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**RELATIONSHIPS AMONG
WORK ADJUSTMENT VARIABLES**

A thesis in partial fulfilment
of the requirements for the degree
of Doctor of Philosophy in Psychology
at Massey University

Monica Jessie Skinner
(née Montague-Brown)

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This thesis is dedicated to the memory of
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ABSTRACT

In the context of changing patterns of work and a growing trend for individuals to occupy more than one position during their working life, knowledge about the factors affecting work adjustment becomes increasingly important to employee and employer alike. The present research investigated the application of aspects of a dominant but relatively unchallenged psychological theory of work adjustment (and its instrumentation) of Dawis and Lofquist (1984). The aspects of particular interest in this area of Occupational, Industrial/Organisational and Vocational Psychology, were the effect of work need correspondence (as moderated by satisfactoriness) on job satisfaction and tenure and the use of the adjustment styles of active, reactive, perseverance and flexibility.

A critical evaluation of the theory raised concerns about possible omissions of important variables, about inconsistencies (such as having the key variables of job satisfaction and satisfactoriness act mutually as moderators yet be relatively independent of each other) and about the apparent failure of an orthogonal model to represent the relationships among work need factors accurately. The underlying factor structure of work needs was explored using confirmatory factor analytic techniques and the linear structural relations model (LISREL). Dawis and Lofquist's work need factor analyses were reworked in an empirical study and as part of a meta-analysis. The work adjustment theory was expanded to take account of relationships among constructs with a more cognitive component (such as subjective well-being, self-efficacy and locus of control), among social constructs (such as social support and social reference group influences) and among non-work variables (such as satisfaction with quality of life domains). Vocational issues such as the relationship between occupational fantasy and actual position taken up were explored.

The study was of a two-stage longitudinal design with questionnaires administered to a relatively homogeneous group of 377 volunteers from a range of academic disciplines in a New Zealand university towards the last third of their final year of study, prior to graduation and to the 288 remaining in the study sample a year later, the majority of whom were in work. Data about the characteristics of the respondent group including information about their parents and individual work expectations were gathered at stage one. Stage two repeated measures of self-efficacy, locus of control and subjective well-being and sought information to evaluate aspects of work adjustment theory, non-work factors and the work/non-work

relationship. The psychological instruments in addition to those of work adjustment theory used were Holland's (1965) Vocational Preference Instrument, The Strong-Campbell Interest Inventory (Hansen, 1985) and the measures used by Campbell, Converse and Rodgers (1976) of happiness, subjective well-being and personal competence.

The criticisms of the theory appeared valid and the expanded model outlined fitted the data better than the original of Dawis and Lofquist with the additional variables performing as well or better in the prediction of tenure. Job satisfaction was found to be a better predictor of work adjustment than expected tenure. Job attachment explained more of the variance in the work adjustment model than did expected length of tenure itself. Although correspondence between work needs and work reinforcers usually occurred, only certain work needs when reinforced affected job satisfaction. The factor structure of work needs was found to be hierarchical with two second order factors. One second order factor was interpreted as being intrinsic and involving personal development and growth aspects while the other was more extrinsic in nature involving the work setting, management and working conditions. Just as the first level factors correlated so did the second order factors to produce a single, general work need factor. Not all work needs may need to be reinforced for job satisfaction to occur and perhaps as few as five need to be measured. Adjustment style did not moderate correspondence between all work needs and their reinforcers. The social reference group and the degree of social support were found to be an important influence on the subjective well-being of respondents. When taken together a greater amount of variance in subjective well-being was accounted for by leisure satisfaction and social support than by job satisfaction. Perceived job satisfactoriness was a better predictor of tenure than job satisfaction. Non-work factors and the relative importance of work and job/lifestyle compatibility were found to be of importance to work adjustment. The implications of the apparent limitations of Dawis and Lofquist's theory of work adjustment are discussed along with the effect of the emergence of a different work need factor structure on the theory's instrumentation.

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CHAPTER ONE

INTRODUCTION

In exploring the relationship among work adjustment variables, a logical place to begin is with a brief look at the importance of work and its role. From there a comparison of the study of work from the perspectives of those involved, the individual, groups and the organisation will be made. A comparison of the psychological approaches to work and work adjustment provides an account of the development of the theoretical approaches in the area. This chapter outlines the main theoretical approaches to work adjustment and concludes with an overview of the approach of the present research to do with the work adjustment of a group of New Zealand graduates.

1.1 The importance and role of work

Within the sub-area of psychology known as occupational or work psychology, an area of increasing importance has been that of adjustment to work. The importance of the study of work itself and the relationship of the individual to it have long been recognised. Of the many different approaches to the study of the individual and work that have been adopted, the most common have occurred within disciplines such as history, sociology, economics and psychology. As a prelude to focusing on adjustment to work itself, it is helpful to briefly examine the importance and meaning of work and the effects of changes in work and attitudes towards it.

The importance of work within societies now, as historically, can be illustrated by the belief that they are usually work-oriented. A goal within developed societies is often to achieve full employment. That many institutions within a society are concerned or associated with work, that there are an overwhelming number of books and articles about work and that work occupies a place of importance in governmental processes and legislation, all attest to it being regarded as an area of great importance. Work is expected to play a significant role in determining the nature of relationships among individuals and between them and the society within which they live.

The apparent centrality of work to individuals can be demonstrated by the amount of time individuals spend engaging in work or work seeking activities. Often half an individual's waking hours can be spent in work, with further time spent resting from or preparing for it. Even in the case of part-time work, where only a few hours a day might be involved, its impact can be out of proportion to the actual time spent. The same impact can occur as a result of voluntary work. The amount of time, the potential importance of work to total life adjustment and its relationship to the satisfaction of needs, all justify work as an appropriate area of study for the behavioural sciences.

The importance assigned to work has in part related to attitudes towards it. Christian ethics have been traced as the root of the development of a work ethic in early industrialised societies. In such societies work was viewed as good for individuals, usually meaning men at that time. Such an ethic is believed to have been replaced by materialism (Dunnette, 1983) and work has come to be regarded as a necessity rather than an activity engaged in by choice (Auden, 1972). Shouksmith (1987) has emphasised that the industrial revolution has been recognised as changing the work force from a rural to an urban one, from one which is no longer craft-based to one which consists of groups of workers in large productive, mechanised enterprises. The success of these societies is believed to depend upon a committed, regulated, disciplined and productive effort on the part of the population. The surprise of Furnham (1984) that the protestant work ethic should have remained central in so many societies and in sound research has been echoed by Shouksmith (1987) who emphasised that the ethic may be a modern 'myth', a convenient assumption. Instead, new values for both the employed and the unemployed are thought to have emerged from newer roles for work. Contributing factors to these new values were listed as, increases in voluntary and enforced leisure, changing technologies and the effect of unemployment.

Work has been described as a cultural transaction with the meanings attached to it being recognised as a matter of the particular society within which individuals live and the sets of prevailing cultural norms (Neff, 1985). A norm in this sense is a shared conception of the behaviour that is appropriate or inappropriate in a given situation in a given culture (Lundberg, Schrag, Larsen and Catton (1968). The evaluation of work and the hierarchy of values attached to different kinds of work have been said to vary sharply from society to society. Neff regarded differences as a reflection, not of the intrinsic nature of the work performed, but of complex sets of social, political and religious beliefs and events.

Consequently he advocated the main thing we need to know with respect to an individual's ability to work within a particular society is the manner in which the prevailing set of social and cultural norms have been internalised.

Both the nature and patterns of work have been affected by many factors this century. The speed often associated with the changes has demanded rapid adjustment on the part of all in the work arena. Technological change has occupied a particular place of importance alongside other factors such as economic and social ones which have accompanied significant events like economic depression or war. The nature of work and the relationship of the individual to it have continued to undergo change such that individuals throughout their working lives might expect to need to adjust not only to a first job and changes within it, but also to several other jobs they may occupy before retirement.

Individuals considering the relevance of work in relation to their search for identity has been regarded as one of the consequences of the industrial revolution. With increasing automation and computerization, the concern arose that machines would reduce individuals to an insecure part of a person-machine system (Dawis and Lofquist, 1984). The effects of social change on work have been both obvious and subtle. Neff (1985) argued that in societies which are heavily industrialised, even small technological changes can remove the need for certain occupations and present major problems of work adjustment. Kinds of work which have been previously valued may lose prestige, while others become more strongly valued. The structure of work forces can dramatically alter in some cases. For example, America has witnessed a shift in the proportion of blue-collar and white-collar workers, with the latter now comprising the majority of the labour force (Neff, 1985).

In New Zealand studies (Inkson and Gidlow, 1981; and Cammock and Inkson, 1985) it has been observed (Shouksmith, 1987) that other changes have occurred, for example, in values upon which decisions about work might be made. These changes have involved a movement away from goals such as achievement, independence, self-control and enduring stress, to goals such as self-expression and self-actualization. For women, the women's movement has been credited with affecting the values of workers via pressure to alter women's roles. For example, a New Zealand study (Abbott and Koopman-Boyden, 1981) demonstrated a change in engaged couples' practices, with an increasing expectation that tasks will be shared more.

In contrast to men, the impact of work on women has been found to be more dependent upon the degree to which it contributes to life satisfaction (Cromie, 1981).

1.2 A comparison within different disciplines of the study of work and work adjustment

Although work has been described as a social phenomenon that must be understood in the context of social institutions and structure, because it is performed by individuals and not societies it becomes an individual problem. The manner in which each individual comes to terms with the almost universal demand to work, can be viewed as a problem in individual psychology. The conditions that influence how we work and whether we work at all can be influenced by individual and personal as well as by social, economic and historical factors. The sets of conditions can be seen to interact. Within psychology the different factors and their interrelationships are mirrored by different levels of analyses, that is of the individual, the group, or the organisation. The psychological, social psychological and sociological disciplines themselves have been said to correspond to or be associated with these three distinct levels of analyses, respectively (Gowler and Legge, 1982; Fincham and Rhodes, 1988).

In contrast to other perspectives, psychology has taken the individual as its chief focus, the individual's interaction with the environment and explanations of the way particular behaviour occurred in a particular situation. It has aimed at producing theories of the psychological processes which cause the behaviour and which will predict it in similar situations. The principal interest lies in the way individual differences affect behaviour and how processes within individuals are evident in behaviour. Often differences between individuals in terms of their aptitudes, abilities and personalities, are studied. Likewise, Roberts, Hulin and Rousseau (1978) submitted that the industrial/organisational psychology paradigm concentrates on the individual as the unit of analysis, assuming that individual differences are more relevant to individual responses than are characteristics of occupational settings. On the other hand, the social psychological perspective would imply that individuals' responses cannot be studied adequately without reference to the social groups to which they respond. Thus, the social group becomes the basic unit of analysis.

Social psychology can be seen to represent the interface between psychology and sociology in its description of how social structures can be internalized by the individual and affect their

attitudes, perceptions and beliefs, which in turn affect their behaviour. Customary ways of behaving and specific patterns of behaviour, such as the roles of leader and follower, become topics of interest. Fincham and Rhodes (1988) have contended that almost all interaction in organisations can be tied to groups. They believe that the recognition of the power of informal groups and friendship groups to influence behaviour has served as an impetus for research in social psychology.

The third level of analysis, that of sociological explanations, are characterised by Fincham and Rhodes (1988) as being based on the idea of social action as a duality, consisting of the structures of behaviour to which people conform and the more active and creative role played by the individual as an agent. Structure here refers to the patterns of expectations and forms of behaviour which have become ordered and which have persisted over time. At the social level behaviour can be seen to originate in the interaction between people. Individual's interests and motives are believed to create the possibility for change. The structure and the part individuals play (agency) are together regarded as accounting for the opposing forces of stability and change. The sociologist is concerned, less with the properties of individuals (or the nature of group-based interaction) and more with relatively enduring social structures. The industrial sociologist applies this broader analysis by looking at areas such as the relationship between workers and employers as distinct classes, or the role of gender in employment. The sociological paradigm is based on the premise that organisations are forms of social collectives with lasting patterns of interaction which can continue unaltered when individual members leave and others join. The units of analysis tend to become the group, organisation, institution, society or culture.

It has been argued that using the three distinct levels of analysis provides a holistic view of the human problems of work and that the resolution of multi-dimensional problems becomes dependent upon the application of a variety of different approaches and perspectives (Fincham and Rhodes, 1988). Problems apparent at one level of an organisation are thought to probably have antecedents and effects at different levels (Gowler and Legge, 1982). An assumption behind the 'levels of analysis' concept is "that one level, operating in a hierarchical or vested manner, provides the context or the environment for another" (Gowler and Legge, 1982, p 73).

Attempts at integration of disciplinary perspectives have been driven by problem-oriented research in the study of work, as such research has rarely enjoyed the comfort of a neatly constrained area of interest. Because the subject matter of the psychology of work or occupational psychology involves individuals in an environment which can consist of groups and organisations, inter-level and inter-disciplinary analyses become more likely even though the primary focus in the psychology of work has probably tended to be at the individual level of analysis.

Although the study of work adjustment within psychology may focus upon the individual, some integration of levels of analysis would seem inevitable. For example, characteristics of occupational settings would be expected to become more relevant than Roberts, Hulin and Rousseau's (1978) Industrial/Organisational paradigm indicated. The social psychological perspective of accounting for individual's social groups would be expected to be important in relation to work adjustment. The sociological perspective, by moving the emphasis from properties of individuals and group-based interaction to social structure, may be departing too far from the domain of a psychological approach. Although the level of analysis involved in the sociological perspective, that of the organisation, would at least be expected to have relevance for the study of work adjustment.

Gowler and Legge noted that the assumed match between certain disciplines and levels of analysis can be more apparent than real. At the same time they warned of the problems inherent in the integration of different disciplinary perspectives and different levels of analysis. They pointed out that as theories, levels of analysis not only involve ideas about causation, they also define a range of empirical referents. An organisational psychologist and a micro-sociologist might agree upon an empirical referent, such as employee performance, but they are more likely to disagree about casual attribution. It is argued that for integration or synthesis of different disciplinary approaches to occur, they have to operate simultaneously at the level of cause and content.

Something approximating integration of levels of analysis occurs in the emphasis on one level of analysis providing a context for another. This is especially notable in the work of organisational researchers, sociologists and psychologists, who adopt some form of a 'systems' perspective. For example Rousseau (1977), treated an organisational-level variable, technology, as the context for two individual-level variables, perceived job characteristics and

affective responses of employees to their jobs. In the case of a fully developed systems approach inferences of causality become more complex because of the assumption of feedback in the system (Gowler, 1969; Legge, 1970). The contextual independent variable at one point in time can become the dependent variable at a subsequent point in time.

Although levels of analysis, individual, group, organisation may be differentiated conceptually, when applied empirically a time dimension can become involved. The time dimension appropriate to measuring behaviour at one level may be very different from that used at other levels. For example, individual attitudes to work may be measured at one point in time by a questionnaire, while cohesiveness of the work groups which provide the context for these attitudes may be measured by observation of patterns of interaction over a much longer time period. The results from these two sets of measurements may not therefore be strictly comparable. If the time period over which variation in the independent variable, the context, is likely to produce variation in the dependent variable is not identified, serious identification problems can occur. This can be further complicated by the use of more than one independent variable, which is likely if several disciplinary perspectives are employed.

It is suggested that integration and synthesis must be limited in scope (Gowler and Legge, 1982) by adopting one of several partial designs. These are, using concepts from two or more disciplines but focused on one level of analysis, integrating two orientations from one discipline focused at one level of analysis, or using concepts from one discipline and one theoretical orientation across levels of analysis. Identifying context variables or variables from another level as moderating variables of same level variable relationships can be of use conceptually and in statistical analysis where more than one independent variable is involved.

Rather than equating different levels of analysis with different approaches, a grouping based on levels of analyses alone and which originated in sociological study (Riley, 1964) is useful to describe analyses within occupational psychology. This typology defines *individual analysis* as measurement carried out on the unit alone, such as measurement and correlation of an individual's attitudes. *Group analysis* is described as measurement carried out on properties of groups, sometimes relative to other groups of the same kind, as occurs in ranking. *Structural analysis* regards the group as the focus of data and conclusions, but individual variables are used for specifying the result or checking its validity. The fourth type of analysis, that of *contextual analysis*, by primarily focusing on individuals differs from

structural analysis, but individual relationships are checked or specified by accounting for differences between the groups to which the individuals belong.

Gowler and Legge (1982) reported that structural and contextual analyses, in involving more than one level, are regarded as more fruitful forms of analyses than group and individual analysis. The information value of a finding is believed to be enhanced. This conclusion is based upon Popper's (1959) argument that the informative value of a finding has to do with the degree to which it can be falsified, that is having a number of ways of showing a statement to be false. It is argued that when analysis is at one level only, statements tend to be more trivial, tend towards tautology and involve arbitrary, unstable operational definitions. Research in the area of work adjustment can be categorised according to the above typology to help clarify how fruitful an analysis might have been.

1.3 Psychological approaches to work and work adjustment

Employment has been claimed to have, apart from its social and its obvious economic function, latent functions of immense psychological significance. For example, Roe (1956) regarded work as important in the satisfaction of basic human needs. Jahoba (1979) identified five major important categories of life experiences associated with work. These were, social contact, enforced activity, involvement with collective purposes, time structure and status. Despite its connotations of a relative lack of freedom, work has been regarded as more important and of greater value than leisure. This is because it can motivate, challenge and stimulate as well as provide resources of benefit to the individual (Brook, Kesha and George, 1987).

The changes that have already taken place with respect to work and those yet to come can be expected to continue to place demands on the adaptation of individuals to it. The primary components of adjustment to work, as the individual and the work environment, can be described as consisting of what individuals bring to the process and the effect the work environment and interaction with it have on their behaviour. What individuals bring to the process includes their basic attributes in relation to behaviour within organisations. Their behaviour is expected to be affected by work environment factors such as different work roles, work structures and organisational attributes. The above elements of work adjustment are delineated in publications such as that of Landy (1985). He identified the individual's

attempts to adjust to the characteristics of the job, co-workers, superiors and the organisation's attempts to coexist with the characteristics of the worker, as an area of particular interest within the broad area of the psychology of work behaviour. Landy approached this area of individual adjustment and organisational coexistence from a molecular view of individual's motives and affective responses to the work environment by looking at work motivation and job satisfaction. He conducted a molar examination of the organisation's expectancies and their effect on the employee's behaviour.

Scott (1961) identified a similar scheme as a way of understanding the behaviour of individuals in an organisation. He argued for the examination of three elements. These were, the requirements of the organisation, the characteristics of the individuals of the organisation and the relationship between the organisational elements and the characteristics of the individuals. In proposing such a scheme Scott was invoking different levels of analysis and the study of their interrelationships.

Theories of organisation have influenced the study of work adjustment and work adjustment related constructs, such as non-work factors, general adjustment, job satisfaction and job success, subjective well-being and stress in the workplace, as set out in section 1.3.2. Work adjustment study has largely taken place in vocational psychology with the emphasis initially on developing psychometric measures (section 1.3.3).

1.3.1 The theoretical approaches to the individual and the organisation

With respect to the examination of the organisation element of the behaviour of individuals in an organisation, Landy (1985) suggested that factors such as its formal characteristics might only be considered important to the extent that they exemplify the values, beliefs, attitudes and predispositions or behaviours of organisational members and the extent to which they have the capacity to help explain differences in the behaviour of organisation members. In an effort to understand the influence of the organisational principles on the behaviour of workers, the characteristics of both the individuals who function within the environment and the characteristics of the environment itself, come under consideration. Different theories have placed differing emphases upon these influences. The early theories of organisation emphasised the immediate organisational environment and key variables within it as important in relation to worker behaviour. These so called classic theorists, of which Weber (1947) is

the best known, argued that variables like the size and number of supervision levels were responsible for organisational success and efficiency. The variables were considered to be independent of the individual and a best way of organisation was prescribed, in order to affect the behaviour of workers to lead to benefits such as maximising worker satisfaction and productivity and minimising absenteeism and turnover.

A later perspective, that of the human relations approach, identified the importance of the recognition of psychological characteristics, such as the need of individuals for independence or affiliation or stimulation. This approach emphasised the personal perspective, making things like satisfaction, motivation, interpersonal conflict, or leadership, key issues. This approach to organisation theory has been identified by Landy (1985) as fitting best with Scott's (1961) third element, the relation between the organisational requirements and the characteristics of the people in it. The human relations approach can be represented by the work of McGregor and his Theory X/Theory Y (1960), involving managers' beliefs about subordinates' behaviour and the effect such belief systems have upon behaviour. The approach can also be represented by the more developmental theory of Argyris (1972) who contrasted the way individuals develop in the context of restrictions placed on that development by the organisation. A lack of congruence between forms of work and the level of the development of the individual would be seen as predictive of worker behaviours such as absenteeism, turnover, unionization and apathy. Important to these examples of the human relations approach is the notion of matching the goal system of the individual to the requirements of the organisation.

Of the key issues in the human relations approach, the motivational approach has been one of the major influences in the psychology of work behaviour and has included need, instrumentality, goal-setting, equity, reinforcement, self-efficacy and physiological theories. The latter two have had less of an influence for reasons such as lack of data and lack of application to the occupational area because they are relatively new theories. The need theories have had particular relevance. Industrial/Organisational Psychologists have applied need theory assuming that individuals strive to meet their needs in the work setting. An understanding of how these needs are met is expected to lead to an understanding of work-related behaviour such as work adjustment. The need theories have tended to categorise needs in consistent ways semantically, but have differed in the number of needs proposed, the interrelationship of needs and the process of moving from one need to another. The models

have ranged from the five need hierarchy of Maslow (1943), to Aldefer's (1969) three level hierarchy, to Herzberg's two factors (Herzberg, Mausner, Peterson and Capwell, 1959; Herzberg, 1966) to the proposal of a single need, the need for achievement and power (Murray 1938; McClelland, 1955) and the incorporation of cognitive elements in the latter (Atkinson, 1964).

The many problems associated with need theories have limited their validity. Wahba and Bridwell (1976) noted some of these difficulties to be conceptual and operational in nature and related to questions such as whether needs have a physiological or psychological basis and whether they are always in existence or only because of a deficiency. The difficulty of the identification and measurement of needs, the failure of data to support the various approaches entirely and the questionable integrity of the needs approach have all been issues of concern. The need approaches being referred to as 'theories' was questioned because they have lacked a tight set of interrelated propositions that can be empirically tested.

An alternative to both the classical and human relations approach has been apparent in the contingency perspective where the choice of the configuration of an organisation does not involve a single best way but is dependent upon particular environmental variables. For some theories these variables might involve technological aspects of environments. For example, Woodward (1958) viewed span of control as dependent upon type of technology. In the case of Lawrence and Lorsch (1967), organisational characteristics were believed to be dependent on the amount of change the organisation was experiencing. Other contingency theories emphasised social aspects. This sociotechnical movement, based on both classical organisational theory and human relations considerations, contended that organisations ought to be arranged with the interaction of social patterns and technological change in mind. This approach has become identified with the Tavistock Institute of Human Relations and Researchers' (Trist and Bamforth, 1951; and Rice, 1958) examination of the social consequences of technological change in the coal-mining industry.

From the perspective of both the individual and the organisation and their interrelationships, a more cognitive element is evident in the organisational climate approach. This has been described as the perception of the objective characteristics of the organisation by its members. Climate can be viewed as an individual's concept of the "personality" of the organisation. Landy (1985) outlined the research of Litwin and Stringer (1966) as reported in their paper

presented to a conference on organizational climate. They proposed six distinct organisational climatic factors, those of structure, individual responsibility, rewards, risks and risk taking, warmth and support and tolerance and conflict. These factors have been said to be descriptive of the way an organisation treats its members, that is its personality.

Much of the work in the area has been aimed at identifying definitive parameters (Campbell, Dunnette, Lawler and Weick, 1970; Sims and LaFollette, 1975; and Muchinsky, 1976). Organisational climate has been found to be a sole correlate of performance for the previously hard-core unemployed (Friedlander and Greenberg, 1971). The research has supported organisational climate as a distinct construct separate from others such as job satisfaction. It is thought to be represented by the characteristics of autonomy, structure, reward and consideration (Campbell, Dunnette, Lawler and Weick, 1970). As Payne and Pugh (1976) depicted, climate is an excellent point of entry into the open system that includes the individual, the organisation and the environment. As such, it can provide information relevant to the match between organisational structure and individual characteristics and has particular relevance for the work adjustment process.

Another theoretical approach involving the interaction between the individual and the organisation and their mutual adjustment, but one which is more sociological in orientation, is that of role conflict and role ambiguity. These constructs have been regarded as negative by-products of organisational growth. An example of a role conflict approach has been that of Miles and Perreault (1976). They described four types of role conflict. One type was person-role conflict with an individual wanting to do things in a manner different from that suggested in a job description. A second type was intrasender conflict, described as the individual receiving an assignment with insufficient staff to carry it out successfully. A third type of role conflict was intersender conflict which involves an individual being asked to behave in such a way that one person will be pleased with the result while others will not. A fourth type of conflict has been described as role overload which involves the assignment of more work than an individual can handle effectively. Such competing demands are expected to produce stress in individuals which result in dissatisfaction and performance difficulties.

The concept of role ambiguity, or the extent to which an individual understands what the job requires, has often been studied along with that of role conflict. It has been expected to have

a similar effect on satisfaction and performance. Role ambiguity is concerned with the extent to which an individual understands what the job requires. Landy (1985) notes the implications role related concepts have for theories of work motivation, goal setting and leadership. The Porter-Lawler model is given as an example. With respect to role conflict, it is thought that instrumentalities, valences and expectancies, may cancel one another. When for example the job description calls for certain behaviour but common sense calls for different behaviour, difficulties with defining good performance could result. This would be an example of inappropriate role perception in the Porter-Lawler model.

1.3.2 Work adjustment related constructs and theories

The study of work adjustment has been influenced not only by the different perspectives associated with the individual, the group and the organisation, but also by the different areas of applied and general psychology. Like most areas in psychology Industrial and Organisational Psychology has its roots in experimental psychology, differential psychology and industrial engineering, including time-and-motion study and the design of work and work machines. These combined influences and the emphasis on the human characteristics, feelings and reactions of individuals, affected the way in which Industrial/Organisational Psychology has developed. Landy (1985) reports that three independent movements have evolved, the testing movement (Personnel Psychology) which drew heavily on the individual differences approach, the human relations movement (Social-Industrial Psychology) which was initiated by the Hawthorne studies and the experimental/industrial engineering approach, which used the methods of industrial and organisational engineering. Each movement developed relatively independently with its own techniques and advocates. However, the overlap of the three distinct, but related areas has received recognition such that the interdependence of social-organisational structure, machine and system design and worker characteristics has, according to Landy, come to define the science of work behaviour.

The fourth major and more recent influence has been the so-called cognitive revolution which has taken cognitive theory into account. Some problems of appraising performance have been recast as cognitive rather than organisational or procedural. The cognitive complexity of many tasks, rating tasks for example, have been considered. In the systems design area, information processing capacities have been recognised as playing a major role in work environment and work tasks design. The understanding of cognitive variables and processes has been

recognised as responsible for major advances in the identification of stressors and the reduction of stress at work.

Work adjustment theory development and research itself has taken place often at the interface of Industrial/Organisational and Vocational or Counselling Psychology. These have taken work, although different aspects of it, as their primary focus. Work adjustment has been closely related to other concepts of adjustment such as well-being in relation to work and stress as related to work. The relationship to and interaction of the non-work setting with work has been considered in the comparisons made of work and general adjustment (Crites, 1969).

Work adjustment initially tended to be examined in relation to general adjustment in an effort to define it as a separate construct (Crites, 1969). Personal maladjustment of workers had been found to be directly related to their work adjustment (Fisher and Hanna, 1931; Paterson and Darley, 1936). Super (1951) viewed work adjustment as a specific aspect of personal adjustment, expecting that change in one would affect the other. Forer (1953) argued that occupational adjustment could improve personal adjustment by gratifying needs not gratified in non-occupational behaviour and by allowing an outlet for neurotic needs whose expression in other situations would lead to difficulties. Vocational adjustment has been regarded as a function of general adjustment by psychoanalysts (Menninger, 1942), adjustment psychologists (Schaffer, 1953) and occupational sociologists (Clark, 1953). Others such as Ginzberg (1962) argued that the two concepts were not necessarily related. Hoppock (1963) allowed for some correlation between the two but argued the causal direction would be situation dependent.

Super (1957), in response to the findings that a relationship between work and general adjustment seemed to be moderate and not always clear, suggested that basic personal and social modes of adjustment learned in the primary social situation set the pattern for adjustment in other situations. Super believed general adjustment to be definable in terms of several kinds of adjustment which are only partially interrelated. As a result no one type of adjustment was expected to correlate highly with the composite of general adjustment. Crites (1969) expected the occupation itself to attenuate or accentuate the relationship between work and general adjustment. He argued that in some occupations a better-adjusted worker might be a poorly adjusted person because of the nature of the work. Being adjusted to certain types of work can be incongruent with being adjusted to society itself.

Crites developed his own model of work adjustment which depicted it as a process with several components which interact, in a similar way to those of Bakke (1953) and Super (1951). A worker was said to be motivated by external or internal stimuli to behave in certain ways, such as seek help from co-workers. When behaviour was impeded either by external circumstances, referred to as frustration, or by competing response tendencies, referred to as conflict, the worker tried to adjust by making a response to eliminate the thwarting conditions or reduce the tensions arising from them. Work adjustment was expected to be achieved by an effective response and to result in either job satisfaction or job success.

Other researchers had proposed job satisfaction and job success as ways of evaluating work adjustment (Lurie, 1942; Lurie and Weiss, 1942; Heron, 1952a, 1952b, 1954; Gellman, 1953; and Scott, Dawis, England and Lofquist, 1960). Crites added occupational persistence (Strong, 1943, 1955) and vocational fitness (Scott, Dawis, England and Lofquist, 1960) to the criteria of work adjustment. Work adjustment, often referred to as vocational adjustment in this early research, was viewed as a developmental process with discernible stages (Miller and Form, 1951, 1964; Super, 1957, 1963) projecting over the total span of the work years.

Another construct which is related to and could be viewed as an indicator of general adjustment is that of subjective well-being. In the literature the cost of work to the worker has been considered in terms of well-being and stress. Both areas of research relate to the construct of work adjustment, stress both initiating and affecting the work adjustment process and the achievement of work adjustment and well-being.

Consistent with the classical perspective, initial approaches to work and well-being involved examining concepts such as work safety and the identification of elements in the work environment which are aversive. There are many potential stressors in the objective work environment of a physical and psychological nature, such as sound, noise, heat and cold, which can affect information processing and performance on the part of the worker (McCormick, 1957; Poulton, 1970; Broadbent, 1954; Jerison, 1957; Finkelman, Zeitlin, Filippi and Friend, 1977; Teichner, Arees and Reilly, 1963), either singly or in combination (Wilkinson, 1963, 1969, Broadbent, 1971). However, a broader approach has emerged with the examination of the psychological demands associated with work, that is the relationship between stress and work. Stress in the workplace has implications for the work adjustment of individuals. Various theories of stress have emerged, examples involving the short and

long-term consequences of stress (Glass and Singer, 1972) and viewing life events as having stress values which have a cumulative effect on well-being (Holmes and Rahe, 1967). This stress/vulnerability type of model implied that for work these accumulated negative effects would include illness, dissatisfaction and poor performance which could culminate in withdrawal through absenteeism and turnover.

Another theory of stress is a person-environment fit model which emphasises the match between characteristics of individuals and the environment. A number of theories of human stress (for example, Pervin, 1968; French, Rodgers and Cobb, 1974) and performance (McGrath, 1976) are based on the programmatic view that behaviour is a function of characteristics of the person and of the environment (Lewin, 1935; and Murray, 1938).

With respect to the work of French et al, for example, environmental events were not seen as universal stressors. Instead the stress values of events were regarded as dependent upon the individual's perceptions of the environmental demands and their own capacity and motivation to meet them. Such an approach is more cognitive in emphasis and is consistent with a definition of stress given by McGrath (1970) which identifies stress as a *perceived* substantial imbalance between demands and response capabilities which has important perceived consequences.

A person-environment fit approach with a long research history, developed within vocational psychology, supported by instrumentation, currently still in use and influential in the work adjustment area, is that of Holland (1959). He proposed that individuals develop a hierarchy of adjustive orientations or preferred modes for dealing with the environment. He used these same six orientations of realistic, investigative, artistic, social, enterprising and conventional, as defined in appendix F, to also describe occupations or environments. His model depicted the orientations in a hexagonal shape with adjacent types being more similar to those further away on the hexagon, see appendix F. The degree of *congruence* between an individual's main orientation and that of their chosen occupation was believed to be predictive of job satisfaction and tenure. An individual's personality or orientation was regarded as high on consistency if the modal orientation involved two adjacent on the hexagon, but low on consistency if the orientations were distant from each other. Individual preferences can be measured by Holland's Vocational Preference Inventory (VPI), (1965) and by the self-administered Self Directed Search (SDS), (1971). The latter has been revised for the New Zealand setting (Keeling and Tuck, 1982). Individuals with a differentiated score profile, that

is one in which a discernable difference between orientations was evident through the scores, are expected to find it easier to make a career choice.

The person-environment fit approach rejected that stressors alone were sufficient to account for the experience of stress. The perception of the objective world, the presence of defense mechanisms and the effect of social support, all became considered. More reminiscent of the human relations perspective was the next so-called logical model (Landy, 1985) that of Type A personality and behaviour (Friedman and Roseman, 1974). This stress/vulnerability approach emphasised the characteristics of individuals rather than the environment or the person-environment fit.

Another model in stress research (Karasek, 1979) has highlighted the contradictions that have become apparent in the stress literature. High demand characteristics have been found in both assembly-line workers and executives, but they have not been equally satisfied (Quinn, 1971). Karasek considered environmental stressors had been emphasised without taking what he considered to be a mediating influence into account; that is the extent to which an individual has control over important decisions. Payne (1979) extended this model by emphasising the idea of individual's *perceptions* of demands and decision latitude as critical and by including the concept of support. Support here referred to the environment making available resources of a natural, physical, intellectual, technical and social kind.

Each of the approaches to work adjustment related concepts imply certain strategies for managing or reducing stress and consequently improving adjustment. These approaches include, behavioural intervention, physiological intervention, job design and redesign and cognitive intervention.

1.3.3 Work adjustment theories in vocational psychology

The initial focus in vocational psychology on work adjustment was two-fold. Firstly, it lay in developing psychometric measures in the areas of vocational choice and personnel selection, of which Holland's and the work of others at Minnesota University is an example. A second area of focus was in the less vocationally oriented areas of work motivation, employee morale and worker productivity. Each of the psychometric measures developed had some relevance to work adjustment problems but produced relatively independent bodies of

research literature. A review of the literature on aspects of work adjustment by Scott, Dawis, England, and Lofquist (1960) had revealed that to achieve a systematic investigation of the area of adjustment there was a need for an integrating theory. Lofquist and Dawis (1969) and Dawis and Lofquist (1984) set out to achieve this. They produced over 30 technical monographs in the *Minnesota Studies in Vocational Rehabilitation*, many published papers and two books (Lofquist and Dawis, 1969; Dawis and Lofquist, 1984).

Dawis, Lofquist and their associates responded to much of the criticisms of the trait and factor tradition, as Holland had to a certain extent. They agreed that it was atheoretical and unsuccessful in accounting for the process of career development (Crites, 1969). Crites characterised their theory as one built upon basic psychological concepts of, stimulus-response and reinforcement and one which has encompassed many of the points of view of the previous approaches. Their approach was said to have incorporated the developmental aspect of more recent trait-and-factor theory, in particular the concept of vocational fitness, the value of knowledge about work histories of the developmental approaches and the need orientation of psychodynamic theory. By developing a model comprised of a set of interrelated empirically testable propositions the title of theory was justified to a greater extent than had been the case with the other need approaches. It has been identified as one of three dominant approaches in vocational psychology from the 1970s (Hackett, Lent and Greenhaus, 1991), the others being Super's developmental theory (1953; 1957) and Holland's typology approach (1959; 1965).

Like person-environment fit theory, that of Holland's in particular, Dawis and Lofquist's theory of work adjustment proposed an interaction between the individual and the work environment. The key concepts involved were those of the work personality, the work environment and the correspondence between the individual and the environment. The indicators of this process were said to be job satisfaction, job satisfactoriness and tenure.

Dawis and Lofquist's theory (1984) can be summarised in the following way. Seeking correspondence between the individual and the work environment is a basic motive of human behaviour. The degree of correspondence is defined as the extent to which the individual fulfils the work requirements of the work environment, that is achieves *satisfactoriness* and the extent to which the work environment fulfils the requirements of the individual, that is degree of job *satisfaction*. Work adjustment was defined as "the continuous and dynamic

process by which an individual seeks to achieve and maintain correspondence with the work environment" (Dawis and Lofquist, 1984, p 55). Tenure was viewed as the basic indicator of correspondence, it was expected to increase when correspondence increased. A lack of correspondence was expected to be associated with leaving the work environment.

The individual's work personality and their work environment were described in parallel terms, each being said to have a structure and style. Personality structure consisted of the skills and needs of individuals, or their reference dimensions or factors of abilities and values. The environmental structure consisted of the skills requirements and needs reinforcers, or their reference dimensions of ability requirements and reinforcer factors. The reference dimensions were the factors produced via factor analysis. The characteristic patterns of these reference dimensions for occupations were referred to as an occupational ability pattern and an occupational reinforcer pattern. Personality style described individuals' customary ways of interacting with the environment. The style of the work environment was depicted in terms of its requirements for speed of response, level of activity, typical pattern activity and duration of response.

1.4 An outline of the approach of the present research

The present research arose from an interest in work adjustment as a potentially key factor in the probability of individuals remaining in any one job or career. The stimulus for the research was an awareness of continual change in the nature of work and its relationship to non-work, the changing relationship of individuals to their work and the changing expectations of societies in relation to work. The research pays attention to person-environment fit in the work adjustment process covering areas traditionally the domain of both counselling and organisational psychology. It has been influenced by topics of the counselling tradition such as the study of congruence and individual decision making in educational and career choice. It has been influenced also by topics typical of organisational psychology, such as job satisfaction and performance. However an attempt is made to avoid the failings identified by Hackett, Lent and Greenhaus (1991) of the counselling and organisational psychology approaches. They noted the underplaying of contextual factors evident in the counselling research and the overemphasis of managerial perspectives of organisational psychology.

A converging theme of both approaches is represented here by introducing a more cognitive perspective, by the use of the constructs of self-efficacy, subjective well-being and perceived work satisfactoriness. Some integration of levels of analysis, those of the individual and the group outside the work setting in particular, is attempted by including social issues, such as the importance of social support to work adjustment and perceived job satisfaction relative to that of an individual's reference group.

The primary research question was whether one of the most comprehensive and testable theoretical frameworks, that of Dawis and Lofquist (1984), would account for aspects of work adjustment behaviour in the population of interest. The population concerned was that of tertiary students, mainly University but some teaching students, as groups in the latter stages of educational choice and in the early part of career choice and work adjustment. The respondents were studied both in the second term of the final year of their studies and a year later. As a group, graduates offered the opportunity for longitudinal study, for gathering work and general adjustment measures both prior to and upon taking up employment.

The existing criticisms of Dawis and Lofquist's theory were considered and some changes and additions to the model were believed necessary in order to respond to those criticisms and others which arose in preparation for the present research. The latter criticisms were related to two areas. The first was a belief that Dawis and Lofquist, by placing little emphasis on cognitive factors and placing only some emphasis on personality ones, whilst ignoring the influence of social and non-work factors with respect to work adjustment, had not entirely fulfilled their aim of producing a theory which would integrate the literature. The second was concern about an apparent incomplete use of factor analysis in determining the factor structure of work needs. The possibility of the existence of higher order needs had not been considered. Consequently, the theory was expected to have some limitations generally and specifically with respect to the respondent group whose members typically are young and in the early stage of their working life. As such they might be expected to be particularly influenced by cognitive factors such as their own degree of confidence and by social factors such as social support and the influence of their peer group.

The appropriateness of applying aspects of Dawis and Lofquist's theory to graduates as a group in early employment was particularly considered. The key concepts of interest in Dawis and Lofquist's theory, such as job satisfaction, were expected to occur and vary in this group

and therefore be variables available for measurement. Job satisfaction was expected to be of importance to this group many of whom could be expected to be career oriented. The lengthy study they had usually undertaken in preparation for employment would suggest they might be career orientated and or at the least place work in a position of some importance in their lives. As such they would probably have an expectation of achieving some degree of job satisfaction. By including graduates from numerous different academic disciplines a wide range of work needs would be expected to be represented and also comparisons could be made in terms of Holland's personality type of adjustive orientations.

CHAPTER TWO

REVIEW OF THE RELEVANT LITERATURE

With respect to work and the individual's relationship to it, Dawis and Lofquist (1984) examined the meaning of work through its various definitions. "Typical definitions include activity engaged in for pay to make a living or to earn money; activity that occupies much of the waking day (*occupation*); activity that uses abilities or skills in some social or economic enterprise (*employment*); activity that one is called upon to do (*vocation*); or activity that one contracts to do (*job*)" (p 3). Many of these definitions have been interchangeable in common usage.

The above definitions view work as an activity. More complete and broader definitions, such as that of Roe (1956), had viewed work as the main focus of the activities and thoughts of an individual. Dawis and Lofquist (1984) argued that if individual's lives develop around work and if it is an important medium for total adjustment, then work comes to mean more than just the list of activities associated with it. They argued that to be fully understood, work needs to be looked at in the historical and social context of the work values of the particular society to which an individual belongs. For example, historically, for preindustrial society, work was said to be " (1) a hard necessity, painful and burdensome; (2) instrumental, a means towards an end, especially a religious end; and (3) a creative art, therefore intrinsically good" (Dawis and Lofquist, 1984, p 5).

The relationship between the individual and work can be regarded as basic to consideration of the work adjustment process. The theoretical and research areas which form a background to the work of Dawis and Lofquist and others at the University of Minnesota relate to the individual's relationship with work and its antecedents and consequences. Motivation to work has been a commonly studied work antecedent, whilst the rewards of work, job satisfaction and productivity have been among the work outcomes predominantly studied. Because job satisfaction and productivity can themselves have further consequences, for example on future productivity and tenure, the factors affecting them have been of particular interest (as described in section 2.2.1). The relationship between job satisfaction and tenure has been given particular attention. It is out of the broader context of personality theory, motivation, job satisfaction and performance theory and research that models have emerged such as those

of Dawis and Lofquist which in focusing on individual work behaviour and employee attributes, values and personalities, involve the key concepts of satisfaction, satisfactoriness and tenure.

2.1 Personality theory

A major objective of psychologists in their theorizing has been to identify universal characteristics and principles of human functioning while taking into account individual differences and the uniqueness of each person. Staub (1980) noted that "personality psychology is concerned with universal characteristics of human beings and differences among them". He recognised that personality psychology is concerned not only with how persons with a variety of characteristics function but also with seeking to provide a conception of human beings in general. Examples given of such theories which strive to provide universal descriptions were: psychoanalytic theory, certain cognitive theories and social learning theory.

The importance of the uniqueness of individuals versus the things they have in common is evident in the use of the two different approaches of nomothetic (the study of groups leading to universal characteristics and general laws) and idiographic (the intensive study of individuals). An advocate of the latter approach, such as Allport (1937, 1961), recommends the study of individuals in terms of their uniqueness and therefore the use of in-depth case studies. The argument against focusing on the uniqueness of every individual is the potential inability to generalise to others. Yet the aim of science is often to find laws or principles which are applicable to at least a significant group of individuals. Therefore, in order to contribute to a science of psychology we need to take both approaches into account. Staub (op. cit.) has concluded that, "While we may want to understand each person's complexity and uniqueness, we certainly want to know what ways people are similar to some others and in what ways they are similar to all other people", (p.4).

2.1.1 The different definitions and theories of personality

Within personality psychology, the term *personality* has been difficult to define in a precise way. Its meaning can be approached by looking at various definitions and theories of personality which have emerged. However, concise definitions have not been able to give a full account of the broad content of this area and they tend to reflect an individual differences

emphasis. Guildford's (1959, p.5) definition of personality as "a person's unique pattern of traits" and Mischel's (1976, p.2) "distinctive patterns of behaviour" are examples of this. A notable exception has been McClelland's (1951) definition of personality as "the most adequate conceptualization of a person's behaviour in all its detail", (p. 69). Staub (1980) noted various emphases in definitions of personality; Mischel (1976) focused on how individuals *adapt* to situations in their lives; for Sullivan (1953), interpersonal situations were identified as the defining aspect; Allport (1961) emphasised personal characteristics and their *organisation* (seen as dynamic and variable). Most of the definitions are said to imply a constancy in individual characteristics.

In describing aspects of personality, Staub (1980) commented upon *the existence of a dichotomy* between characteristics apparent on the surface and those which lie underneath. He noted that psychologists such as Maslow and Rogers imply that the inner person is more genuine than the one indicated by the surface presentation. Staub agreed that it is appropriate to distinguish between self-presentation and the thoughts, behaviours, desires and other characteristics which may underlie it. He thought also that we should be concerned with both and with the relationship between them. In general, personality psychology has focused not so much on the human capacities per se (such as physical abilities and intelligence) but on how they are modified by personal characteristics, like motivation and attitudes, when they are expressed in differing situations (of which work is an example).

Hall, Lindzey, Loehlin and Manosevitz (1985) in examining the influences of other traditions on personality theory, traced its origins to early classical scholars (such as Hippocrates, Plato and Aristotle) as well as to other great thinkers over the centuries. The study of personality and the discipline of psychology as a whole show dissimilarities, in part as a result of their having different origins. The discipline of psychology generally was said to have arisen gradually in the late nineteenth century out of philosophy and experimental physiology, whereas the study of personality arose from the theory and practice of Medicine and the need to understand the 'patient' or the 'abnormal' person. On the one hand personality theorists such as Sigmund Freud and Karl Jung worked mainly with clinical data while on the other hand the study of phenomena such as perception and memory began the experimental and learning approaches to psychology. Theorists such as Herman von Helmholtz, Wilhelm Wundt and John B. Watson belonged to the latter group.

Because of its different origins and purpose, personality theory has been recognised as functional in orientation, as also rebelling against accepted theory and research techniques and as lacking in the disciplined systematic approach of traditional scientists. The theorists have been interested in the motivation process and the study of the whole person. The theories have acted as an integrative force often drawing together findings of studies relating to parts of individuals' functioning. Personality theories themselves often focus on only certain aspects of human behaviour. They have not been credited with achieving a grand theory or paradigm which (as defined by Kuhn, 1962) provides a compelling way of looking at a problem and a solution for a whole area of scientific research.

2.1.2 Personality theory, Dawis and Lofquist's theory and Personality theory traditions

A discussion of personality theory is of particular relevance to Dawis and Lofquist's theory for the following reasons. A large component of their theory is to do with work personality specifically but they also advocated their theory has relevance for personality theory more generally. They began by focusing on work adjustment behaviour specifically but later when the theory was more fully developed they suggested it had application for many different areas (some more closely allied to work than others). The applications they suggested were for use in vocational counselling, personal counselling, adjustment to retirement and organisational and societal development. They went as far as to suggest that the concepts in the theory of work adjustment "might serve as a more general theory of behaviour and, in particular, as a theory of personality because it is rooted in basic psychological concepts as they might relate to a major part of human behavior - work" (Dawis and Lofquist, 1984, p 145.) In this way they appear to be postulating a paradigm. Their theory does focus exclusively on the interaction of a work personality and work environment, in particular the degree to which individuals' work personalities (made up of their work needs and abilities) are reinforced by the work environment (the ability requirements and work need reinforcers of the work environment) to produce satisfied and satisfactory workers more likely to remain in the environment. However, Dawis and Lofquist suggested that the needs and ability requirements could be identified for any environment and the theory would then have a general application.

A look at the origins of personality theory (as discussed above), the influences on it, its status both at the time Dawis and Lofquist developed their theory and currently, is aimed at placing

their theory in context and comparing it with current personality theory, in particular identifying aspects they have excluded.

The influences on personality theory have been identified by Hall et al (op. cit) as involving four traditions. One was the tradition of *clinical observation* said to begin with Jean-Martin Charcot, a French neurologist and psychiatrist 1825-1893), to include Sigmund Freud (1856-1939) and to have done more than any other single factor to determine the nature of personality theory. Another influence was that of the *gestalt* tradition where human behaviour was studied as a unit rather than a collection of small parts. The focus tended to be on the individual's perception of self and the environment. It is represented by theorists such as Maslow, Rogers, Binswanger and Boss, Lewin and Kelly. A third tradition was that of *experimental psychology* (in general) and *learning theory* (in particular). This tradition is especially concerned with properly controlled research, better theory construction and detailed accounts of how behaviour is modified. The fourth tradition, the psychometric one, in focusing on individual differences, brought an improvement in the measurement of behaviour and the analysis of data. Theorists exemplifying this tradition are Cattell and Eysenck and to some extent Murray, Allport and Sheldon.

The current personality theories have been said (Hall et al op. cit.) to make certain basic assumptions about human behaviour which reflect theorists' stance on some major issues which face personality theorising. The theorists have been said to fall either somewhere on a continuum, with regard to the extremes of any one issue or dimension of personality (such as the importance of *past* or *present* factors determining behaviour), or to take both extremes into account. The basic assumptions about human behaviour were identified as involving the following issues: a) conscious versus unconscious; b) acquisitions versus the process of learning; c) heredity versus environment; d) past versus present; e) holistic versus analytic; f) person versus situation; g) purposive versus mechanistic; h) a few motives versus multiple motives; and i) normal versus abnormal. Each of these assumptions can be briefly described as follows.

The *conscious versus unconscious* issue is to do with whether rational process or irrational factors control behaviour. Although most theorists admit to both existing, for some, one or the other is given greater importance. Unconscious factors were emphasised by theorists such

as Freud, Jung and Murray. The other end of the continuum is represented by Roger's, Allport's and Lewin's positions.

For some theorists, for example, Murray, Allport and Cattell, the *acquisitions* (or structures of personality or the outcomes of learning) are of key importance. Whilst for others, such as Skinner, Dollard, Bandura, the *learning process* (the way in which behaviour is modified) has been regarded as the key to all behavioural phenomena. According to Hall et al (op. cit.) most modern personality theorists were said to deal with both in some way. For example, Miller and Dollard (1941) include the structural concepts of psychoanalysis into their learning theory. Most personality theorists view development in global terms like maturation, individuation, self-actualization rather than detailing the learning process. The acquisitions or structures of personality are not thought of as objects with existence in time or space but as aspects of personality that are more enduring than other more changeable elements.

On the heredity versus environment issue, many personality theorists, American psychologists in particular, are said (Hall and Lindzey, op. cit.) to have minimised genetic and biological factors as determinants of behaviour whilst European theorists such as Freud and Jung emphasised them. Theorists such as Sheldon in the late 1920s and Eysenck from the 1950s on, are credited with placing considerable emphasis on inherited tendencies. Hall and Lindzey identify Murray and Allport as occupying a more middle-of-the-road position on the heredity versus environment issue. More recent research in the area of behaviour genetics (using identical and fraternal twin or biological and adoptive sibling comparisons) has tended to support the influence of such tendencies on personality (Loehlin and Nichols, 1976; Young, Eaves and Eysenck, 1980; Floderus-Myrhed, Pedersen and Rasmuson, 1980).

Theorists are no longer so much divided on the issue of whether mainly *past* or *present* factors determine behaviour, but rather whether factors influencing present behaviour can be assumed by observing that behaviour or whether knowledge about past events contributes critical information. Theorists such as Freud and Erik Erikson were given as examples of personality theorists for whom events occurring in the earliest years of development are of paramount importance.

In the holistic versus analytic debate few contemporary personality theorists completely reject the holistic approach and the individual is usually regarded as a total functioning unit.

However, Hall and Lindzey noted that theorists (Cattell, Eysenck, Skinner, Miller, Dollard and Bandura are given as examples) do question to differing degrees the importance of studying the whole individual. Those adopting a holistic view generally suggest that a successful theory must be complex and multivariate and include the situation within which a behavioural event occurs.

On the issue of theories of personality being either purposive (behaviour is goal oriented such as seen in the work of Adler) or *mechanistic* (events explained entirely in terms of their antecedents and behaviour accounted for by way of physical laws and principles), many theorists maintain intermediate positions. Hall and Lindzey suggest theorists such as Skinner and Eysenck at one extreme did not consider purpose critical to understanding behaviour. Examples of theorists at the other extreme are Adler, Rogers, Binswanger and Boss, Kelly and Allport in their emphasis on a purposive view.

Hall and Lindzey in discussing motivation as an issue in personality theory observe that it has been represented in terms of a few variables or many. For Adler, Maslow, Rogers and Kelly, the number of motives involved were said to be limited. Whilst for theorists, such as Lewin, Murray, Allport and Cattell a large number of motivational variables are used to explain behaviour.

Many theories of personality developed from a clinical concern with changing behaviour which was indicative of psychological distress of some kind. On a normal-abnormal behaviour continuum, most of the personality theorists fall somewhere in between (whether they be psychotherapists or researchers basing their information on the 'abnormal' behaviour of individuals). Freud, Adler, Horney and Sullivan were placed by Hall and Lindzey (op. cit.) at the abnormal end of the continuum and Maslow, Lewin, Kelly, Allport and Cattell, were placed at the end concerned with the normal individual.

The person-situation debate has been concerned with whether behaviour is mainly the product of the inner processes of individuals or a product of the situation or environment in which they exist. Most theorists seem to subscribe to some form of interactionist view such that the person and the situation are both viewed as critical in determining behaviour. Only theorists such as Skinner (who located all causal factors ultimately in the environment) and Binswanger and Boss (who locate the main determinants of behaviour within the person) can be located

at either extreme. The importance of sociocultural factors in personality has been closely linked to the person-situation issue.

Dawis and Lofquist's theory is analysed according to the above issues or dimensions of personality in the section concerned with the present research and placing their theory into theoretical context (section 3.11 of chapter three).

2.1.3 Current Personality Theory

In tracing the development of current personality theory and the changes which have occurred over time Staub (1980) has noted that the traditional theories of personality tended to be all-encompassing and to do with varied aspects of psychological functioning. The focus and the method of assessing personality has varied. Psychoanalytic theory focused on unconscious motivation and intrapsychic conflicts, Rogerian theory on the nature of human consciousness and subjective awareness and behaviourism, and social learning theory on overt behaviour and principles guiding the acquisition of responses (behaviourism emphasized outwardly observable behaviour and paid little attention to inner processes such as fantasies, thoughts and feelings because these cannot be easily measured). These comprehensive theorists assumed their focus to be central and as a result tended to derive all other functioning from their theories. Staub (1980) concluded that some aspects of these traditional theories have not survived unmodified. Cognitive processes have been given a central role in later social-learning theory (Bandura, 1977b; Mischel, 1973, 1977). Carl Rogers's notions are represented in "self" theories. Much of the theory and research in child development (Staub, 1979) has been influenced by Freud's ideas of a child identifying with socializing agents and internalising beliefs, values and behaviour.

There has been a tendency for some of the approaches to personality theory to have become integrated. Epstein (1979) in reviewing personality theory and proposing an integrated theory argued that to ignore all that is subjective, psychologists would have to ignore a great deal of behaviour that is uniquely human. Phenomenologists have tended to believe behaviour can only be understood from the viewpoint of the individual. Cognitive psychologists emphasise the mediating concepts that individuals use to interpret the objective world. The cognitive approach is viewed as an attempt to integrate the study of objectively oriented behaviour and the work of the subjectively oriented phenomenologist by focusing on the processes used by

the individual (through cognitions) to transform the objective world into a subjective one. A theorist such as Kelly could be categorised as taking a phenomenological and cognitive approach. Adams-Webber (1979) noted in particular that Kelly (1969) based his psychology of personal constructs on a single philosophical assumption, that of *constructive alternativism* (this principle contends that reality does not directly show itself to us, but that is instead subject to as many alternative ways of construing it as we can invent). Individuals in their attempts to anticipate their experience are said to develop a coherent system of constructions which are then imposed upon events. Kelly suggested that although an event is open to several interpretations, this is not to say that in the long term some ways of construing it will be likely to be more useful than others. He believed that most of our current interpretations of events are subject to continual revision.

With respect to the person versus situation issue, all theorists assume at least a minimal degree of constancy in the personality at different times and in different situations. The conflict between trait theorists (like Allport and Sheldon) and situational determinants (like Skinner and Bandura) has dissipated in the face of the newer interactionist position. The individual's dispositions or traits help to determine the situations as well as the stimuli in the environment to which they attend. In this view, both traits and situational variables play a significant role in determining behaviour (Endler, 1981; Magnusson and Endler, 1977).

The interactionist position was foreshadowed by Murray's conception of need and by Lewin's conception of psychological environment. The growing tendency is for personality theorists to attend to the sociocultural context within which behaviour occurs. Theorists such as Erikson, Adler, Horney, Fromm, Sullivan, Lewin and Miller and Dollard, have all been influenced by findings of sociology and anthropology.

In more contemporary personality theory Staub (op. cit.) observed the approaches to have the following in common: a) the assumption that human beings actively seek interaction with their environment; b) that consciousness and cognition are important; and c) recognition of factors and their interrelationships, unconscious processes, the importance of measuring behaviour and existence of different levels of human functioning. A trend which is noticeable among personality theorists is a lessening of polarization on specific issues. The argument between the trait theorists and the situational determinists seems to be resolving itself into an interactionist position.

2.2 Motivation to work

It could be argued that work motivation does not differ greatly from other kinds of motivation, hence most of the models of work motivation have their roots in the more general field of human motivation. Motives and drives were traditionally approached from a psychodynamic viewpoint (English and English, 1958) and offered theories relating to the identification and satisfaction of needs. Differing from need theories, with their emphasis on cognition, were the more work related instrumentality theories. Here activity was regarded as *instrumental* in achieving some valued outcome and individuals may ask of themselves "should I expend energy on this activity to achieve this particular outcome?" Other distinct positions in relation to work motivation have included goal-setting, balance and reinforcement approaches.

2.2.1 The need approaches

Although the need theories have differed in their structure, some being arranged hierarchically, and in the number of needs proposed, they have tended to categorise needs in consistent ways semantically as in the work of Maslow (1943), McLelland (1955) and Herzberg (1966). Maslow's (1943) theory of needs was generally employed in conceptualising adjustment, but it has been regarded as a broad theory of human development. It was not explicitly formulated for the work situation. Maslow's hierarchy of five levels of, physiological, safety, love, esteem and self-actualization needs and the movement of individuals up the hierarchy in a systematic manner dependant upon the satisfaction of needs at each level, has received little support from either cross-sectional or longitudinal studies. Need intensity had been found to correlate positively with need satisfaction (Hall and Nougaim, 1968) which is contrary to the expectation that a need would become unimportant once satisfied. Changes in the importance of needs at one level did not correlate positively with changes in the importance of needs in the next higher level of the hierarchy as the model would predict (Lawler and Suttle, 1972).

Aspects of Maslow's theory under scrutiny have not withstood empirical investigation and longitudinal study well (Lawler and Suttle, 1972). That Maslow's propositions have been either rejected or received only limited support has in part has been attributed to the vagueness of the theory which in turn, according to Wahba and Bridwell (1976), has impeded the

derivation of testable hypotheses. Maslow's model has been viewed more recently as of importance historically rather than functionally (Landy, 1985).

Despite the criticisms levelled at Maslow's theory, Landy (1985) suggested it was broader than the typical research designs have allowed. It was thought possible that changes in need levels may occur over years rather than the weeks or months implied by research. Because Maslow's theory was not designed specifically for the workplace, Landy cautions that any assessment of it should include non-work environments as well. He noted that it is not only difficult but probably also questionable logically to separate work from non-work attitudes and behaviour.

Alderfer (1969; 1972) proposed a theory called ERG theory after the three basic sets of needs he identified, that is existence needs, relatedness needs and growth needs. These were effectively a rearrangement of Maslow's five needs, but a different process to explain how individuals move from one level to another was proposed. As well as Maslow's *fulfilment-progression*, the satisfaction of one level of need before progression to the next can occur, a *frustration-regression* component was added. This assumes that the needs vary on a continuum of concreteness and that when the less concrete needs are not met the fulfilment of a more concrete need is sought. Landy suggested such a theory is of more practical use in the work setting because when needs at a higher level are not fulfilled managers can help redirect energy towards lower-level needs. The little research that has involved ERG theory has produced mixed results. Although the existence of the three need levels has been supported (Wanous and Zwany, 1977; and Rauschenberger, Schmitt and Hunter, 1980), Rauschenberger et al did not find changes in need levels over time and Wanous and Zwany concluded that need-hierarchy theories generally may not be of value.

Roe's (1956) need theoretical orientation viewed occupations as an extremely important source of need satisfaction in Western culture. Occupations were thought to have become so important because they have been able to satisfy so many needs so well. More specifically Millar and Form (1964) submitted that needs such as sense of belonging and love have been traditionally frustrated by management policies and that deprivation of the higher-order needs has occurred. Unlike other theorists such as Ginzberg and Super, Roe placed emphasis on the events in early childhood, particularly the influence of early parent-child relationships as having a special significance in relation to vocational development. Roe came to regard

personality as only one of the factors influencing occupational choices, thus believing there is no universal personality pattern associated with members of occupations. She suggested there is still some evidence for a relationship between specific and general early childhood experiences and vocational choice.

A number of researchers have concentrated on the specific need for achievement, referred to as nAch. This single need has been proposed by many as a major basis for motivational behaviour. It has been defined by Murray (1938) who provided a measure of it among other needs using his Thematic Apperception Test (TAT) and was in time used as a basis for a theory of motivation (McClelland, 1955). Later cognitive elements were incorporated in the concept by Atkinson (1964). Murray considered the need for achievement to be the desire to "overcome obstacles, to exercise power, to strive to do something difficult as well as quickly as possible" (1938, pp 80-81). For McClelland stimuli acquire motivational properties by being associated with success and failure in the past; achieving behaviours are thought to be more likely in a particular situation where they have been accompanied by success in the past. McClelland and his associates have established a research tradition in which they use projective measures to investigate various aspects of human motivation. The operation of specific motives they have been particularly interested in are the need for achievement (McClelland *et al*, 1953; McClelland, 1975, 1961; and Atkinson and Raynor, 1974), the need for power (Winter, 1973; and McClelland, 1975), the motive to avoid success (Horner, 1974) and the origin-pawn¹ variable (deCharms, 1976), (refer page 496 for these references).

Steers (1975) and Steers and Spencer (1977) found work goals have become associated with past achievement and the pleasure derived from satisfying this need. Good performance becomes a reward for high achievers. However, achievement effects on performance were perceived as relatively minor in comparison with other effects such as reward levels and pressures for production.

Herzberg's motivator-hygiene or two-factor theory has been extremely popular and like all need theories assumes each individual is born with certain needs which must be satisfied. His *hygiene* needs were defined as maintenance needs which provide a healthy environment and in the work setting include such things as pay, security, coworkers, general working conditions and company policies. His *motivator* needs were higher-order or growth needs related to innate characteristics requiring individuals to seek challenge, stimulation and

¹ A concept of personal motivation which has individuals differing along a dimension from originating their own behaviour (origin) to being manipulated by others (a pawn).

autonomy. These are satisfied by such things as responsible work, independence and recognition for the accomplishment of tasks. The motivator needs are part of the work itself, rather than the context in which the work is done. Of Herzberg's two levels of functioning, motivation seeking and hygiene seeking, the former was considered preferable being able to yield productive worker activity and few problems of control for management. Job enrichment was offered as a technique for moving individuals from hygiene seeking to motivation seeking levels thus making them self-motivated. Although the two-factor theory was not proposed as a hierarchical one, in practice if hygiene needs were unmet individuals may be more likely to leave and not fulfil their motivation needs. Because Herzberg did not postulate where the needs originated, except to see them as part of an individual's defining characteristics, the reluctance of the scientific community to take anything as given has contributed to the propositions not being accepted.

In the more limited view of needs as found in the instrumentality approach of Lawler (1971), the concept of valence is related to need and objects which are said to acquire valence if they are instrumental in meeting the basic needs of individuals. The concept of need is limited to certain stimuli which can be grouped because they are sought by people. But Wahba and Bridwell argued that even in this more limited view there are questions which still remain, such as, why should needs be arranged hierarchically? Would the hierarchy be the same for all? How would it alter over time? How can a fixed hierarchy of needs be consistent with behaviour being multidetermined? Landy (1985) has suggested that the need-hierarchy theories have the components of good theory that Campbell, Dunnette, Lawler and Weick (1970) pointed out, that is the inclusion of both content and process considerations and that perhaps a redefinition of need levels and the process component will gain more support. However, there may be other models of need fulfilment which are in part hierarchical or which have quite a different structure which account for the behaviour of individuals and which are moderated by other individual and environmental factors, such as, traits and abilities, perception of likely success and the availability of the opportunity and reward for need-fulfilment in the environment.

Roe had concluded that the most appropriate prediction model is a multivariate one where the appropriate factors can be combined and weighted (Roe, 1964). Although Neff (1985) criticised Roe's data for involving retrospective accounts from a small group of individuals

in advanced training for particular professions, he regarded her views as accurate and persuasive.

The failure of the need approaches to acquire theoretical status because of a lack of empirically testable interrelated propositions has affected their acceptability. Although the approaches have identified similar tendencies in behaviour, in Landy's (1985) view these may, where questionnaires have been used, merely be a reflection of subjects noticing the same thing and thinking the same way as researchers.

2.2.2 Instrumentality theory

The first work-related instrumentality approach known as "path-goal theory" was that of Georgopolous, Mahoney and Jones (1957), which proposed that workers who regard high productivity as a path leading to one or more personal goal will be highly productive. Vroom (1964) formalised instrumentality hypotheses in Valence, Instrumentality and Expectancy theory (VIE). It was assumed that individuals assess the probability of a particular action leading to a certain outcome, *expectancy* (*E*); and that the outcome will produce other outcomes, *instrumentality* (*I*); which are valued, that is have *valence* (*V*).

A later and more current variation of instrumentality theory, that of Porter and Lawler (1968), rejected the traditional drive approach of need theories and their emphasis on previous response-reward links in favour of the instrumentality emphasis on the anticipation of future events, dealing with abstract concepts and the delaying of satisfaction. The Porter-Lawler model involved the effect of the value of reward and perceived effort-reward probability on the effort made and the effect of effort on performance as moderated by abilities and traits and role perceptions. The role perception was described as the individual's definition of successful performance on a specific job. Performance brings intrinsic and/or extrinsic rewards, the effect of which on satisfaction are moderated by perceived equitable rewards or the level of reward felt appropriate. Satisfaction in turn affects the valence and performance affects the perceived effort-reward probability, that is the subjective estimate that increases in effort will lead to acquiring a valued reward.

The acceptance of both managers and researchers of the importance of cognitive activities and their potential role in motivation and performance has lead to extensive research on

instrumentality models, as reviewed by Campbell and Pritchard (1976) and Mitchell (1974). As the reviewers noted, research in this area tended to involve either different ways valence, instrumentality and expectancy combined to predict either effort or expenditure or both. Other research investigated the ways variables were operationally defined and measured, or the differing approaches to testing the model. Taking a different perspective, further studies looked at the characteristics of workers or environments which affected the model's ability to predict behaviour. In the tests of the instrumentality models of, for example, Lawler (1971; 1973), Graen (1969) and Naylor, Pritchard and Ilgen (1980) effort was shown to be more accurately predicted than performance. Valence, instrumentality and expectancy have not been found to play an equal role in effort expenditure, but weighting each differently, for example by multiplying actual valence ratings by instrumentality ratings, have been fraught with problems (Wanous, Keon and Latack, 1983; and Schmidt, 1973). The V, I and E components were not found to be highly interrelated (Wanous et al, 1983) unless instrumentality theory was viewed as a theory of choice of courses of action as related to occupational or organisational attractiveness, rather than one of work performance.

The Meta-analysis of Schwab, Olian-Gottlieb and Heneman (1979) found a much greater percentage of variance in either effort or performance to be explained by things other than the cognitive, instrumentality and expectancy estimates. They questioned the multiplicative relationship between valence and expectancy as determining a course of action, whilst the research task itself was believed to create behaviours which are not representative of those being investigated. Subjects are asked to evaluate many more outcomes than the few which they tend to deal with in real life. It was suggested this might cause them to use decisions and combination rules which are different from those they might employ in everyday situations. Also individuals would be expected to differ in their ability to deal with complicated combination rules such as are involved in a multiplicative task. For example, many may reduce it to a simpler one of adding V and E. It has also been difficult to assess if the failure of the instrumentality approach has been due to the way variables are measured or the theoretical propositions employed. The measurement has been unreliable (Deleo and Pritchard, 1974) and sensitive to aspects such as questionnaire format (Ilgen, Nebeker and Pritchard, 1981).

Several methods for measuring instrumentality, expectancy and valence have been found which demonstrate greatly improved validity and reliability. For example Landy (1985) stated

that research has shown, when subjects have been permitted to suggest and evaluate their own outcomes rather than those of a researcher, a marked increase in the relationship between cognitive components and effort is found. The difference between positive and negative outcomes has also become a measurement issue. A review of studies (Leon, 1981) found many demonstrated VIE predictions to be more accurate if only positive outcomes were taken into account. In contrast to negative outcomes, positive outcomes were found to be evaluated as VIE theory would suggest, the more attractive the outcome the stronger the relationship between that outcome and choices of courses of action. Leon noted that data from other areas of applied psychology and from information processing work, also substantiate the fact that negative information is processed differently. In this case it did not matter how negative an outcome was, it had a fixed effect on the choice of actions. According to Landy (1985) whether or not the Pollyanna hypothesis of Boucher and Osgood (1969) is in operation, that is individuals preferring not to think about negative things, a rethink of the VIE model would seem appropriate. The qualitative and quantitative differences of positive and negative outcomes would need to be considered further.

2.2.3 Goal-setting theory

As a theory of motivation the goal-setting approach has involved the role of intention in motivated behaviour. In their review of fifteen years of research related to this approach, Locke, Shaw, Sacri and Latham (1981) concluded there is support for a relationship between goal-setting and performance, given individuals have the ability to perform well. Goals are believed to direct attention and action, mobilize energy, prolong effort and motivate the development of relevant strategies for goal attainment. Hard goals have been found to produce higher importance and feedback or knowledge of results is needed for high level performance. Rewards have been found to increase commitment to a goal which has been accepted but performer participation in goal-setting does not necessarily have any affect.

There have been no consistent findings with respect to individual differences variables other than the ability variables, such as the need for achievement, or self-esteem. Goal acceptance has been shown to be affected by individual participation in goal setting and goal commitment may be strengthened with monetary or other awards. Feedback has been shown to influence the intention to work fast on the part of lower performers.

2.2.4 Balance theory

Balance theory proposes that behaviour is initiated, directed and sustained by individuals attempting to maintain an internal balance of psychological tension. The approach tends to be based on Festinger's (1957) cognitive dissonance, that is that discrepant cognitions produce psychological tension which, being unpleasant, becomes the object of action to reduce it.

Variations of the approach applicable to the work setting have included self-consistency theory, such as that of Korman (1970) which is based on personality considerations, suggesting that individuals attempt to balance the view of themselves with that held by others. A more common version of dissonance theory is equity theory, for example Adam's (1965) version. Individuals are believed to form a ratio of inputs, which may be anything an individual feels he or she contributes, such as intellectual abilities, psychomotor skills, personality traits, or experience, to their outcomes in a given situation. Outcomes are those factors seen by the individual as of personal value, such as money, praise, or promotion. The individual then compares their ration of inputs to outputs to the value of the ration for *significant others*. A situation is perceived as equitable and no tension exists if the individual's ratio is equal to that of the significant others. The intensity of any motivated behaviour resulting from any inequity is expected to be proportional to the amount of tension created.

Some of the questions which have arisen in relation to equity theory, despite its intuitive appeal, have been, the way in which a comparison person is selected by an individual, the way in which tension reduction strategies are chosen, the emphasis on compensation as the independent variable and the role of individual differences, such as cognitive factors, in equity research. The significant other has been identified as someone else within an organisation, someone outside the organisation, the stated structure of the system, the way a system such as a pay system is administered, past experience, the extent to which needs of self and family will be met and a conception of self-worth.

Landy (1985, op. cit.) noted that equity research in concentrating on the issue of compensation has neglected other outcomes which might be of importance, such as promotions, interesting work, pleasant co-workers and increased status. In fact the outcomes perceived as important to any one individual would seem to be those which should be the subject of study. Landy expects substantial modification to occur in equity theory which will involve individual

differences, an extension to outcomes other than money and a definition of equity which will replace relative equity with adjustment equity. Relative equity advocates that individuals of equal merit should receive salary increases which are equal with respect to percent of salary at the time. On the other hand, adjustment equity advocates that individuals of equal merit should receive salaries which are equal in absolute dollar terms.

2.2.5 Reinforcement approaches

Behaviourist, reinforcement approaches, in an industrial setting have attempted to show that behaviour can be accounted for by understanding various stimulus-response-reward associations. The presence or absence of a contingent reward and the timing or schedule of rewards, such as continuous or intermittent reinforcement are of concern. Landy (1985) has reported that the research in the area demonstrates that although as expected contingent reinforcement of any type is more effective than noncontingent reinforcement, the various contingent schedules have not produced differences. In the case of complex tasks in job settings, Pritchard, Hollenback and DeLeo (1980) concluded that intermittent schedules have not been found to be superior to fixed schedules. Landy offers some reasons for this lack of generalisation of the relevant animal studies to the work setting. The capacity to reason and conceptualise would be expected to be greater in the human and many would superimpose layers of meaning on immediate environmental events. In the work setting a reward would be expected to carry with it excess meaning and reinforcement represents information which is transformed and often stored in an altered form. There would be far less control over the giving of reward in a non-laboratory setting. In the field setting there would be many different reinforcers operating simultaneously, some of which, including social influences on behaviour, would not be controlled by an experimenter.

As in all areas of psychology there has been a continuing debate between behaviourists and in particular humanists and cognitive psychologists. One of the most basic areas of disagreement is about the status of behaviourism. It has been called a technology rather than a theory. Radical behaviourists in denying the importance of reasoning, judgement, creativity and concept formation, for example, claim behaviour can be understood via associations between behaviour and events. Others have pointed to evidence with respect to mental events and the inability of the behaviourist interpretation to explain why, for example, behaviour

does not return to baseline levels after intervention when it is no longer under the control of reinforcement or reinforcers.

Locke (1980), for example, suggested that there are problems associated with adopting behaviourism as a sole approach to understanding industrial behaviour. He and others following (Komaki, Collins and Penn, 1982) advocated the use of a more cognitive interpretation for understanding the effects of contingent reinforcement. The earlier anticognitive emphasis has tended to be replaced by a complex information processing and self-control orientation (Mahoney, 1974; Thoresen and Mahoney, 1974). Locke makes the distinction that the behaviourist is interested in knowing only that a reinforcer reinforces while the cognitive psychologist would want to know *why* it reinforces. Landy argues that the needs of the practitioner and the theorist can be different in that a manager who wants to improve certain behaviours does not need to know anything about goals or reasoning, but just needs to observe the behaviour and apply reinforcement contingently. Furthermore, Landy, not atypically, regards behaviourism as a technology rather than a theoretical position contending that to understand *why* contingent reinforcement is effective, one must look elsewhere, to cognitive psychology, to goal-setting theory or to instrumentality theory. However, behaviourism does answer some 'why' questions or questions about the causal mechanisms involved in contingent reinforcement, for example in terms of previous reinforcement history and the strength of reinforcers. That it does not answer all of the why questions merely suggests it is, like many other theories, incomplete. Earlier behaviourists did not take into account cognitive aspects but only the most radical of behaviourists would maintain such a position today.

2.2.6 Comparing the approaches

The instrumentality approaches have been based on individual's estimates of the chances of obtaining some valued reward rather than on inferred drives or needs and information about the individual's reward history. Although it has been shown that it is sufficient to measure current cognitive estimates without examining reward history, the rationality of the individual in making estimates of obtaining reward is expected to be limited by certain factors. Some of the factors suggested have been, cognitive skill, negative outcomes and the number of alternatives under consideration (Landy, 1985). Studies reviewed by Leon (1981) showed

predictions to be more accurate if only the positive outcomes are considered, which is at variance with the averaging of negative and positive outcomes VIE theory would predict.

Instrumentality theories have been unclear about the nature of potential rewards, where intrinsic and extrinsic rewards come from, how they develop and the effect of personality differences on the potential of a reward to modify behaviour. Need theories have been more specific, not so much about where needs come from but about their nature (if they are hierarchical for example), the objects able to satisfy them and (in Maslow's case) individual differences in need strength. Instrumentality theories have on the other hand been more easily able to be applied. Managers have been able to clearly show relationships among outcomes and able to affect effort-reward probability by rewarding good performance. Herzberg's theory is easier still to apply, but because his solution of job enrichment could fit with most theories of work motivation, research results have not been able to be used in unique support of his motivator-hygiene hypothesis.

It has been argued (Landy, 1985) that VIE theory and goal setting theory can be integrated. He suggested goal-setting theory appears in conflict with other theories of motivation and would predict the opposite to expectancy theory which would hold that easy goals will lead to greater effort than hard goals. Achievement motivation theories might predict moderately hard goals would produce higher performance and easy goals lower performance. However a two-phase process for explaining motivated behaviour which would indicate the different approaches may not be mutually exclusive. Menlo, Cartlede and Locke (1980) proposed that the first stage, of goal setting, may be influenced by expectancies and valences. While the second phase, energy expenditure, may be affected by the actual goals that were set, feedback also plays a continuing role in energy expenditure. The expectancy perspective has hard goals lowering the expenditure of energy but the higher valence of hard goals, because of their attractiveness, may overwhelm the low expectancy of success. This results in higher energy expenditure which in turn leads to higher performance. This approach is thought to explain why goals are accepted and as such is not regarded as a different approach from that of Locke. More generally, a number of findings suggest valences and expectancies influence goal adoption or choice (Matsui, Okada and Mizuguchi, 1981; Matsui, Okada and Inoshita, 1983).

Equity theory has been regarded as a special case of expectancy theory, Landy (1985). The two theories are said to make identical predictions when individuals regard equitable behaviour as in their best interests. Although the range of strategies employed to reduce inequity related tension, from increased inputs, to sabotage, to leaving the job, generally fit with equity theory, there are some inconsistencies. Weick, Bougon and Maruyana (1978) noted that equity theory does not explain the strategy of requesting higher outcomes for self in response to inequity involving low outcomes. Increased effort due to overpayment has not been as common as previously thought. Thus it may be concluded expectancy theory is of assistance in providing an explanation when the overriding concern is to maximise individual's outcomes.

Although the different theories would probably like to be able to account for differences in effort expenditure *and* performance, none claim to predict performance directly. Instead, they do look at more general work-related behaviour, such as absenteeism and turnover. In looking at effort expenditure and performance, which could be viewed as the antecedents and the consequences of work motivation, need-hierarchy theories and equity theory agree that internal tension directs behaviour. However, they differ about the causes of this tension. Equity theory orders needs less rigidly, adopting a more cognitive approach in dealing with tension reduction. Neither the behaviourists nor the instrumentalists feel the same compulsion to concern themselves with motivation as a psychological construct.

The behaviourists avoid reference to internal states and emphasise environmental effects on behaviour. Any explanation of the relationship between rewards and activity would have "work motivation" as a system of needs obtained through past reinforcements. The instrumentality theorists tend to view motivation as having two roles. One role is as a simple measure of the effort expended. A second more broader role breaks motivation into functional areas of perceived probabilities, values rewards and equitable reinforcement systems. Goal-setting theory would have harder goals leading to greater effort if appropriate feedback is provided.

With respect to job performance, because performance has determinants additional to motivation such as ability, equipment and opportunity, the motivation theories do not attempt nor expect to account for performance on their own. Equity theory would regard performance change as only one method among others of reducing inequity; other methods such as

absenteeism, quitting, changing comparison others, or devaluing inputs are also included. It has been suggested that there are other aspects of equity theory of more interest than the prediction of performance (Goodman and Friedman, 1971). For example, the intermediate states between equity perceptions and performance, such as satisfaction and dissatisfaction may be of more interest.

Some of the other theories have been more relevant to performance considerations. Balance theories for example have been less vague in their predictions about performance than have need-hierarchy theories. It is difficult to assess the performance implications of functioning at a particular level in a need-hierarchy. However, balance theories have not been able to specify which strategy will reduce tension and how that strategy will relate to performance.

For the radical behaviourists, performance would be regarded as an operant and a complex one, which is a function of behaviour-reward contingencies. Relationships between self-esteem and performance, for example, would be ignored, self-esteem being viewed as an intraindividual construct which therefore has no place in their theoretical system. Goal-setting and any sense of achievement associated with the attainment of a difficult goal would likewise be disregarded because cognitive activity, another internal construct, would be implied. The less radical behaviourist would be more likely to accept the joint effects of contingent rewards, goals and feedback and less inclined to dismiss cognitive aspects, but contingent reinforcement would still be viewed as critical to high performance.

According to Landy (1985) the instrumentality theories would have the most to say about performance and motivated behaviour. The antecedents of motivated behaviour would include effort expenditure, abilities and traits and role perception. The consequences of performance through rewards can be seen in its affect on satisfaction. The consequences for performance would also be cognitive, affecting perceived equitable outcomes and perceived effort-reward probabilities.

Most of the research related to the testing of motivation theories has been aimed at the acceptance or rejection of entire theories without modifications, refinements, or reconceptualisations. Landy claimed that examples of "modification" research, as in equity theory (Birnbaum, 1983; and Mellers, 1982), expectancy theory (Leon, 1981) and the emergence of cognitive behaviourism (Komaki, Collins and Penn, 1982) are both healthy and

necessary, especially if the concept of motivation is to survive. The theories tend to have a mixture of useful and useless propositions as Landy (1985) also pointed out and they are still in the process of developing. This should allow the acceptance of reasonable propositions only and result in less of an emphasis on the application of theories in the form they were originally proposed. Regardless of the motivational approach adopted, because of the manner in which cognition affects behaviour, perceptions can be more important than reality. What individuals perceive about reality in the work place may be so different in some cases from the reality itself, that it certainly cannot be ignored by those researching the work environment and the individual's relationship with it.

2.3 Job satisfaction and productivity

Work satisfaction has been defined in a number of ways which are either similar or at least complementary (Dawis and Lofquist, 1984). Hoppock (1935) defined satisfaction as the individual's expression of their overall like or dislike of a job. Satisfaction has been regarded as the meeting of human needs (Schaffer, 1953; Maslow, 1954; and Roe, 1956). For Vroom (1954) the product of the valence of work outcomes and the perceived instrumentality of the job produced satisfaction. Katzell (1964) was interested in the discrepancy between the amount of stimulus that is experienced and how much the stimulus is valued. He viewed satisfaction as an affective response along a pleasurable-displeasurable continuum. Similarly, satisfaction was seen as an affective response to different aspects of work that arises from a perception of the fair and reasonable compared with what actually occurs, given the alternatives that are available (Smith, Kendall and Hulin, 1969). The expression of the extent to which a job situation fits one's values in a pleasurable or positive way constituted job satisfaction for Locke (1976). Dawis, Lofquist and Weiss (1968) have regarded satisfaction as resulting from the individual judging the extent to which the work environment fulfils their needs.

It was the above definitions which Dawis and Lofquist (1984) synthesised to conclude that "job satisfaction might be defined as a pleasurable affective condition resulting from one's appraisal of the way in which the experienced job situation meets one's needs, values and expectations" (p 72). Conversely, job dissatisfaction was defined as an affective state that is unpleasant which results from the failure to have one's needs, values and expectations met by the job situation.

Cooper and Robertson (1986) have characterised job satisfaction as a relatively theory-free construct which has most often been studied as a correlate of other variables or clusters of variables. As an outcome variable they noted its determinants have included, goal setting, job design, demographic profiles, rewards and reward systems, organizational characteristics, leadership factors, decision participation and individual differences.

The cognitive element has been lacking in these descriptions of job satisfaction. Dawis and Lofquist only hint at such a possibility by referring to "one's appraisal" of the way in which the job matches expectations. Cognitive factors affecting an appraisal are not elaborated upon. One such cognitive influence could be self-efficacy for achievements leading to job satisfaction.

Performance and productivity have been defined often by way of the criteria used to measure work output. Like job satisfaction, the cognitive element, individual's perceptions of their performance, has received less emphasis than the so-called objective measures of performance or measures based on observer ratings.

The relationship between satisfaction and performance has been described as a kind of "Holy Grail" in industrial psychology (Landy, 1989), the search for it having been discouraging. No "appreciable relationship" was believed to exist (Brayfield and Crockett, 1955; Vroom, 1964). Meta-analysis by Iaffaldano and Muchinsky (1985) found the average correlation between satisfaction and performance to be .14. Rather than satisfaction being said to cause productivity, as has been maintained in the past, the opposite, that successful performance causes satisfaction, has been suggested (Locke, 1970; Porter & Lawler, 1968).

Campbell, Converse and Rodger's (1976) model of determinants of job satisfaction, as in Figure 2.1, has job satisfaction depending mainly on the way an individual perceives and evaluates aspects of the job. The perceptions are said to depend primarily upon the "corresponding objective characteristics of the job" (p 296). Objective job characteristics were depicted as having a direct effect on job satisfaction and an indirect effect, the latter through the perception of respondents. Characteristics of the respondents were thought to have effects at three levels, directly on job satisfaction, perceptions and assessments and on the relationship between perceptions on the job and job satisfaction. Personal characteristics were depicted as affecting job satisfaction directly and the perceptions and assessments of job

characteristics indirectly through standards of comparison. Standards of comparison used concepts such as expectation and aspiration levels, reference group level, needs and equity levels. The conceptual model is similar to that of Smith, Kendall and Hulin (1969).

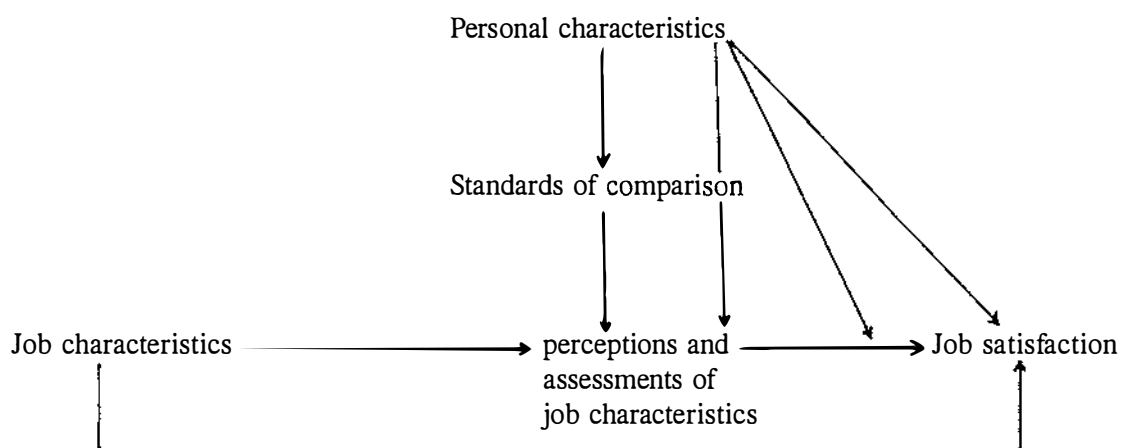


Figure 2.1 Model of job satisfaction determinants (Campbell, Converse and Rodgers, 1976)

Campbell, Converse and Rodgers identified five major dimensions of work experience which they believed would contribute to job satisfaction. These were comfort, challenge, financial reward, co-worker relations and resources. Comfort was defined as a "respondent's desire for a job which provides solid creature comforts and which presents no problems" (p 297). Converse, Campbell and Rodgers reduced the dimensions to four, excluding resources, but without explanation. They included travel to work in the comfort items thus providing some small link between work and non-work. Their findings specific to the college graduate and professional group were that these respondents scored higher on challenge and pay scales and young people tended to exhibit less job satisfaction. The relationship between job satisfaction and education was curvilinear for the entire sample. Those at either the top or bottom in level of education being more satisfied. Generally women were equally satisfied as men despite their higher probability of being in jobs of lower status and pay.

The perceptions explaining the most variance in job satisfaction were in order of highest to lowest, how challenging a job is, its pay, perceived job security, physical surroundings and enough time to get the job done. This group of perceptions explained 48 per cent of the

variance in job satisfaction, as measured by a single item, "All things considered, how satisfied are you with your job?" on a scale of 1 to 7 from completely satisfied to completely dissatisfied. None of the relationships of the objective job characteristics were regarded as reasonable and they explained a meagre one per cent of the variance in job satisfaction. Individuals in different occupational categories differed markedly in their assessments of job attributes, but differed only slightly in their job satisfaction. The personal and objective characteristics produced less than one percent more explanation of variance than did the perceptual assessments. Most of the influence of personal and objective job characteristics on job satisfaction came indirectly through the perception of job attributes.

Because the direct relationship between personal characteristics and job satisfaction was weak, most of the influence of personal characteristics was indirect through their influence on the way the job environment is perceived. This indicates the potential importance of constructs such as self-efficacy. The link between personal characteristics and perceptions can be understood by looking at the standards of comparison that vary among individuals of different backgrounds. Personal characteristics as a moderator of the perceptions-job satisfaction relationship was not considered to be very important. The relationship between assessment of job attributes and job satisfaction was considered the most important in the model. The three sets of variables, perceptions of the job, objective characteristics of the job and respondent characteristics, were found to explain about half of the variance in reported job satisfaction.

2.4 Job satisfaction and tenure

Not surprisingly the potential effect of job satisfaction on tenure has generated considerable research interest, as evidenced by the large number of studies included in Carsten and Spector's (1987) meta-analysis of turnover studies.

Although job satisfaction has been shown to be associated with tenure it usually has accounted for only part of the variance in common. Managers have tended to believe that both absenteeism and turnover are related to satisfaction (Landy, 1989). These beliefs are consistent with those of Brayfield and Crockett (1955), Herzberg, Mausner, Peterson and Capwell (1957) and Vroom (1964) whose reviews of studies concluded that the two variables were closely related. It seemed that unhappy workers were more likely to be absent from or to leave the job.

Porter and Steers (1973) argued that absenteeism is more spontaneous while the decision to quit, because of its economic implications, is a decision which is much more carefully considered. They noted a satisfaction-turnover relationship but advised caution in identifying a relationship between satisfaction and absenteeism. It was concluded that absenteeism might function as a substitute for quitting only under extreme conditions. However, as noted by Landy (1989), more recent reviews have challenged these beliefs. The assumption that leaving the job and absenteeism are similar has continued to be questioned and the role of satisfaction in either absenteeism or turnover has been regarded with scepticism. Of the two, absenteeism is expected to be the result of dissatisfaction rather than turnover.

Mobley, Horner and Hollingsworth (1978) suggested that dissatisfaction was not the only, nor even the most important, variable contributing to turnover. Their model of the turnover process has job satisfaction several steps removed from the process of leaving the job. Job satisfaction was found to be most closely associated with thoughts of leaving and intentions to search for another job. The intention to quit was in turn found to be significantly related to actually leaving, but job satisfaction was believed to play a greater role earlier in the process, at the thinking about leaving stage.

A major controlling factor of quitting has been identified as the extensiveness of unemployment both generally and in an individual's field (Landy, 1989). Irrespective of level of satisfaction, the scarcity of jobs was said to lessen the likelihood of quitting. Carsten and Spector's (1987) meta-analysis of 47 studies of turnover carried out between 1947 and 1984, found the relationship between satisfaction and unemployment to be minimal when unemployment is high (-.18). The relationship strengthened as the unemployment rate decreased (-.52² e.g.). Landy (1989) warned that the relationship between satisfaction and turnover is only modest even under good conditions for quitting. Only 27% of the variance, that is -.52² x 100, can be accounted for. Quitting therefore is only one of several other responses that could be made when the opportunity to leave is available.

Hulin, Roznowski and Hachiya (1985) listed multiple influences on decisions relating to leaving a job and multiple alternative mechanisms available for coping with dissatisfaction. The first mechanism suggested involved behavioural intentions to increase job outcomes. Job outcomes could be increased by behaviours such as stealing, using work time for personal tasks and moonlighting. The second proposed coping mechanism was reducing job inputs.

Examples given of behaviour aimed at reduced input were, missing meetings, long coffee breaks, drinking/taking drugs before work, wandering around looking busy and talking with co-workers about trivia. The third coping mechanism listed was behavioural job withdrawal or avoidance. This included higher absenteeism, higher turnover and leaving for retirement. The fourth and final coping mechanism involved specific change behaviours such as unionization activity, demotion and transfer attempts.

Another construct related to tenure is that of employment commitment. More conceptual analysis of what is meant by employment commitment has been recommended in the literature and some progress has been made in the use of a variable known as employment importance (Feather, 1986). Employment importance has been defined by variables involving job need, job want, work interest, job satisfaction and unemployment disappointment.

It has been argued that career commitment, job involvement and organisational commitment are distinct work referents which should be operationalised separately (Morrow, 1983). Blau (1985) developed a reliable measure of career commitment which showed discriminant validity from job involvement and organizational commitment measures. Career commitment was found to be distinct operationally from job involvement and career commitment (Blau, 1988). Career commitment was defined as involving occupational commitment and career orientation. Job involvement was defined as the degree to which the individual identifies with a job or the importance of the job to one's self-image. Organisational commitment was defined in terms of identification with an organisation and its goals. Blau also employed a measure of withdrawal cognitions from the perspective of job and career. Withdrawal cognitions have been found (Miller, Katerberg and Hulin, 1979) to be good predictors of turnover. These cognitions are, thinking of leaving, intention to search for a job and intention to quit. Career withdrawal cognitions have demonstrated adequate reliability and discriminant validity from a job withdrawal cognitions scale (Blau, 1985).

Another example of what is considered to be a standard commitment scale is that of Cook and Wall (1980). This is a nine-item scale of commitment of affective reaction to the employing organisation and feelings of attachment to goals and values of the organisation not for any instrumental reasons. The scale consists of three subscales, identification or pride in the organisation, involvement or the willingness to invest personal effort as a member of the organisation and loyalty or attachment to the organisation.

Recently organisational commitment has been examined with respect to work rewards and work values (Oliver, 1990). Three factors have resulted from factor analysis of the work value items. Oliver explored how levels of commitment in an organisation owned by the employees varied according to variables such as age, tenure, education, salary and work values. The demographic variables were found to all be positively related to work value variables. Factor analyses that included varimax, equamax, quartmax and oblimin rotations differed only minimally. The factors which emerged were labelled as instrumental, participatory and task centred values. Examples of instrumental values were job security, fairness of income and working conditions. Participatory values included variables such as participating in decision making and working for the mutual benefit of one's self and one's coworkers. Examples of task centred values were variety and interest in work.

2.5 Individual work behaviour and the work environment

With respect to relating individual work behaviour to employee attitudes, values and personalities, one can examine the antecedents of work adjustment relating to the conditions of conflict and adjustment mechanisms as well as to the development of the work personality.

2.5.1 Conditions requiring an adjustment response

In the earlier literature the need for work adjustment behaviour to be initiated and therefore adjustment styles to come into operation, was viewed as a response to conditions thwarting adjustment behaviour. In Crites's (1969) discussions about vocational adjustment these thwarting conditions were termed conflict and frustration. Thwarting conditions in work can be seen to have their origins in and are a function of either the individual or the environment and refer to some obstacles, either internal or external, which impede the individual from reaching a goal. In the case of the process of work adjustment, the goals are usually thought of as vocational success and satisfaction, although there are others such as securing employment. Crites (1969), by way of definition, noted that an internal thwarting condition was often called conflict and an external thwarting condition, frustration.

Examples of thwarting conditions have been evident in research relating to women with both internal and external barriers to vocational adjustment being identified (Crites, 1969). External barriers to women have included sexual harassment and discrimination in compensation

(Fitzgerald and Betz, 1983). External barriers have been exemplified in the attitudes of men and women towards women in paid work, especially towards those in non-traditional occupations. West Point cadets with traditional sex-role attitudes were found to react negatively to a female leader (Rice, Bender and Villers, 1980). Stevens and DeNisi (1980), using a hypothetical female as a stimulus, found subjects with positive sex-role attitudes tended to attribute a manager's success to ability and effort. Failure was more likely to be attributed to bad luck and a difficult job. Internal barriers to women might relate to confidence about their own abilities and performance, particularly in occupations traditionally the domain of men.

Robbins (1939) grouped conflicts at work into disturbances of aim and disturbances of function. Examples of disturbances of aim were grandiose aims, such as aiming to be original in all work and a pervasive lack of ambition. Such a lack of ambition was expected to have the effect of making it almost impossible for the individual to work. Disturbances of aim were said to be related to individuals themselves, while disturbances of function were related to what the worker can or cannot do on the job (frustration in Crites's terms). Robbins divided dysfunction at work into the misdirection of energy and the partial or absolute inhibition of energy. If a worker's efforts were dissipated and scattered, tasks were left unaccomplished. Inhibition of energy was expected to result in no effort being made to work. Robbins regarded a hatred of work and the necessity to work as central conflicts, maintaining that states of inertia and lesser obstructions arose because of a hatred against working.

Ichheiser's (1940) classification of conflict consisted of five types. *Conflict of function*, was said to arise from the nature of the job duties. *Conflict of conviction*, involved activities like selling an inferior product to earn a living. *Conflict of ambition*, involved discord between the individual's personality and place in a social hierarchy because of occupational standing. *Conflict of response*, was used to refer to a discrepancy between a person's desire for a certain social milieu and the kind of people with whom their job brought them into contact.

An example of an early attempt at classifying frustration at work (Eaton, 1952) which was more sociological in nature proposed seven external conditions which could lead to an individual experiencing frustration in their work. These conditions involved, work which is insignificant, absentee ownership of the products of work, unfulfilled expectations of upward mobility, lack of a defined role, the availability of many alternatives in work, economic

insecurity and work, as it becomes more complex and more incomprehensible to others, isolating workers in the community. In the early literature the identification of frustration at work included the failure of management to delegate authority downward as one of the most significant factors along with the importance of pay (Brinker, 1955). Person-environment fit theory would regard mismatches between the person and the environment as conditions requiring adjustment type of behaviour. The most frequently mentioned source of grievances and frustrations of workers generally have tended to be 'low pay' or 'poor profits' with the upper occupational levels experiencing less frustration (Centers, 1948).

2.5.2 Work personality maturation

The individual has developed ways of adjusting to work conditions which represent a development and maturation of a work personality. In vocational psychology the assumptions of the trait-and-factor approach of Parson's (1902) person-job matching model and Murray's (1938) need-personality theory, came to be no longer interpreted literally. The assumption that by virtue of unique psychological characteristics each worker was best suited to a particular type of work, had led to the belief that there was only one occupation to which an individual was suited. Groups of workers in different occupations were assumed to have different psychological characteristics. Vocational adjustment was believed to vary directly with the extent of agreement between worker characteristics and work demands. There was no recognition that individuals and jobs were interacting with each other, changing, or adapting (Scott and Clothier, 1925). Anderson (1929) in his criticism of this static concept of human nature, had argued that work failure tended to result not simply from a lack of ability but from the presence of more dynamic factors that influence the personality and general health of the worker.

The focus on other factors and the recognition of vocational adjustment as a developmental process, previously seen mainly in the psychodynamic approach to vocational adjustment, became characteristic of the trait-and factor approach. Career patterns and work histories became a focus as dependent variables. The emerging vocational fitness concept differed also by recognising that an individual may be qualified for success in more than one occupation. Occupations themselves were believed to be broad enough for workers with different attributes to become equally well adjusted within them.

Ginzberg (1951)	Super (1953)	Tiedeman & O'Hara (1963)	Dawis & Iofquist (1984)
Fantasy^a (10-12 yrs)	Growth (Initiation) Exploration (differentiation)	Anticipation Exploration	Differentiation Experimentation
Tentative	Tentative ^a (early to middle adolescence) Transition (later adolescence/ transition from school)	Crystallization Choice	Development Expansion
Realistic (later adolescence & early adulthood) Exploratory Crystallization Specification	Establishment (articulation)	Implementation Induction Transition	Stability (beginning employment) Response Formation
	Maintenance	Maintenance	Response Maintenance
	Decline Floundering Stabilization Consolidation - said to all characterise behaviour at various of Super's life stages		Decline (aging affects responses)

Note.^a Use of Bold depicts stages, non-bold substages

Figure 2.2 A comparison of developmental theorists' work adjustment stages included factors such as abilities, interests and aptitudes.

Work personality developmental theories emerged which proposed stages and the process of passing through these. Figure 2.2 provides an outline of a sample of the range of such developmental theories. Although exact comparisons among the theories are not always

possible because the chronological age or period associated with the stages was not always specified, the notion of stages was central to all the developmental theories. Ginzberg et al (1951) regarded occupational choice as a process rather than an event and as a general type of human behaviour to be approached using concepts from all of the chief behavioural sciences. He focused on the interplay of intra-individual and extraindividual determinants but did not expect these factors to be highly correlated. *Intraindividual* determinants included such factors as abilities, interests and aptitudes. *Extraindividual* determinants included factors such as environmental demands, pressures and constraints. Occupational choice was regarded as a function of both sets acting together rather than able to be predicted from knowledge of personal attributes alone, as theorists such as Super would maintain.

Vocational adjustment was viewed as a process which evolves over time. The individual was treated as being born with "response potentials" which in interaction with "potential reinforcers" in the environment produce behaviours which are a primitive set of cognitive, perceptual and motor abilities. A primitive set of "needs", such as, achievement, attention, affection, was expected to develop from those reinforcers which occur most frequently in association with the individual's responses.

Ginzberg's fantasy stage in the occupational decision making process, was defined as pre-awareness of social status and class values. His tentative stage was characterised by the beginning of an awareness of social status and social class values. This stage was further subdivided into an earlier phase, characterised by a preoccupation with interests and a later stage distinguished by the emergence of a concern for capacities. Stages were believed to occur in the same order for most people.

The chief difference in and criticism of Ginzberg's approach was the irreversibility of the process. The real options for choice were thought to become more and more limited over time. Psychologically changing a given course of action, abandoning it and beginning again, was thought to become increasingly difficult. Ginzberg did not describe the determinants in detail, develop instruments to measure them, nor form propositions about the interrelationships. His approach was also criticised for truncating development in early adulthood, having operationalisation problems and having inconsistent research support (Osipow, 1973). His theory was criticised more and enjoyed less empirical support than Super's, but Neff (1985) suggested that Ginzberg's ideas were too hastily rejected.

Super (1961, 1963; Super et al., 1967), regarded as the most influential writer in the field of occupational choice (Holland, 1969), was critical of the assumption of early occupational prediction models that once an individual and job were matched, no changes occurred. Super's theory was credited with initiating research on vocational maturity, career exploration and self-concept implementation. But its main weaknesses were identified as, a lack of operationalisation and a lack of attention to social and economic factors (Osipow, 1973).

According to Neff (1985) the way the theory had been structured made it difficult for Super and his co-workers to fit their empirical findings to a general theory of vocational development. Individuals were believed to make occupational choices which were the most consistent with the concept they have of themselves. Self-concept was viewed as a pattern of attitudes, interests and aspirations that develop through stages of initiation, differentiation and articulation, which translate into occupational choice. Neff suggested that the difficulties of finding ways of assessing self-concept components in different individuals over time and relating the components to career patterns, were in part associated with self-concept theory itself. The theory in its long and complex development had been difficult to define and describe precisely. Much of Super's efforts to derive testable hypotheses and operationalise them through standardized methods of measurement were said to be fraught with technical problems (Neff, 1985).

Although Super's developmentally based theory had been held up as an effective description of the process of vocational development which systematically examined the important components, none of the career theories at that time were accepted as adequate explanations of vocational choice and development. Of the theories, Super's was regarded as one of the most technically adequate, all encompassing and advanced (Osipow, 1969, 1973). However, to be supported, Neff (1985) believed seemingly impossible conditions needed to be met. Individuals would require an almost total freedom to make occupational choices. They would need unlimited opportunities for training in order to meet different circumstances. In addition they would need to operate as rationally as a computer in their matching of data about themselves and occupations. In the absence of these conditions, Neff saw little reason to expect a generally detectable relationship between an individual's notions about themselves and the occupations they enter.

Neff (1985) contended that individuals could be expected to be constrained by more than a single factor in their occupational choices. The factors he added were socioeconomic status, particular aspirations, family preferences, ethnic and demographic barriers, the characteristics of the formal education system and the influence of adults and peers as possible factors. The implication is that to be adequate, a theory of vocational behaviour needs to be multivariate in nature. Super himself departed from a single concept approach in the elaboration of the "Life Career Rainbow" (Super, 1980) which involved the overlap of roles of an individual and their relative importance during different times of the life cycle. The concepts of role salience and the development of instruments to measure it (Nevill and Super, 1986, 1988) has been regarded as another important addition to Super's theory (Brown, 1990).

Earlier research in developmental theory was said to concentrate on career maturity (Super and Kidd, 1979) and adult adjustment to careers (Crites, 1976). Interest has been renewed in the adult stages of Super's theory. Life-long aspects of career development have been addressed in the work of developmental theorists such as Levinson, Darrow, Klein and McKee (1978).

Another developmental theorist to go beyond the use of single explanatory concepts was Gottfredson (1981). Her theory of occupational aspirations challenged the traditional approach of examining either the process or content of career choice. Her aim was to integrate both. She was particularly interested in intelligence, socioeconomic status, race and sex because it was maintained these variables had been either minimised or neglected previously. Her model included concepts such as aspirations, self-concept, developmental stages and perceived match between person and occupation, in a unique synthesis of her own ideas with those of Super and Ginzberg.

Reviewers have noted that tests of Gottfredson's model have hailed it as an important theoretical development (Slaney and Russell, 1987; Brooks, 1990). However, it has also received criticism (Pryor, 1985; Vondracek, Lerner and Schulenberg, 1983), in particular for what has been regarded as an overemphasis on the effects of personal factors on women's career choices (Betz and Fitzgerald, 1987).

Developmental theorists such as Tiedeman and O'Hara (1963), demonstrated an interest in work history, in particular as a predictor of individual work adjustment styles. They listed

defining characteristics of the work history, such as the kinds of positions occupied, the sequence in which they were held and time spent in each. The work history was used as a criterion or dependent variable to show work adjustment through such things as progression to higher positions. Tiedeman and O'Hara (1963) built on some of Ginzberg's ideas but called their own model a "concatenation of concepts " rather than a theory. Their views received less attention empirically than those of Super but they formed a bridge between the early developmental work of Ginzberg (and his group) and the work of Super. Tiedeman showed more interest in the specific process of occupational choice than the development of work attitudes.

A number of Tiedeman's empirical investigations about vocational decision have been claimed to have assisted in the clarification of some issues (Neff, 1985). Sex-role and family status have been shown to be at least as important as determinants of choice, as the self-concept. Interest and personality tests have been shown to better predict occupational choice than aptitude tests. Also support for Ginzberg's observation about when the vocational self-concept begins to emerge was found. Tiedeman's theory of vocational development has been seen to be related to the work of Erikson (1963) and his psychogenic ideas. A need for a broad psychosocial theory was proposed that examines how a "vocational identity" is acquired. Like Erikson, Tiedeman also viewed vocational development as an "epigenetic process", one which involves the differentiation of a previously undifferentiated structure. Tiedeman became interested also in the development of computer-assisted self-guidance systems (Tiedeman and Willis, 1972; Tiedeman and Miller, 1974) in response to what he saw as the obsolescence, as a result of rapid technological change, of the relatively leisurely process of making vocational choices. His expectation was that individuals must be prepared for multiple careers in rapidly altering work environments. He expected the resultant decision making to be a continuous process with the need for the implementation of particular skills being determined by the environment.

Neither Ginzberg nor Super has been said to produce sufficient evidence for their theories but Ginzberg's was regarded as more plausible by Neff (1985). Ginzberg's theory, the more complex and sophisticated of the two, did not ignore environmental constraints, as Super had by focusing on the self-concept and he treated the environment in a dynamic way. Environmental determinants were believed to play different roles at different times, but expected to become increasingly influential. Both theorists regarded the experiences of later

childhood and adolescence, rather than early childhood, as more important in relation to work behaviour and were less inclined to specify when work adjustment stages occur.

Other research in developmental theory has concentrated upon career maturity (Crites, 1978; Super and Kidd, 1979) and adult adjustment to careers (Crites, 1976). A more recent developmental perspective was represented in the work of Vondracek et al (1986), in which both life-span development and contextualist perspectives were emphasised. Development was seen as an interaction between an active organism and a dynamic environment. Hackett, Lent and Greenhaus (1991) noted this to be in contrast to approaches derived from mechanistic or organismic notions of individuals in environments. Vondracek et al's work has generated little empirical activity and has been criticised for failing to improve the conceptual status of career development to any great extent (Gottfredson, 1983).

Vocational terminology and thinking about career behaviour has been considerably affected by developmental models, such as Super's. Despite career choices continuing to be studied as static events, there is a general acknowledgement of career development being a dynamic process. Although Super's notions of career stages, vocational identity, career maturity, developmental tasks and career patterns have helped generate a wide range of research in the past twenty years, empirical studies have usually not been conducted within the framework of his theory (Hackett, Lent and Greenhaus, 1991). Instead Super's theory has been referred to in a post hoc way (Fitzgerald and Rounds, 1989; Phillips, Cairo, Blustein and Myers, 1988). Hackett et al. (op. cit) argued, however, that this criticism applies to much of the research related to career theories. It becomes difficult to determine whether studies which have examined concepts such as self-concept, career stages, or career exploration have tested Super's theory, or alternative models. Later theories, such as that of Dawis and Lofquist (1984), have been more successful in their attempts to produce testable hypotheses and standardized methods of measurement than Super and his associates who experienced many technical difficulties in their attempts. Although Dawis and Lofquist's theory is as likely to be referred to in a post hoc way as are the theories preceding it, this may be just as much a comment on the failure of researchers to use theoretical frameworks generally than the testability or potential of the theory itself.

	active	reactive	active/ reactive	perseverance/ flexibility
Super (1940)		compensation outside work/contrasting leisure		
Meltzer (1945)	domination appeasement	integrating the conflict	compromises	neglect
Shaffer & Schoben (1956)	bullying to compensate	attention getting mechanisms/ rationalisation by chronic fault finding in others/ use of hysteria/ delusional beliefs		
Crites (1969)	seeking help/remove obstacles to goals	acquiescence or compliance/suppressing own conflicting motives/changing self synthesising factors in conflict and frustration without change		give up/ endure the conflict/ leave
Beehr & Newman (1978)	altering physical conditions/altering behaviour/changing the work environment	denial/distortions		
Folkman & Lazarus (1980)	problem-focused coping	emotion - focused coping		
Gottfredson (1981)	changing the job to match	changing aspirations to match	changing both jobs and aspirations	
Van Sell, Brief & Schuler (1981)	establish new behaviour	emotionally distort the situation/block out threatening stimuli		
Farrel (1983)	exit or leave/ verbalising dissatisfaction/ accidents/sabotage	changing comparison standards for job satisfaction		neglect (passive) pathologically accept situation
Latack (1984)	altering stressor directly/managing the symptoms e.g. exercise, relaxation	cognitive reappraisal re-evaluating to lessen stress or devalue job	altering the relationship to the situation	
Nicholson (1984)	proactive role development strategy role development	personal development adapting to meet environment	personal	

Figure 2.3 Adjustment styles categorised by Dawis and Lofquist's dimensions

2.5.3 Adjustment mechanisms

It was recognised in early adjustment psychology that conflict and frustration produce anxiety and tension (Shaffer and Schoben, 1956). Because these emotional states are uncomfortable, the individual was expected to attempt to allay them in some way. If a certain response reduces anxiety and tension there is a high probability that when these feelings are re-experienced a similar response will be made. There have been a number of different classifications of work adjustment mechanisms in existence, Figure 2.3 presents some for comparison.

Two of the models represented in Figure 2.3 postulated other dimensions along which their mechanisms could also vary. Farrel (1983) proposed that his four response model of exit, voice, loyalty, or neglect could be each described also on the conceptual dimensions of active/passive and constructive/destructive. Also Nicholson (1984) posited that development could be potentially retrograde, reactionary, or destructive. He added a third independent dimension to his personal and role development dimensions, that of affective responses. Each dimension was thought to be equally able to carry positive or negative connotations. Two characteristics were expected to interact with adjustment to a change in role, the discretion and the novelty of role demands. Discretion was described by the dimensions of, the capacity to choose goals, the means for achieving them, the timing of the means-ends relationships and the pattern of interpersonal relationships and their influence and evaluation. Low-discretion roles were predicted to prescribe replication or absorption outcomes and high-discretion roles, determination or exploration. Novelty was defined as the similarity of the new role to previously occupied roles. Low novelty was expected to prescribe replication or determination and high novelty absorption or exploration outcomes.

2.6 Summary

In summary, within the theoretical context out of which Dawis and Lofquist's theory developed and which formed a part of the literature their theory aimed to integrate theories concerning personality, motivation, job satisfaction and productivity were of importance. The literature relating to job satisfaction and tenure was also of particular significance.

The long history of personality theory has culminated in contemporary personality theory being less divergent on specific issues and sharing many common assumptions, for example, the

assumption that individuals actively seek interaction with their environment. A lessening of polarization on certain issues such as the argument between trait theorists and situational determinists resolving itself into an interactionist position. A certain degree of consensus appears to have been reached in the area of personality theory. Dawis and Lofquist's theory, as described in the next chapter, reflects this consensus to a large degree. Although their theory will be seen to have many elements in common with personality theory generally and contemporary personality theory in particular, some aspects (such as the recognition of the consciousness and cognition issues) have been neglected by them.

Most approaches to motivation have received criticism, even if to varying degrees. Because most research has tested the approaches in their entirety and usually without modification, no one theory has tended to gain universal acceptance. The debate over the number and the structure of work needs and the processes of need fulfilment has not lessened the apparent importance of the need concept. Moreover, each of the approaches to motivation has offered some useful propositions. For example, we are left with the need theories being more specific than others about the nature of needs, although instrumentalists and behaviourists concern themselves little with the concept of motivation. The instrumentality approaches have emphasised individuals' perception of what to expect in the way of rewards and the goals of goal-setting theory have been credited with motivating individuals to consider strategies of obtaining goals. The balance theory approach has emphasized the importance of achieving a balance of what is referred to as psychological tension.

The need for an integrating theory has been apparent, particularly in view of the specific criticisms levelled at the various approaches and each approach being guilty of excluding important aspects of the others. For example, the need approach has been criticised for the lack of a definitive description of needs and the structure they are arranged in, the instrumentality approach for its inability to account for effort or performance on its own, that is, through using just cognitive, instrumentality and expectancy estimates. The goal-setting approach has been criticised for being unable to account for motivation on its own and the reinforcement approaches for failing to generalise to the work setting and for excluding, with a few exceptions, cognitive elements.

Another major area discussed which has provided the context for work adjustment theory has been that of personality theory. Although the direct application of personality theory to vocational and work psychology has been limited, its influence appears to have been strong, particularly in the

instrumentality approach for its inability to account for effort or performance on its own, that is, through using just cognitive, instrumentality and expectancy estimates. The goal-setting approach has been criticised for being unable to account for motivation on its own and the reinforcement approaches for failing to generalise to the work setting and for excluding, with a few exceptions, cognitive elements.

The third major area forming a theoretical context to Dawis and Lofquist's theory, the relationship of job satisfaction to productivity and to tenure as will be seen in the next chapter, has been defined by Dawis and Lofquist in such a way as to exclude the cognitive component. Just as a relationship between satisfaction and performance has not been established, a strong relationship between job satisfaction and tenure has not emerged in the literature. Other concepts such as job involvement and career commitment have been suggested as more useful.

The fourth major area discussed in this chapter is that of relating individual work behaviour to the work environment. In this context, the conditions requiring an adjustment response, provide the circumstances in which work adjustment is required and to which a theory such as Dawis and Lofquist's can be applied. These conditions of conflict and frustration are defined by Dawis and Lofquist as being those situations where the individual's work personality does not match that of the work environment. Dawis and Lofquist's stages of maturation of the work personality are similar to those previously proposed, but they were credited with being more successful in producing testable hypotheses and standardised methods of measurement. The same could be said of their adjustment mechanisms. Most of those proposed by others could be categorised according to Dawis and Lofquist's styles of active, reactive, flexibility and perseverance (as described in the next chapter). However, Nicholson (1984) did propose other dimensions and in particular added an affective component. Yet other approaches, to be discussed later, appear to have been of influence. For example, Dawis and Lofquist reinterpreted their theory in systems theory terms.

Although Dawis and Lofquist are to be commended for many aspects of their theory, in particular the use of testable propositions, they can be criticised for other aspects such as neglecting the cognitive perspective. However extensive criticism of their theory will be reserved for chapter four and instead be presented in a more expository manner in the next chapter.

CHAPTER THREE

DAWIS AND LOFQUIST'S THEORY OF WORK ADJUSTMENT (1984)

3.1 Introduction

The study of work adjustment within vocational psychology initially focused upon developing psychometric measures of vocational choice, personnel selection, work motivation, employee morale and worker productivity. Each of these psychometric measures had some relevance to work adjustment problems, but had produced independent bodies of literature. Lofquist and Dawis advanced their first general formulation of a theory of work adjustment (1969) in response to the need for an integration of the literature. Neff (1985) has described the development of the theory of work adjustment as arising from a long series of research studies, under the title of the *Work Adjustment Project*, which began in 1959 at the University of Minnesota under the leadership of Lloyd H. Lofquist and Rene V. Dawis and was supported by the U.S. Department of Health, Education and Welfare.

Dawis and Lofquist's theory once developed (1984) gave the appearance of being highly valid, in part because its basis lies in a well accepted experimentally based stimulus-response model and more importantly because its testable propositions were operationalised through extensive instrumentation. It has attracted little criticism and has come to be regarded as one of the dominant theories relating to vocational behaviour (Hackett, Lent and Greenhaus, 1991). Most of the research related to it has been undertaken by the theorists and their associates. They have also noted the research of others which support their theoretical propositions. A summary of the research and a critical analysis of the theory is presented in the next chapter. Because much of the research of others was not designed to test Dawis and Lofquist's theory, its interpretation has had to be of a post hoc nature. Although factors such as this may in themselves not invalidate the theory, the need for caution in its wholesale acceptance and application becomes apparent. Despite the theory's possible limitations, it still has remained the most appropriate work adjustment theory to use in research like the present for two main reasons. Firstly, its propositions and extensive instrumentation help make it empirically testable. Secondly, it has been used in vocational counselling and research in relation to similar respondents in America.

The first version of the theory appeared in 1964 (Dawis, England and Lofquist), was revised in 1968 (Dawis, Lofquist and Weiss), and was produced in an extended form in 1969 (Lofquist and Dawis). The most recent version (Dawis and Lofquist, 1984) discussed the historical aspects and research literature which together demonstrated the centrality of work to human development, its importance in total life adjustment and its contribution to the satisfaction of needs. Dawis and Lofquist saw the amount of time an individual spends in work and work related activities as a major justification for work being an appropriate area of study for the behavioural sciences. Work was viewed as a way of improving understanding of human behaviour and as an area to which psychological theory could be usefully applied. Dawis and Lofquist described their work behaviour research as a psychological study about how individuals adjust to work which uses the concepts and methods employed by scientific psychology in the study of behaviour generally. Their definitions of work as an occupation, employment, vocation, or job, viewed work as an activity.

Dawis and Lofquist claimed the studies forming the basis of our scientific knowledge of human behaviour, have taken place mainly in the highly controlled setting of the laboratory where specific responses and stimuli have been defined. They suggested such laboratory studies can be applied to the study of more complex and larger units of behaviour which occur over longer periods of time. Their aim was to take laboratory derived concepts, such as response and reinforcement, and adapt them to larger units of individual behaviour and environmental stimulation. Such a stimulus-response approach was regarded by Dawis and Lofquist (1984) as a typical model upon which the study of human behaviour is based in contemporary psychology. Individual's responses are examined in relation to preceding stimuli, in the case of classical conditioning, or the stimuli which follow as reinforcers, in the case of instrumental conditioning. In the work setting an individual was said to respond to a variety of stimuli using many related responses over a long period. All the relevant stimuli and responses were believed to be of importance. In order to make the task of observing these manageable, global clusters of responses and stimuli arrived at through factor analysis were used as the focus of interest in the first instance.

They believed the most desirable context for the study of work behaviour to be the natural setting and the most desirable aim of such research to be the solution of practical problems. They acknowledged that laboratory experiments provide the most dependable approach in developing knowledge, but they argued that work behaviour needs to be studied in its natural

setting initially in order to identify the significant variables for further study. Also they were concerned that laboratory findings are not always able to be generalised to naturally occurring behaviour, particularly where findings involving specific behavioural elements are expected to generalise to larger units of behaviour.

The basic principles they referred to appear to be mainly those exemplified in operant conditioning or the experimental analysis of behaviour. These are represented for example in Reynold's (1968) definition of operant behaviour as an experimental science of behaviour, a process involving the frequency of a behaviour being modified by the consequences of the behaviour, and as being concerned with the relationship between the behaviour of organisms and their environment. The analysis of behaviour was characterised as deterministic and experimental, and as focusing on the study of the operant or instrumental behaviour, but not to the exclusion of the study of instinctive and reflexive behaviour. Reynold viewed it as an objective science, confined to the study of factors that can be observed, measured, and replicated.

As well as the stimulus-response model, Dawis and Lofquist identified differential psychology, or the psychology of individual differences, as a basis of their research. They noted that:

"People differ on any behavioural dimension. An individual's standing in a group may differ from one behavioural dimension to the next. For some behavioural dimensions, the individual's standing in a group will remain stable over time, whereas for others there may be a change. An individual's status on a behavioural dimension is the result of a unique genetic inheritance and a unique response-reinforcement history." (Dawis and Lofquist, 1984, p 8,9)

Dawis and Lofquist conceptualized differences among individuals and work environments as being able to be measured reliably, using the statistical technology generally available. They assessed these differences using their matching model, in which work environments and individuals were described using the same constructs and the same dimensions. Their theory of work adjustment concentrated upon the work behaviour of specific individuals in continual interaction with their specific work environments.

Dawis and Lofquist's (1984) starting point was the individual as an organism which responds by reacting to and acting on sets of stimuli, thus developing a response repertoire for coping with the environment, which includes communicating with it. Because an individual can report on their stimulus and response experiences, the presence of memory is inferred. Memory is viewed as a unique reference system for classifying present experiences. The environments of individuals are also regarded as unique. Reports of observers about stimulus conditions and the ways individuals respond, were also regarded as distinctive in keeping with their own unique reference system or memory. The observer is expected to make inferences about an individual's behaviour on the basis of observing responses that follow specific stimuli, and observing the changes in responses that might be associated with changes in stimuli conditions. Dawis and Lofquist believed that both the individual and observer or observers, should describe an individual's behaviour, and that standard methods of observation should be used as a way of increasing observer reliability and minimising subjectivity.

The theory can be categorised in ways other than in individual differences and stimulus-response model terms as discussed at the conclusion of this chapter. The theorists themselves couched it in systems theory terms, as in Figure 3.2.

3.2 Dawis and Lofquist's theory

Dawis and Lofquist (1968; 1984) depicted their theory of work adjustment in a diagrammatic form, as in Figure 3.1. They maintained that because their theory is based upon "the concept of *correspondence between the individual and environment*" (p 54), a harmonious relationship that is reciprocal, complementary, and mutually responsive or corresponsive is implied. A basic assumption is that "*each individual seeks to achieve and maintain correspondence with the environment*" (p 54), such an activity being regarded as a basic motive of human behaviour. Achieving and maintaining correspondence in the case of one environment is thought to affect that achieved and maintained in other environments, and work is regarded as "*a major environment to which most individuals relate*" (p 54). As can be seen from Figure 3.1, both the individual and the environment contribute to the work adjustment process. The skills which the individual brings to the environment were said to enable them to respond to the work environment's requirements and at the same time the rewards of the work

environment can match individual's requirements. Correspondence is said to be achieved by both parties when their minimal requirements are mutually fulfilled.

The concept of work adjustment is defined as, "*the continuous and dynamic process by which the individual seeks to achieve and maintain correspondence with the work environment*" (p 55) has individual's behaviour in a work environment directed towards meeting its requirements. In the absence of a correspondent relationship, the individual seeks to establish and maintain it but if this fails other courses of action such as leaving the work environment may be taken. Each work environment-individual relationship is regarded as idiosyncratic, with the initial relationship often not being correspondent, and both elements constantly changing. It is this process of change which is referred to as work adjustment. Achieving minimal correspondence and remaining in the work environment allows more optimal correspondence to be achieved, the correspondent relationship to be stabilised and tenure to increase. "*This stability of the correspondence between the individual and the work environment is manifested as tenure in the job*" (p 55). As such tenure was viewed as the most basic indicator of correspondence and defined as "*a function of correspondence between the individual and the environment*" (p 55).

Other basic indicators of correspondence were said to be satisfactoriness and satisfaction. These were developed from the basic concepts of correspondence and tenure. Satisfaction regarded as an internal indicator was defined as "a pleasurable affective condition resulting from one's appraisal of the way in which the experienced job situation meets one's needs, values, and expectations" (Dawis and Lofquist, 1984, p. 72). Satisfactoriness was called an external indicator and referred to the extent to which an individual met a standardised set of work behaviours required by the employer. In the case of substantial tenure it was inferred that the requirements of the work environment and the individual are being met.

The individual's work personality, representing the chief characteristics of the individual in relation to work adjustment, is said to consist of at least two sets of characteristics: status characteristics, *personality structure*; and process characteristics, *personality style*. Personality structure is described via the *skills* and *needs* of the individual or their reference dimensions of *abilities* and *values*, respectively. Personality style, in describing the individual's customary ways of interacting with the environment given a particular personality structure, uses the dimensions of *celerity*, or quickness or slowness in interacting with the environment, *pace* or

the typical level of activity, *rhythm* or the typical pattern of pace, and *endurance* or the duration of interaction. These were derived from the characteristics of responding, latency, intensity, pattern, and duration, respectively. The work environment personality style was described on a dimension of *flexibility*. The adjustment styles used to increase correspondence were activeness and reactivity. The former referred to acting to change the environment and acting on the environment, the latter referred to acting on self or changing the expression or manifestation of personality structure.

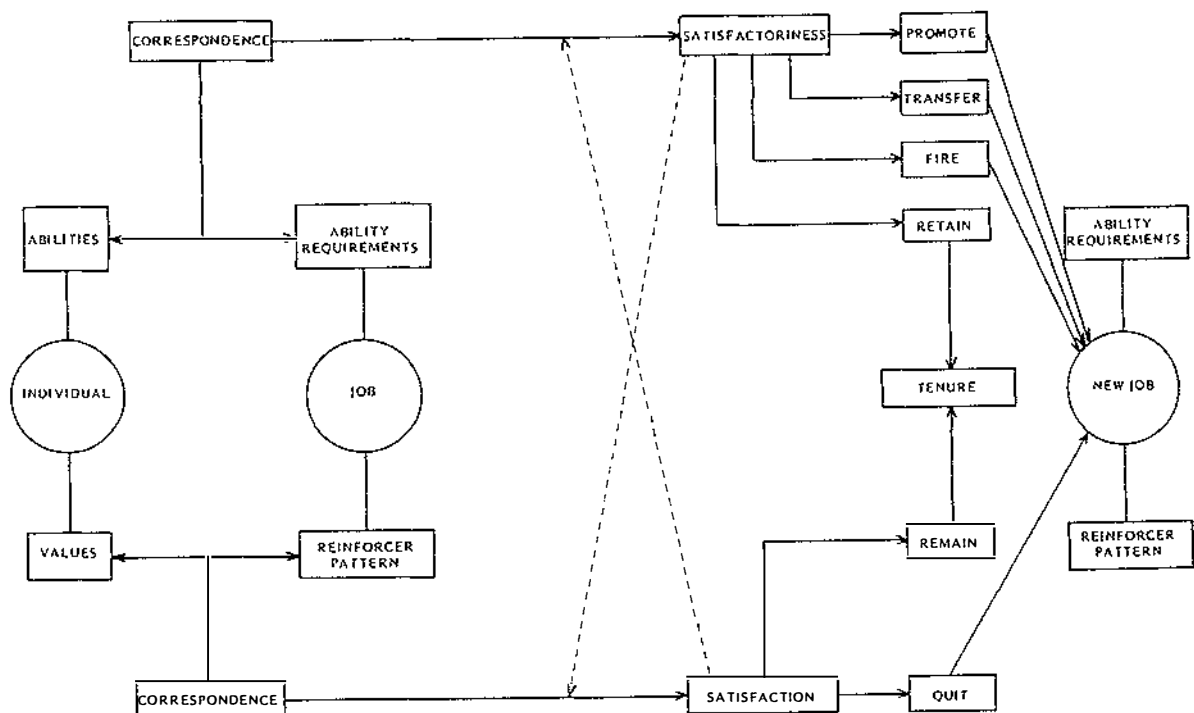


Figure 3.1 Prediction of work adjustment

Note. From Dawis and Lofquist (1984), p 62.

The work environment's status characteristics or structure is described by way of *skill requirements* and *need reinforcers*, or classes of stimulus conditions via their respective reference dimensions of ability requirements and reinforcer factors. The presence or absence of skill requirements and need reinforcers are associated with the satisfaction of needs. The characteristic patterns of these reference dimensions for any occupation are referred to as an occupational ability pattern and an occupational reinforcer pattern. The style of the work environment is depicted in terms of its requirements for speed of response (celerity), level of activity (pace), typical pattern of pace (rhythm) and duration of response (endurance). Work adjustment itself is then predicted from the correspondence between the work personality and the work environment.

3.3 The theory's propositions

In developing their theory of work adjustment Dawis and Lofquist aimed to construct a conceptual framework to give direction to the study of a specific class of behaviours (work adjustment) occurring in the natural, rather than laboratory setting of the work environment. A second aim was to require the operationalisation of its concepts such that both individual and environmental differences were incorporated. And a third aim was to provide for the study of behaviour from both a historical retrospective position, and a predictive prospective position.

In the use of a stimulus-response paradigm Dawis and Lofquist identified their theory as conceptualising behaviour at a molar level. They attempted to use response and stimulus dimensions which were "optimally descriptive, manageable in number, and combined so as to reflect both the individual and the environment functioning as integrated systems in an interactive adjustment process" (Dawis and Lofquist, 1984, p 148.). The dimensions specified in their theory, abilities, values, and personality style, were viewed as combinations and patterns, rather than separately. The particular combination or pattern for each set of dimensions was believed to have greater significance than each dimension on its own. The patterns were expected to better represent reality because they were thought to reflect a hypothesised underlying interconnectedness of single dimensions and to represent the integration of the individual with the overall organisation of the environment.

Dawis and Lofquist articulated their theory of work adjustment in terms of sixteen formal propositions, and their associated corollaries and diagrammatic representations which operationalised those propositions, as shown in Figure 3.8. The first nine propositions, see Table 3.1, provided Dawis and Lofquist with both the direction for their research and a basis for the prediction of work adjustment. A further work adjustment proposition related to the belief that knowledge of the characteristic ways in which an individual interacts with an environment, given a particular work personality structure, can improve the prediction of work adjustment. The first ten propositions were said to be related to the *prediction* aspect of work adjustment, while propositions XI to XVII described the *process* of work adjustment.

3.3.1 Formal propositions I to IX

Crites' (1976) summary and review of the theory provides a useful description of it in its earlier stage, as represented by propositions I to IX, prior to the later development of process aspects as represented by adjustment styles in 3.4.¹ He regarded the theory as consisting of dynamically interrelated components of *motivation*, *adjustment*, *outcomes*, and *time*. The motivation component related to needs as antecedents of behaviour both when they are met and when they are frustrated. The consideration of both facilitating and thwarting environmental conditions were believed necessary to adequately represent the work environment.

The adjustment component referred to an attempt to fulfil work-related needs in response to thwarting or constraining conditions which in the event of failure might result in such withdrawal behaviours as job instability (Vaitenas and Wiener, 1977). However, correspondence between an individual's needs and situational characteristics were expected to lead to adjustment and positive attitudes towards work (O'Reilly, 1977; Dreher, 1980). The outcomes component was described as a state of adjustment which may act as an important antecedent for effective role behaviour, or satisfactoriness, which may be followed by affective reactions primarily in the form of satisfaction. The component of time was that over time the interactions between the individual and the organisation will produce positive outcomes given that motivation, adjustment, and satisfaction remain positively related. In the event of a misfit, negative personal and organisational outcomes were expected. The central

¹ Section 3.4 herein.

Table 3.1 Propositions I to IX

PROPOSITION I. Work adjustment at any time is indicated by an individual's concurrent levels of satisfactoriness and satisfaction.

PROPOSITION II. Satisfactoriness is a function of the correspondence between the individual's abilities and the ability requirements of the work environment provided that the reinforcer pattern of the work environment corresponds to the individual's values.

Corollary IIa. Knowledge of the abilities of individuals and their satisfactoriness permits determination of the effective ability requirements of the work environment.

Corollary IIb. Knowledge of the ability requirements of the work environment and of the individual's satisfactoriness permits the inference of the individual's abilities.

PROPOSITION III. Satisfaction is a function of the correspondence between the reinforcer pattern of the work environment and the individual's values, provided that the individual's abilities correspond to the ability requirements of the work environment.

Corollary IIIa. Knowledge of the values of individuals and their satisfaction permits the determination of the effective reinforcer pattern of the work environment.

Corollary IIIb. Knowledge of the reinforcer pattern of the work environment and of the individual's satisfaction permits the inference of the individual's values.

PROPOSITION IV. Satisfaction moderates the functional relationship between satisfactoriness and ability-requirement correspondence.

PROPOSITION V. Satisfactoriness moderates the functional relationship between satisfaction and value-reinforcer correspondence.

PROPOSITION VI. The probability that an individual will be forced out of the work environment is inversely related to the individual's satisfactoriness.

PROPOSITION VII. The probability that an individual will voluntarily leave the work environment is inversely related to the individual's satisfaction.

PROPOSITION VIII. Tenure is a joint function of satisfactoriness and satisfaction (a combination of VI and VII).

Corollary VIIIa. Tenure is a function of correspondence between abilities and requirements and between values and reinforcers.

PROPOSITION IX. Correspondence between work personality and work environment increases as a function of tenure.

Note. From Dawis and Lofquist (1984) pp 60-61.

concept of Dawis and Lofquist's model was identified by Tziner (1983) as the notion of correspondence.

3.3.2 Formal propositions X to XVI

Dawis and Lofquist (1976) attempted to improve their prediction of work adjustment by adding the concept of adjustment style and its dimensions of flexibility, perseverance, activeness, and reactiveness. They formulated additional propositions and corollaries, X to XVII, to provide direction for research. These were as in Table 3.2.

Table 3.2 Propositions X to XVII

N.B. Corollary VIIIa followed from propositions II, III and VIII. Proposition X related to the characteristic way individuals interact with their environment.

PROPOSITION X. The correspondence between work personality style and work environment style moderates the prediction of work adjustment from the correspondence between work personality structure and work environment structure.

PROPOSITION XI. The flexibility of the work environment moderates the functional relationship between satisfactoriness and ability-requirement correspondence.

PROPOSITION XII. The flexibility of the individual moderates the functional relationship between satisfaction and value-reinforcer correspondence.

PROPOSITION XIII. The probability that the work environment will use adjustment modes is inversely related to the individual's satisfactoriness.

Corollary XIIIa. Knowledge of this probability associated with the individual's satisfactoriness permits the determination of the work environment's flexibility threshold.

PROPOSITION XIV. The probability that the individual will use adjustment modes is inversely related to the individual's satisfaction.

Corollary XIVa. Knowledge of this probability associated with the individual's satisfaction permits the determination of the work environment's flexibility threshold.

PROPOSITION XV. The probability that the work environment will act to remove the individual is inversely related to the perseverance level of that work environment.

(continued)

Corollary XVa. Knowledge of this probability associated with the work environment's perseverance permits the determination of the work environment's perseverance threshold.

PROPOSITION XVI. The probability that the individual will act to leave the environment is inversely related to the perseverance level of that individual.

Corollary XVIa. Knowledge of this probability associated with the individual's perseverance permits the determination of the individual's perseverance threshold.

Given Propositions VIII, XV, and XVI, it follows that:

PROPOSITION XVII. Tenure is a function of satisfactoriness, satisfaction, and the perseverance levels of the individual and of the work environment.

Note. From Dawis and Lofquist (1984) pp 67-68.

3.3.3 A systems perspective

Dawis and Lofquist believed their set of propositions suggested research hypotheses which could be used to assess the applicability of the theory and to gain further understanding of work adjustment. They acknowledged that work adjustment is very complex and that additional research findings and improved methods for the description of work personalities and work environments may suggest other propositions. They attempted to integrate the adjustment process and prediction aspects of their theory by viewing work adjustment from a systems perspective, as depicted in Figure 3.2 (Dawis and Lofquist, 1978).

In Figure 3.2, the individual (I) is expected to evaluate a set of needs against a set of expected reinforcers. If these reinforcers equal or exceed the needs, satisfaction (SN) occurs and the individual behaves in an expected way. The individual's work behaviour is said to consist mainly of task performance which is then evaluated by the work environment (E) against the task requirements. If the individual has achieved satisfactoriness (SS), the organisation produces the reinforcement necessary to meet the individual's needs. The individual experiences job satisfaction. The individual remains satisfied and satisfactory until further significant changes occur.

The main points in the system believed to affect a stable interaction between an individual and the work environment are needs, work behaviour, task requirements, and organisational

behaviour. The possibility that an inaccurate evaluation could be made by either the individual or the work environment was also expected to have an effect.

In the case of reinforcers not meeting needs, the individual is said to experience dissatisfaction (DSN) which if above the individual's lower threshold (T), will result in better adjustment being sought. Either the active (A) or reactive (R) modes of adjustment (AM) may be brought into play on their own or together. If these adjustments do not culminate in at least a tolerable level of satisfaction, the individual could leave the work environment instead of attempting to meet task requirements through work behaviour. When the work environment (E) evaluates an individual's task performance as not meeting task requirements, the individual would be considered unsatisfactory (USS). When the unsatisfactoriness exceeds the work environment's threshold (T), the appropriate adjustments would be made by the work environment. These include accommodating, which is categorised as a reactive response by the environment, or making an active response by taking steps to have the individual change. If a mode of adjustment did not have the desired effect, the work environment would effect a separation (S) of the individual from the work environment through methods such as transfer, demotion, termination of employment or even promotion in some instances.

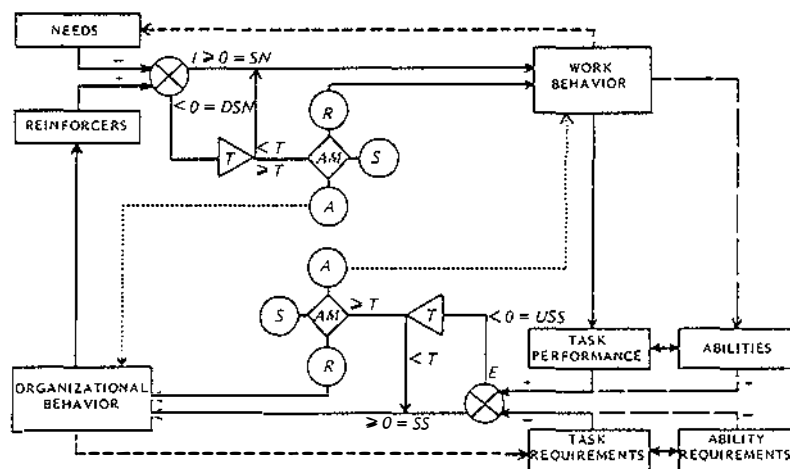


Figure 3.2 Work adjustment from a systems perspective.

Note. From Dawis and Lofquist (1984), p 66.

I	=	the individual	E	=	the environment
SN	=	satisfaction	SS	=	satisfactoriness
DSN	=	dissatisfaction	USS	=	unsatisfactory
T	=	the individual's threshold	AM	=	adjustment modes
A	=	active adjustment mode	R	=	reactive adjustment
S	=	separation			mode

Information on the four components of the system, needs, reinforcers, task performance and task requirements, is needed in order to predict work adjustment. Information can be obtained in advance on all components with the exception of task performance. This can be known only when the individual is in the work environment, therefore a measure of the potential for task performance, that is, abilities, is substituted. For convenience and to match the translation of task performance into abilities, task requirements are also translated into ability requirements, as shown to the bottom right of Figure 3.2. The initial formal propositions of work adjustment theory, the subsequent adjustment style dimensions and the intervening variables of individual work behaviour and organisational behaviour are all incorporated into the dynamic system to describe the flow of the work adjustment process.

3.4 The work personality

Dawis and Lofquist claimed that the behaviour of an individual is perceived by others in terms of the social standards of behaviour that have developed within a particular society. Societies are said to have well defined and stable prescriptions for behaviour which are acceptable in different environments, the work setting being one of these. These prescriptions are administered and promoted by social institutions. The responses of an individual in this context come to constitute their work personality.

3.4.1 Skills/abilities

An individual's 'personality' can be represented by describing their responses to stimuli. Recurring sequences of responses, referred to as skills, are believed to be being continually improved upon thus developing a repertoire of skills. Despite individual differences in skill repertoires, response sequences can be similar for some individuals. Where a common skill for individuals exists, a *skill dimension* can be defined using characteristics, such as level of difficulty.

Individuals can be ranked on dimensions according to their skilfulness. Dawis and Lofquist recognised the large number of skill dimensions likely to exist and the resulting difficulty in any attempt to describe individual responses. Consequently, factor analysis was used to produce fewer and more basic dimensions called ability dimensions, which underlie the numerous skill dimensions. These ability dimensions were regarded as reference dimensions

for skills. The description of individuals, using such dimensions, was believed to be both more economical and efficient. It was acknowledged that the measurement of the entire range of abilities was 'formidable' and that such measures commonly include ability tests which are developed on a factor analysis basis.

An individual's abilities were expected to improve over time and become established as development occurs. Measurements of ability at different points in time were said to reflect this change. An individual's abilities are regarded as mature when the measurements of them appear stable. Abilities are believed to be used not in an automatic way but in response to the presence of the appropriate stimulus conditions. It was maintained that as responses are made in the context of many stimuli, and as similar response-stimuli sequences occur, an individual is able to describe the stimuli and responses and make an evaluation of them. This evaluation is thought to be made in relation to how satisfying the stimuli are. Evaluations like this help to establish 'stimulus-condition requirements' for responses which will produce satisfaction. The individual may then report these requirements as preferences.

In the case of an observer, the individual's preferences for stimulus conditions are inferred by sampling their behavioural responses to different stimuli conditions, and by comparing these observations with those of other observers while taking the individual's stated preferences into account. The stimuli are referred to as *reinforcers* when they are associated with an increase in the rate of responding over a base rate. An increase in and maintenance of a response rate is said to have resulted from *reinforcement*. Different reinforcers are expected to have different *reinforcement strengths* for any one individual and among different individuals. Dawis and Lofquist distinguished among *actual* reinforcement strengths, those experienced by the individual, *stated*, those reported by the individual, and *observed*, those reported by an observer. They noted that stated and observed strengths may differ and that actual strengths could be inferred from either. The need for reinforcement at certain levels of strength is believed to become established because some reinforcers need to be higher in strength than others to be of importance to an individual.

In identifying the most important ability dimensions of the work personality, Dawis and Lofquist elaborated on other classification systems of categories of work tasks (Fine, 1955; and the U.S. Department of Labor, 1977) where tasks are grouped in terms of the functions of workers as they relate to data, people and things. They translated these into the

psychological terms, as in Table 3.4, of symbolic abilities, interpersonal abilities, and sensorimotor abilities respectively, which were abilities categorised in terms of their content. The basic psychological processes involved in work skills were said to be afferent, mediational, and efferent in nature. Afferent abilities, or input, were defined as those involved with receiving, processing and the transformation of information. Mediational abilities, or central processing, referred to the storing, processing, and transformation of information on the part of the individual. Efferent abilities, or output, related to the individual acting on the environment.

Table 3.4 Examples of abilities in nine content-process areas

PROCESS	CONTENT		
	Symbolic abilities (Data)	Interpersonal abilities (People)	Sensorimotor abilities (Things)
Afferent abilities (Input)	Verbal, numerical, and spatial perception	Person dynamics, group dynamics, and mass dynamics perception	Visual, auditory, tactual, kines- thetic, and form perception
Mediational abilities (Central processing)	Verbal, numerical, and spatial reasoning; memory for words, numbers and space	Reasoning about person, group, and mass behavior; memory for person, group and mass phenomena	Sensory judgement; mechanical reason- ing; memory for objects and sensations
Efferent abilities (Output)	Verbal fluency; numerical compu- tation; spatial manipulation; verbal, numerical, and spatial reporting; speaking	Communicating; persuading; leading, and following	Manual and finger dexterity; eye-hand coordination; mechanical assembly; physical abilities (strength endurance); inventing ability

Note. From Dawis and Lofquist (1984), p 27.

The three processes were said to apply to all of the so called content areas of data, people, and things. Abilities were therefore able to be classified in terms of both process and content. A cross classification of these produced nine ability areas regarded as important for an individual functioning in their work. These are presented in Table 3.4. Work skills were thought to involve the use of one or more of these different abilities in combination. Some

studies had identified the abilities used where skills are complex (Fleishman, 1954). However, Dawis and Lofquist advocated more empirical research to recognise abilities which are central to the wide range of work skills required in any one culture and to discover which are the most important when describing the personality structure of individuals.

3.4.2 Needs/Values

A *need* was defined as "an individual's requirement for a reinforcer at a given level of strength" (p 17). The collection of needs was described as a required pattern of reinforcers at certain levels of strength. The theorists emphasised that their use of the term need was different from its common definition as a particular state of deprivation. They recognised that deprivation may affect a reinforcer's strength, but emphasised that the important psychological point lies in the requirement of a reinforcer at a particular strength, irrespective of its deprivation. It is for this reason their needs were called psychological needs. They were said to be stable when repeated measurements of them, usually via questionnaires, inventories or judges' ratings, show little change. Often this has been found to occur as an individual reaches maturity. In the case of a large degree of change in an individual's environment, some change in an individual's psychological needs were still expected but to a lesser degree once an individual has reached maturity.

Dawis and Lofquist in reviewing the concept of *values* concluded there is general agreement that it is what the individual regards as important which is central to a definition of values. In the literature values had been described as "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach, 1973, p 5). Values had been equated with 'basic interests or motives' and 'evaluative attitudes' (Allport, Vernon and Lindzey, 1970). They have been described as "a special kind of attitude, functioning as standards by which choices are evaluated" (Smith, Kendall and Hulin 1969, p 102). England and Lee (1974) regarded values as a relatively permanent perceptual framework which shapes and influences the general nature of an individual's behaviour. Although similar to attitudes, they were characterised as more ingrained, permanent, and stable in nature, more general, and as less tied to any specific referent than are many attitudes. Super (1973) stated that

"traits, values, and interests derive from needs... Traits are ways of acting to meet a need in a given situation. Values are objectives that one seeks to attain to

satisfy a need. Interests are specific activities and objects through which values can be attained and needs met." (p 189-190)

Holland (1973) treated values as one of several characteristics, including interests and competencies that create a characteristic disposition or personality type. Locke (1976) distinguished the concept of values from that of need. The latter was regarded as those conditions necessary to maintaining an organism's life and well being. Needs were regarded as subjective and innate while values were believed to be objective and acquired. But it is Katzell's (1964) definition of a value, "that magnitude of a stimulus or job characteristic which evokes a relatively high level of satisfaction" (p 346), which Dawis and Lofquist regarded as being the most similar to their own concept of needs.

The psychoanalytic and self-theoretical orientations classified as psychodynamic (Crites, 1969) have only some aspects in common with Dawis and Lofquist's approach to needs. Some of the needs are the same and work needs are believed to have a reinforcement history (Dawis and Lofquist, 1984). Like Maslow's theory, Dawis and Lofquist believed that individuals will initiate and sustain behaviour aimed at satisfying needs and they placed importance on knowing which needs individuals are attempting to satisfy.

The approach to work needs adopted by Dawis and Lofquist could suffer some of the same criticisms levelled at operant conditioning generally. Of particular concern might be the circuitous nature of the definition of needs and reinforcers. Needs were defined as requirements for reinforcers, and reinforcers defined in terms of their effects on the subsequent frequency of the response, that is the need response, which immediately preceded them.

Needs were thought to be measurable in at least two ways: 1) through questionnaires, inventories, or surveys, in order to gain reported preferences or 2) via observers evaluating the relative reinforcement strengths of stimulus conditions. Because there could be as many need dimensions as stimulus conditions associated with them, the more basic dimensions that underlie needs were sought through factor analysis, these common elements being referred to as *value dimensions*. In the same way that abilities were inferred from skills, values were inferred from the factor structure of needs.

3.4.3 Personality style

While personality *structure* referred to the stable measurements of abilities and values and the relationships among them, personality *style* was defined as the utilisation of abilities in the context of values in terms of the dimensions of celerity, pace, rhythm, and endurance. Personality style represented the process characteristics of the work personality and the individual's typical ways of interacting with the environment. Tolerance of discordance between the individuals and the work environment was described on an adjustment style dimension of *flexibility*. The description of minimal correspondence needed to predict tenure was said to involve knowledge of the individual's flexibility. The adjustment style dimensions or modes used to increase correspondence were those of *activeness* and *reactiveness*.

With instruments for measuring these three adjustment styles at the development stage, Dawis and Lofquist suggested that data on the individual's past history could be used to assess their standing on these dimensions. It was suggested that the highly celerious individual would be expected to have a history of early completion of tasks, behaviour that is approaching being impulsive, and an inclination towards favouring speed of response rather than accuracy. In contrast, low celerity was expected to be characterised by deliberateness, procrastination, and response latency. Participation in a large number of activities or, particularly where high levels of activity were expended was expected to be indicative of an individual exhibiting a high pace. The high level of activity of high-paced individuals was thought to be compulsive in nature and represent an inability to relax.

The variability of the indicators of pace, historical or observed, were expected to show the nature of any rhythm of responding. Endurance, it was suggested, might be inferred from length of tenure in jobs, length of relationships with people, the completion of lengthy projects and the tendency to continue with hobbies, interests, and sporting activities.

It was hypothesised that an individual with a history of participation in a wide range of activities and situations would have a high level of flexibility. Similarly an individual with a heterogeneous group of friends and a successful work history over a wide range of jobs, would be expected to have a high level of flexibility. It was argued that because personality style develops over time, suitable sources of data might include records, such as biographical data, school and work history, and cumulative psychometric data. Other data sources

suggested were clinical observation of behaviour in a number of different settings and supplementary ratings from individuals who have made observations over a prolonged period.

The extent to which an individual adopted the leadership role was expected to be associated with the use of the active mode. The indicators for reactivity suggested were, a history of

"abiding by the rules, carrying out assignments according to prescribed procedures, comfort or satisfaction in highly structured situations and groups, and loyal and continued participation in groups as a member rather than a leader."

(Dawis and Lofquist, 1984, p 64)

Dawis and Lofquist probably did not intend any one of their suggested indicators be used in isolation nor expect the individual indicators to accommodate varying cultural or organisational differences in values. Without measurements which are known to be reliable and valid, their suggested indicators may provide some degree of valid prediction about the adjustment styles of an individual in the interim. They did not seem to be suggesting that any one individual is capable of employing only one of the adjustment modes exclusively but rather that they have a propensity towards the use of a particular one.

Some of the research relating to adjustment styles (Dawis and Lofquist, 1984) has, however, focused upon the exclusive use of styles, upon occupations and organisations able to be clearly identified with a particular adjustment style and upon vocational preference and adjustment of individuals whose preferred style coincides with that of the occupation or organisation.

Dawis and Lofquist (1984) defined the interrelationships among the three adjustment style dimensions of flexibility, activeness and reactivity as in Figure 3.3. They used the notions of a lower and upper threshold on an axis of discordance and a range of tolerable discordance, within which the styles of activeness and reactivity can be applied. The length of time an individual remains in the tolerable range is their *perseverance*, and is said to depend upon the effectiveness of an individual's particular mode of adjustment. Flexibility defined the distance between points O and TL, whilst the range of tolerable discordance and perseverance defined the distance from point TL to the upper threshold on the axis of discordance (TU).

When discordance is above this lower threshold but does not exceed the upper threshold, the individual is said to be within the range of adjustment. The range of unmanageable discordance is that above the upper threshold. Within this range a change to another environment would be expected. Of the four adjustment style dimensions, activeness and reactivity are referred to as adjustment modes. Initially their use and the length of time they operate is determined by the degree of individual flexibility and perseverance.

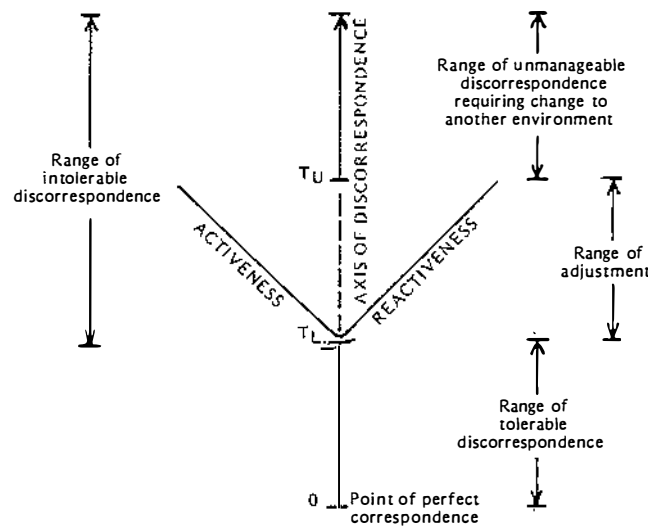


Figure 3.3 Relationships among adjustment style dimensions

Note. From Dawis and Lofquist (1984), p 64.

There are similarities and differences between Dawis and Lofquist's and other treatments of the conditions which necessitate work adjustment and the need to adopt an adjustment style or styles. For Dawis and Lofquist the internal thwarting conditions Crites (1969) wrote of would have involved an individual lacking certain abilities to match the environment's ability requirements. Crites' external thwarting conditions would relate to a failure or inability on the part of the environment to reinforce the work needs of the individual. In summary, thwarting conditions would be the lack of correspondence between the individual and the environment. But Dawis and Lofquist's treatment of conflict did not focus upon types of conflict, such as disturbances of aim and function, as did the earlier researchers of which Robbins (1939) is an example. Of Horney's necessary factors for creative work which were abilities, a lack of extensive conflict, a good level of self-confidence and an interest in work,

only ability considerations were the focus of Dawis and Lofquist's theory. Ichheiser's (1940) conflict of function was represented in Dawis and Lofquist's individual abilities and work requirement correspondence. The identification of moral values as a work need resembled conflict of conviction. Conflicts of ambition and response were represented to some extent by Dawis and Lofquist's social status needs. Like the more sociological approach of Eaton (1952), Dawis and Lofquist were interested in the importance of work and a defined role. In addition they recognised the importance of the failure of top management to delegate authority downward. This failure and concerns about pay were seen by Brinker (1955) as the most significant factors causing frustration.

In Dawis and Lofquist's theory, both the employee and employer are credited with determining the relevant abilities, values and style dimensions in a work personality. The employer determines the behaviour necessary for the achievement of workplace goals, determines the stimulus conditions and provides the reinforcement intended to maintain the desired behaviour, all within the constraints of the wider environmental context. The context of influence can include governmental policies and actions, union activity and other work organisations. The employee affects the work environment by accepting, changing, or rejecting working conditions as specified by the employer. In order to retain workers, an employer is believed to need to take satisfaction into consideration, facilitating it through meeting employee requirements.

3.4.4 The adjustment mechanisms of Dawis and Lofquist and others

Because Dawis and Lofquist's categories of adjustment mechanisms are broad and reasonably comprehensive, most other adjustment mechanisms can usually be reclassified according to their theory as in Figure 2.3. Some involve more than one style. Farrell's (1983) dimensions did not appear to have a Dawis and Lofquist equivalent. On the other hand, Nicholson's analysis of role demands and their impact and the addition of the affective component, appear to represent a reasonable expansion of Dawis and Lofquist's theory.

3.4.5 The development of personality structure and style

The personality style of an individual was expected to stabilise with maturity. Three phases were postulated in this maturation process. The *differentiation* stage was described as the

experimentation, development, and expansion of responses in relation to their variety, range and complexity. A second stage was regarded as one of *stability*, where a response repertoire is being formed and maintained. A third and final period of *decline* was postulated where physiological changes associated with the aging process are expected to affect responses. Within the differentiation stage the development of perceptual and motor skills were thought to predominate. As mastery is achieved over the physical environment and other individuals are interacted with, skills and needs are exhibited and a set of abilities and values developed.

At certain periods, development is expected to be more rapid than others. Examples given of expected rapid development have been puberty and other times where there is change in the physical development of individuals and/or environmental stimuli. Graduation from university might be such a period of rapid development. Abilities and values are said to crystallize and stabilize, the former referring to the keeping of sets of abilities in the personality structure, and the latter to the maintenance of abilities and values at certain levels of strength relative to each other.

An individual's work personality, made up of abilities, values, and style dimensions, is said to mature when there is a crystallized and stable personality structure and style. Physical and psychological maturity generally have been believed to occur about the same time (Anastasi, 1958; Tyler, 1965). This maturity was thought to coincide with the time when most begin employment (Dawis and Lofquist, 1984), which is however also a time characterized by new stimulus conditions. These conditions can produce certain new skills and needs such that the initial employment period results in some change in an individual's skills and needs.

By postulating a maturation of personality style involving developmental stages, Dawis and Lofquist's theory departed from its trait-and-factor foundations that Rounds, Dawis and Lofquist (1987) had identified. Dawis and Lofquist identified fewer developmental stages than Super (1953) but more than either Ginzberg et al. (1951) or Tiedeman and O'Hara (1963). See Figure 2.2 which is a comparison of developmental theorist's work adjustment stages. For Dawis and Lofquist, stages of development seemed to be less central to their theory and to function more as a chronological context for their interest in work personality/work environment correspondence and the stimuli and responses involved. The maturation of the work personality, however, was a developmental stage fundamental to the application of their theory which assumed a mature personality. The time period involved in their developmental

stages were only indicated by their somewhat self-explanatory labelling of the stages of *differentiation*, *stability*, and *decline* (differentiation included substages of experimentation, development, and expansion). The third stage of decline to do with age and aging affecting responses also lacked specificity about the typical age of onset.

Like Ginzberg, Dawis and Lofquist viewed occupational choice as a process rather than an event. They also focused on the interplay between intraindividual and extraindividual determinants, that is between work personality and work environment. However, unlike many others they described the determinants in detail, developed instruments to measure them, and formed propositions about the interrelationships. Osipow's (1975) criticisms of Ginzberg's theory could not be as easily applied to Dawis and Lofquist's approach, those criticisms having been concerned with the truncation of development in early childhood, poor operationalisation of the constructs, and inconsistent research support.

Like Super, Dawis and Lofquist were critical of early occupational prediction models. Although they focused on work adjustment rather than occupational choice, it was attention to many of the difficulties associated with occupational choice theories that influenced the way in which their theory developed. This was evident in the extensive instrumentation used to operationalise their theory. Although they went beyond a single concept approach (like that of a self-concept, Super et al 1967) their additional factors, unlike Neff (1985), included fewer of an occupational choice nature. In addition, Neff included factors such as socioeconomic status, particular aspirations, family preferences, ethnic and demographic barriers, formal education system characteristics and the influence of others, adults and peers.

In keeping with developmental theorists such as Teideman and O'Hara (1963), Dawis and Lofquist also demonstrated an interest in work histories, in particular as a predictor of individual work adjustment styles. But unlike theorists such as Ginzberg and Super they were not interested in the experiences of childhood and adolescence. Dawis and Lofquist's theory was more similar to the approach of Vondracek et al (1986), which post-dated theirs, and which emphasised interaction between an active organism and a dynamic environment. Although Dawis and Lofquist's work has, like other career related theories, been referred to more often in a post hoc way, Hackett, Lent and Greenhaus (1991) noted they have been more successful in their attempts to produce testable hypotheses and standardised methods of measurement than were Super and his associates, for example.

3.5 The work environment

The work environment itself, its nature and complexity, has been described by Dawis and Lofquist (1984) using terms applicable to the work personality. Firstly, the importance of taking into account the diversity of work environments was noted. The increasing diversity was thought to provide more opportunity for unique skills of individuals to be used and to increase the likelihood that needs would be satisfied. However, the enormous number of occupations and the resulting complexity of their interrelationships has made it difficult for individuals to locate occupations which are compatible with their work personalities. Therefore information was sought which would facilitate work adjustment for individuals entering the workforce or changing employment, by allowing them to classify work environments.

The type of information thought helpful to individuals to optimise work adjustment through increasing the likelihood of choosing the best occupation included knowing which occupations have the work environments to meet their needs and what can be brought to a job to make them satisfactory employees. A system was sought which classifies jobs in a sophisticated manner and provides information about groups of occupations which are congruent with work personalities. In this way work adjustment was expected to be optimised through increasing the likelihood of choosing the best occupation. Such a system could of course suffer from the same criticisms applied to the traditional matching jobs and people approach. There may not be an exact match for everyone, some groups of occupations would lack congruence with the needs of most individuals and some occupations may have no match. But the individuals for whom this was the case would still seek work and the positions in question would still need to be filled, despite problems of congruence.

The work environment has been defined usually from the perspective of employers and has involved an account of the work performed, the materials used, the title of the job and the rate of pay. Such descriptions are based on an economic model of work where the individual is regarded as only one of the factors in the production of services and/or goods, with the central focus being the job itself. Dawis and Lofquist noted that task oriented definitions of work usually involved the tasks necessary for the attainment of employer related goals. They maintained that where the understanding of adjustment to work is the main consideration, task requirements would be better translated in terms that identify the abilities needed for the task

performance. Similarly, work-environment descriptions would be better to focus upon how to meet the needs of workers, and how workers can influence work-environment characteristics.

Dawis and Lofquist recognised the enormity of the task of describing the work environment in work personality terms, particularly in view of the complexity of work. The United States' Department of Labor's Dictionary of Occupational Titles (1977) alone describes some twenty thousand jobs. Dawis and Lofquist have found merit in viewing jobs in terms of their similarities and differences and have used the stimulus conditions as a basis for making such comparisons among jobs. They grouped stimulus conditions into two main classes: *cues* and *reinforcers*. The stimulus conditions which signal the type of response which is appropriate and when it should occur were called cues. The stimulus conditions associated with the likelihood of a response occurring were called reinforcers.

Cues were said to be associated with skills. In the expression of a skill, cues were believed to initiate the appropriate response sequences. In part, the level of skilfulness was expected to be linked to the speed with which appropriate cues are perceived. Cues were said also to be associated with reinforcers by signalling which are to be expected and at what strength. On the other hand, reinforcers were described as being associated with needs. Needs were said to be an individual's requirements for stimulus conditions if responding is to be maintained. They were said to arise from previous experience with responding and to be expressed by individuals as preferences for certain stimulus conditions. Effective reinforcers were said to be those which respond to individual needs. The effective reinforcers established by employers are often labelled *rewards*, for example, pay. Other types of rewards are established to form *incentives*, such as bonuses. Other stimulus conditions were thought to represent effective reinforcers because they are congruent with a particular employee's needs. It was contended that work environments can be described in terms of their similarities through identifying the presence and level of reinforcers. Where there are a large number of reinforcers these may be referenced via *reinforcer* factors which can then be used to depict reinforcer patterns.

The description of work environments in terms of ability requirements and reinforcer patterns was referred to as *work environment structure* paralleling the description of the work

personality structure. The work environment, the work personality and relationship between them, thus formed the basis of work adjustment theory.

For both work personality and the work environment, Dawis and Lofquist (1984) regarded basic theoretical concepts having been built upon stimulus and response formulations of behaviour in the laboratory setting. Their concepts of skills and abilities were derived from response dimensions studied in laboratory research and were to do with sensation and perception generally, perceptual and motor skills specifically, and information processing as found in cognitive psychology. The concepts of needs and values were derived from stimulus dimensions in laboratory research relating to reinforcement and conditioning.

3.6 Correspondence

Correspondence is the key concept in work adjustment theory linking the work personality and the work environment. Dawis and Lofquist claimed the maintenance of correspondence becomes a basic motive of human behaviour as each individual attempts to attain correspondence with the environment. In the attempt to achieve correspondence, both individuals and work environments were thought to be constantly changing. It is this continuous and dynamic process of mutual responsiveness which is labelled *work adjustment*.

The degree of correspondence between work personality and work environment was expected to predict tenure and indicate the degree of work adjustment achieved at any one time. The correspondence between the personality and work environments was operationalised by examining the correspondence between the variables of needs and reinforcers, using satisfaction as an indicator. The correspondence between abilities and ability requirements was operationalised using satisfactoriness as an indicator. Satisfactoriness was termed an *external* indicator because it was obtained from sources outside the worker while satisfaction was termed an *internal* indicator because it represented the worker's appraisal of the degree to which their requirements were being fulfilled by the work environment.

As discussed in the previous chapter, section 2.3, Dawis and Lofquist's definition of job satisfaction was a synthesis of earlier definitions (Schaffer, 1953; Hoppock, 1935; Vroom, 1943; Maslow, 1954; Roe, 1956; Dawis, Lofquist and Weiss, 1968; and Smith, Kendall and Hulin, 1969). The resulting definition had job satisfaction as a "pleasurable affective condition

resulting from one's appraisal of the way in which the experienced job situation meets one's needs, values, and expectations" (p 72). Conversely, job dissatisfaction was regarded as an affective unpleasant state which results from the failure to have one's needs, values and expectations met by the job situation.

Satisfactoriness was said to have arisen from employers having objectives, the achievement of which necessitated groups of people to carry out the required separate tasks in a coordinated fashion. Sets of tasks would be allocated to employees along with rules concerning how these tasks are to be undertaken in relation to other tasks. Over time, sets of tasks and rules were believed to become standardised for most employers, which then enables employee performance to be evaluated against a desired standard and compared to other employees. Satisfactoriness referred to a standardized set of work behaviours required of the employee, rather than the contribution of the employee towards the achievement of the greater goals of the employer.

Although the construct of satisfactoriness bears some resemblance to those of performance and productivity, it involves judgements about criteria of good performance as defined by employers rather than the individual.

3.6.1 The relationship between job satisfaction and satisfactoriness

Although Dawis and Lofquist proposed that job satisfaction and satisfactoriness were relatively independent, their use of the word relative implied they expected a relationship, albeit slight. As already discussed satisfaction has not been reported to have an appreciable affect on performance in the literature (Brayfield and Crockett, 1955; Vroom, 1964; Locke, 1976; Iaffaldano and Muchinsky, 1985), but it has been suggested that successful performance causes satisfaction (Locke, 1970; Porter and Lawler, 1968). The construct of satisfactoriness may be different from that of performance.

The relationship of satisfaction to satisfactoriness may be expected to differ from that of satisfaction and performance as discussed previously in chapter two. For example, job satisfaction may be associated with satisfactoriness although it has not been associated with performance. One might expect individuals to achieve greater satisfaction if they have met the expectations of employers and compare favourably with other employees. When

performance is evaluated using other criteria which are not necessarily the standards of the employer one might expect less of an association between satisfaction and performance. At the same time that Dawis and Lofquist described the relationship between satisfaction and satisfactoriness as relatively independent, they regarded satisfaction as a moderator of the relationship between ability-skill correspondence and satisfactoriness. Also they regarded satisfactoriness as a moderator of the relationship between need-reinforcer correspondence and satisfaction. Therefore, the correspondence between their abilities and the job requirements would determine their satisfactoriness only if an individual is satisfied with their job. Similarly, the correspondence between the needs of individuals and the available reinforcers would determine their job satisfaction, only if they were satisfactory workers. Dawis and Lofquist's argument would suggest that the relationship between satisfaction and satisfactoriness would be less independent for groups achieving either satisfaction or satisfactoriness.

3.6.2 Tenure

A reasonable level of the two primary indicators of the work adjustment process, *satisfaction* and *satisfactoriness*, were thought to be required for the individual to either choose to remain in the work environment or be retained on the job. Tenure, the third and final indicator of correspondence between the work personality and the work environment was defined as, "the length of time an individual remains in a work environment" (Dawis and Lofquist, 1984 p 73). Because it was recognised as both an indicator and result of adjustment to work, tenure was posited as indicative of adequate levels of satisfaction and satisfactoriness. As an outcome of work adjustment, it was regarded as a criterion measure in its prediction.

3.7 Predicting work adjustment

In predicting work adjustment, Dawis and Lofquist argued that both satisfaction and satisfactoriness fluctuate with changes over time in both individuals and their work environments and that there are minimum levels of both required by individuals and work environments, respectively. These minimum levels were thought to be best established by observing individuals who have remained in a work environment. In this way limits of satisfactoriness and satisfaction could be established and used to predict tenure, see Figure 3.4. That is, the level of satisfactoriness observed for a group with substantial tenure in

specific work environments sets the limits of satisfactoriness from which tenure can be predicted for others.

As well as being indicators of correspondence, satisfactoriness and satisfaction were also regarded as outcomes in the work adjustment process during a period of adjustment, that is,

"they are criterion measures of work adjustment that can be used to establish a methodology for the prediction of work adjustment from the assessment of work personalities in relation to work environments." (Dawis and Lofquist, 1984, p 57)

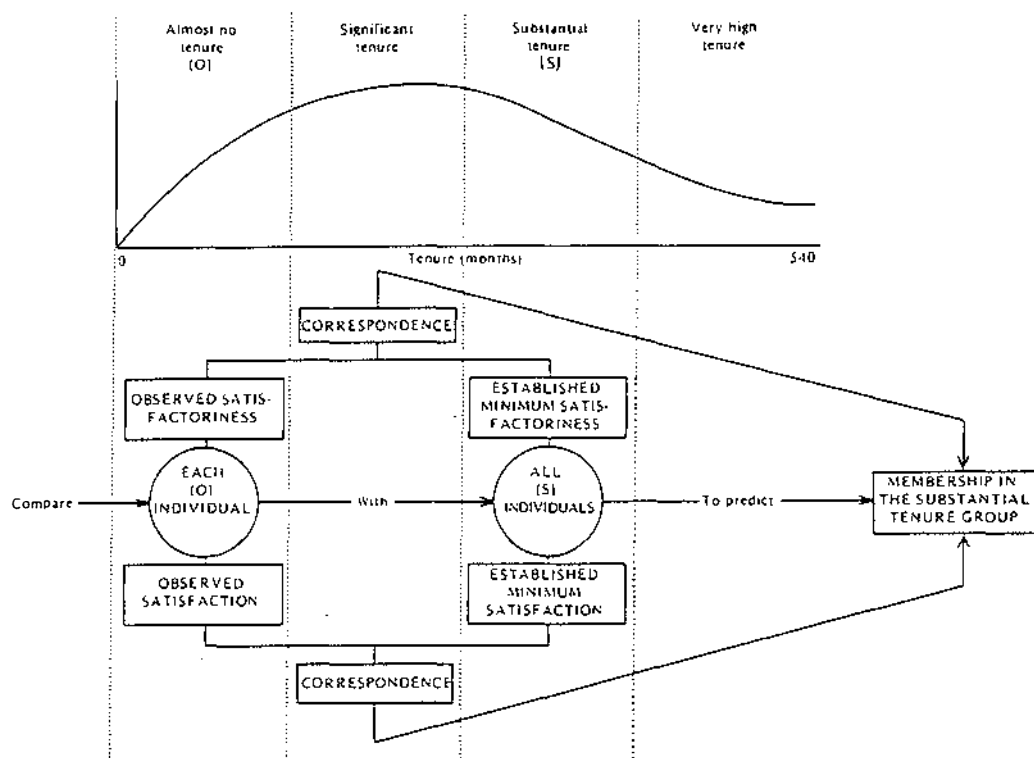


Figure 3.4. Prediction of Tenure

Note. From Dawis and Lofquist (1984), p 58.

Work personalities are inferred to correspond with the specific work environment if they fall within the limits of satisfactoriness and satisfaction for which substantial tenure can be predicted. The limits for specific personality characteristics that are needed for adjustment to the associated work environments are therefore established by the different kinds of work

personalities for which correspondence can be inferred, see Figure 3.5. These limits can then be used to estimate the degree of correspondence between other individuals and the specific work environments. The correspondence estimated in this manner can be used to predict satisfactoriness and satisfaction.

It was argued that because satisfactoriness and satisfaction together can be used to predict tenure, the correspondence between work personality and work environment can be used to predict tenure, given relative stability of the work personality. This stability is expected after the structure and style variables of abilities and values, have undergone a "process of development and differentiation" (p 58). Both ability requirements and reinforcer patterns of the work environment were to be obtained by studying workers with substantial tenure who are satisfactory, in the case of the former, and who are satisfied, in the case of the latter.

The variables of the structure and style of the work personality and the work environment were operationalised through the development of various psychological instruments.

3.8 Measurement of Dawis and Lofquist's work personality

The work needs, abilities and adjustment style dimensions of the work personality were operationalised by Dawis and Lofquist via instruments designed to measure each of the dimensions. The theory of work adjustment in operational terms is depicted in Figure 3.8.

Because they represent common components, the measurements of underlying dimensions of abilities and values were expected to be more stable than measurements of skills and needs. The relationships that can occur between abilities and values were recognised as complex and at times as potentially resulting in conflict, for example, where values can compete in relation to an ability. Nevertheless, it was thought that most individuals do not experience such conflict in a lasting form and instead are able to behave in an integrated manner on the whole.

The ability-value relationships are represented by *expressed* or *stated interests*. In the case of sampling activity preferences experienced by most individuals, they can be scaled psychometrically to give *measured interests*. Such a structured approach is believed to provide a superior sampling of activities and a good measure of the entire set of preferences. The

assessment of the reliability of the measures and comparisons of the activity preferences of different individuals and groups are also thought to be made easier using this procedure.

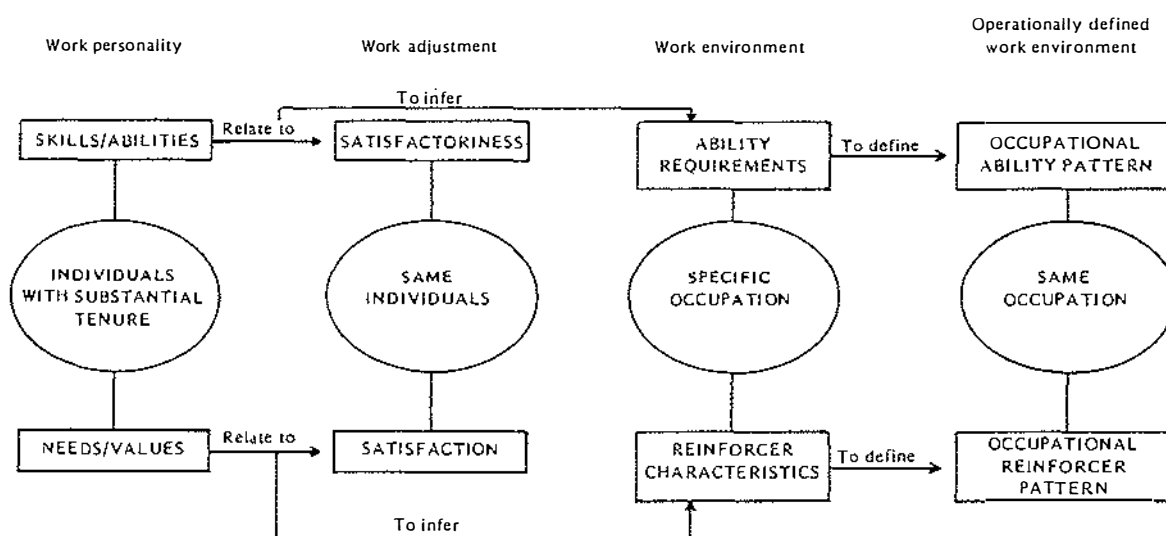


Figure 3.5 Establishing the requirements for work adjustment

Note. From Dawis and Lofquist (1984), p 59.

Observed or *exhibited interests* are compared with measured interests and in the case of agreement between the two, are called *validated interests*. Validated interests are said to result from experiencing certain combinations of values and abilities. The degree to which interests are stable is believed to depend upon the stability of an individual's set of values and abilities. It is argued that a restricted experience with some combinations of values and abilities may explain the later emergence of what are referred to as *latent interests*. The use of the word latent here is distinct from its use in covariance structure modelling where it refers to underlying factors or unmeasured endogenous or dependent variables.

A second way that ability-value relationships are expressed is by noting the likelihood of certain behaviours occurring. This likelihood of behaving in certain ways is known as *expressed* or *stated personality* descriptions. Where these descriptions are made via a psychometric instrument aimed at sampling and scaling a wide range of behaviours in a systematic way in accordance with theoretical models, these are known as *measured*

personality descriptions. Where personality descriptions are based on observation these are called *descriptions of exhibited personality* and when these are in agreement with measured personality descriptions, they are termed *validated personality descriptions*. However, they are said to refer only to important aspects of the personality rather than a complete personality description.

Although Dawis and Lofquist consider the description of interests and personality as useful in examining ability-value relationships, they adopted a more direct approach by starting with ability and values measurements rather than the constructs that are another level again away from their data. Abilities and values were therefore used as the principal personality variables and interests and personality descriptions were relegated to a supporting role.

3.8.1 The measurement of abilities

Dawis and Lofquist (1984) recognised the difficulty of the task of assessing the many abilities. Multifactor test batteries had been found to represent the most feasible and economic method of assessing abilities (Super, 1958). However, as Dawis and Lofquist noted the batteries may examine 9 to 15 ability dimensions and each of these might include one or more of the basic abilities depicted in Table 3.4. Most of the test batteries were said to concentrate on symbolic abilities, to usually include assessment of sensori-motor abilities to a small degree and to exclude the assessment of interpersonal abilities, which are usually assessed by observation.

The General Aptitude Test Battery (GATB) of the USA Department of Labor (1970) was provided as a good example of a multifactor test battery. It assesses nine abilities which sample several of the major ability dimensions. Dawis and Lofquist (1984) maintained that the value of the GATB (1970) lies in having been standardised on large samples of workers in a broad range of occupations and being used to describe occupational ability requirements.

3.8.2 The measurement of work needs

The concept of needs was operationalised by developing the Minnesota Importance Questionnaire (MIQ), (Gay, Weiss, Hendel, Dawis and Lofquist, 1971). The MIQ focuses upon the relative importance to an individual of having twenty particular needs reinforced. Both Super (1970), in his Work Values Inventory, and Rokeach (1973), in his rank-order

measure of values, had used the dimension of importance to define values. But Dawis and Lofquist used this dimension of importance to define needs. By regarding values as reference dimensions for the description of needs, through using factor analysis to group needs according to their underlying communalities, they identified the more basic dimensions.

The factor structure of the needs of the MIQ, as organised around six value dimensions, is presented in Table 3.5. The MIQ had developed out of the Work Adjustment Project at the University of Minnesota to assess 20 work-related needs. The varimax factor loadings are given in Table 4.1. Seven factors were found, but only six of them were deemed interpretable in representing the 20 need dimensions underlying the MIQ data. The factors were labelled as:

"Achievement: the importance of an environment that encourages accomplishment

Comfort: the importance of an environment that is comfortable and not stressful

Status: the importance of an environment that provides recognition and prestige

Altruism: the importance of an environment that fosters harmony with and service to others

Safety: the importance of an environment that is predictable and stable

Autonomy: the importance of an environment that stimulates initiative." (Dawis and Lofquist, 1984, p 29)

The description of the six factor derived values by the twenty needs of the need scale and the Minnesota Importance Questionnaire statements used to measure these are given in Table 3.5. Dawis and Lofquist listed the values according to their source of the reinforcement, environmental, social, or self, and used multidimensional scaling to identify pairs of contrasting values, as in Table 3.6. Their three-dimensional arrangement of the values is reproduced in Figure 3.6.

Two forms of the MIQ are available and are described in chapter five in the section concerned with Dawis and Lofquist's instruments. The MIQ is claimed to give a wide coverage of the work-relevant needs which can then aid in the description of value dimensions of the work personality structure. Occupational reinforcer patterns have been generated to depict work environments in MIQ terminology.

Table 3.5 Description of values by need scale and statement

VALUE	NEED SCALE	MINNESOTA IMPORTANCE QUESTIONNAIRE
Achievement	Ability utilization	I could do something that makes use of my abilities
	Achievement	The job could give me a feeling of accomplishment
Comfort	Activity	I could be busy all the time
	Independence	I could work alone on the job
	Variety	I could do something different every day
	Compensation	My pay would compare well with that of other workers
	Security	The job would provide for steady employment
Status	Working conditions	The job would have good working conditions
	Advancement	The job would provide an opportunity for advancement
	Recognition	I could get recognition for the work I do
	Authority	I could tell people what to do
Altruism	Social Status	I could be "somebody in the community"
	Co-workers	My co-workers would be easy to make friends with
	Moral values	I could do the work without feeling it is morally wrong
Safety	Social Service	I could do things for other people
	Company Policies and practices	The company would administer its policies fairly
	Supervision (human)	My boss would back up the workers (with top management)
	Supervision (technical)	My boss would train the workers well
Autonomy	Creativity	I could try out some of my ideas
	Responsibility	I could make decisions on my own

Note. From Dawis and Lofquist (1984), p 29.

Table 3.6 The source of reinforcement for pairs of values

Sources of reinforcement	Values	
Environmental	Safety	Comfort
Social	Status	Altruism
Self	Achievement	Autonomy

Note. From Dawis and Lofquist (1984), p 30.

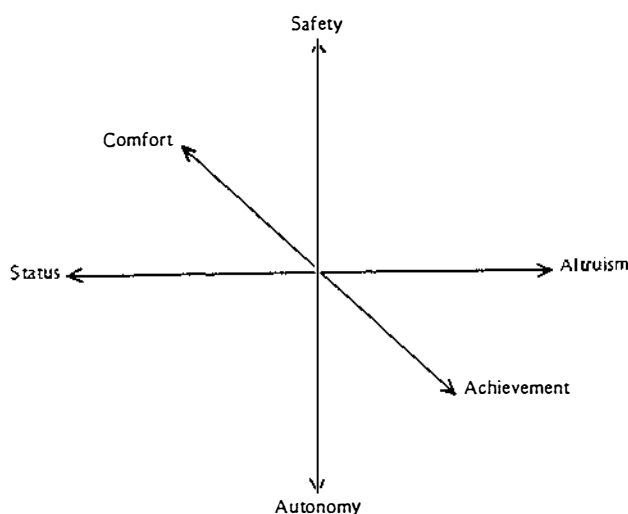


Figure 3.6 Three-dimensional arrangement of values

Note. From Dawis and Lofquist (1984), p 30.

3.8.3 The measurement of personality style

The personality style dimensions translated into the personality dimensions of *celerity*, *pace*, *rhythm* and *endurance*. They were operationalised only in an experimental exploratory rating form. The dimensions were used to describe individual behaviour, celerity describing speed of response, pace the average level of activity, rhythm the pace pattern and endurance, the length of time of interaction with an environment. For the original experimental form, from

which the modified version for the present research was developed, refer section A.4 of Appendix A. An example of different patterns of responding is given in Figure 3.7 where it can be seen that the steepness of the lines indicate rate of responding or celerity.

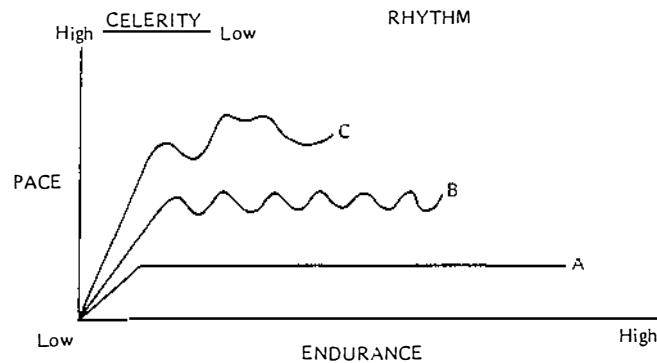


Figure 3.7 Interrelationships of celerity, pace, rhythm, and endurance

Note. From Dawis and Lofquist (1984), p 32.

Line length shows the continuance or endurance of behaviour over time. The distance the lines travel up the graph represents the pace or effort expended, and the straightness of a line exhibits how constant the activity level is, that is the response rhythm.

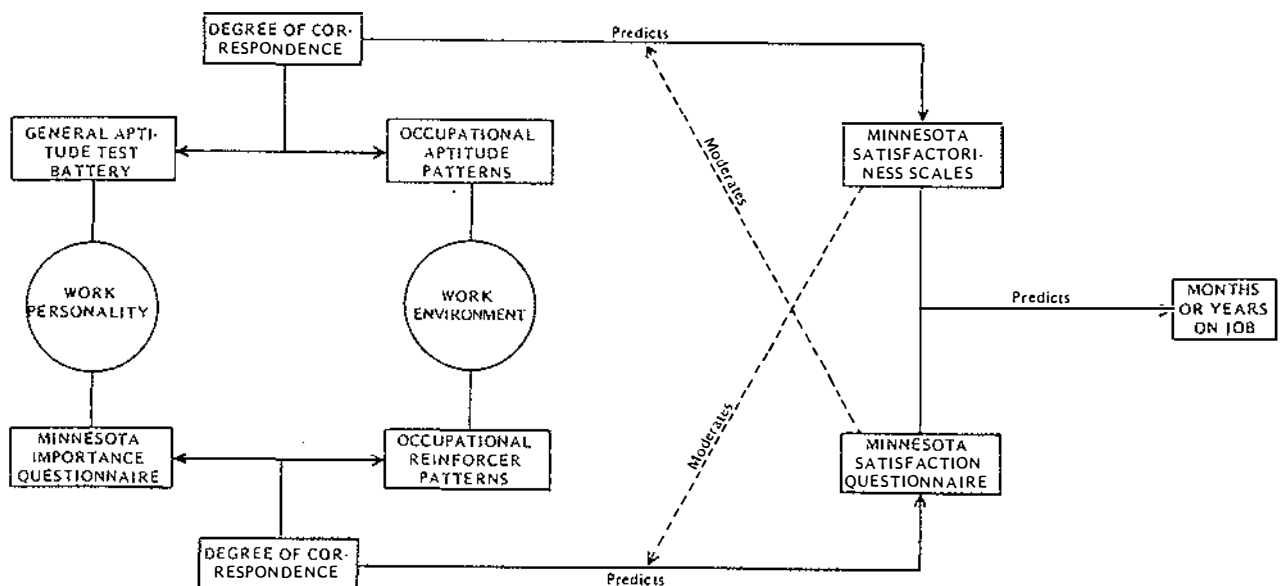


Figure 3.8 The theory of work adjustment in operational terms

Note. From Dawis and Lofquist (1984), p 75.

Because Dawis and Lofquist have not studied the dimensions of personality style widely the constructs involved needed further clarification and instruments other than the exploratory ones developed.

The psychometric instruments thought to yield information about the dimensions of personality style included personality inventories and tests of ability. It was suggested, for example, that the completion of repetitive tasks, such as responding to the MIQ itself, may indicate endurance and the speed with which self-report inventories are completed may be a guide to an individual's level of celerity and pace.

3.9 Measurement of work environment constructs

Instruments were developed to measure the structure and style of the work environment in terms commensurate with these aspects of the work personality and its operationalisation.

3.9.1 The measurement of work environment structure

In the measurement of work environment structure, the occupational aptitude patterns (OAPs) as developed by the US Department of Labor (1970, 1979) were given as a good example of establishing ability requirements for occupations. Job analyses are undertaken for the same occupation in different sites and the U.S. Department of Labor's GATB (1970) is administered. Three or four separate ability requirements are defined by their correlation with a criterion such as productivity, by the mean score level and standard deviation size, and by an importance rating of the ability to job performance. The ability cutoff scores are determined such that individuals in the top and lower halves of the distribution of criterion scores can be identified. For example, OAPs and GVNS or general learning ability, verbal ability, numerical ability and spatial ability, have been developed for several occupations such as biologist, botanist, soil conservationist and zoologist.

Dawis and Lofquist's summary of other approaches in establishing ability requirements included Ghiselli's 1966 taxonomy of occupations. This was derived from validity coefficients of occupational aptitude tests, the Job Psychograph of Viteles (1932), Paterson, Gerkin and Hahn's (1941, 1953) Minnesota Occupational Rating Scales and the Minnesota Job requirements questionnaire (Desmond and Weiss, 1970) which all used estimation methods.

The estimation method develops ability requirements for many occupations quickly and they can be applied with reasonable confidence. The OAP approach uses the same instrument (GATB) to measure both abilities and ability requirements and bases the latter on the direct measurement of an incumbent worker's abilities.

Occupational Reinforcer Patterns (ORPs) were arrived at to describe the work environment in need-value terms through using the Minnesota Job Description Questionnaire (MJDQ), of Borgen, Weiss, Tinsley, Dawis and Lofquist (1968). This presented the twenty MIQ need-reinforcer statements in a multiple rank-order format to be rated by supervisors and incumbents for each occupation "in terms of the relative presence or absence of the reinforcers described in the statements" (Dawis and Lofquist, 1984, p 40). A twenty-first statement was included to accommodate the multiple rank-order format which uses statements in blocks of five.

The expression of ORPs in the same terms as the MIQ allows comparisons of profiles for an individual. Although other approaches could be applied in relation to the description of the reinforcer systems of work environments Dawis and Lofquist had not found others in use. The other approaches they referred to were, Super's work Values Inventory (1970), England's Personal Values Questionnaire (1967), Rokeach's Survey of Values (1973), and the Allport, Vernon and Lindzey Study of Values (1970).

They noted that others have used job satisfaction studies to infer need-satisfying characteristics (Campbell & Pritchard, 1976; Herzberg, Mauser and Snyderman, 1959; and Schaffer, 1953) or have used needs, interests and personality data of individuals in different occupations. Dawis and Lofquist with others (Weiss, Dawis, England and Lofquist, 1965) have employed a method similar to the OAP approach to determine reinforcer systems. Firstly, the needs and values of individuals in different occupations were measured. The patterns of needs and values that were able to discriminate among occupations, and correlate significantly with a criterion, were determined.

The two sets of dimensions, ability requirements and need/value reinforcer patterns which make up work-environment structure, were combined in a single system by cross-classifying occupations using the two sets of dimensions to produce the Minnesota Occupational Classification System, (MOCS) Dawis and Lofquist, (1974). A broader coverage of

occupations was achieved by the Minnesota Occupational Classification System II (MOCS II), Dawis and Lofquist, Henley, and Rounds (1979/1982). Two axes were used. One was based on the Dictionary of Occupational Titles coding system. Occupations were presented in three ability requirement levels (high, moderate, average) for worker functions in the three separate fields of data, people, and things. This produced 27 ability-requirement groups. The second axis represented the work environment classified in terms of occupational reinforcers present.

The reinforcer environments were grouped into six occupational reinforcer clusters yielding 28 groups or taxons that gave information about 1,161 separate occupations of which 1094 had occupational aptitude data (OAPs) and 184 had occupational reinforcer potential data (ORPs). Of the occupations, 723 had been classified by expert raters into one of the six major occupational reinforcer clusters.

3.9.2 The measurement of work environment style

It was considered important by Dawis and Lofquist that information about the work environment style should also be part of descriptions of work environments, but because of the newness of this concept at the time, the necessary psychometrically adequate measures were still being developed. Three other assessment measures based on clinical judgements were available instead.

One method was that of direct observation via job analyses concerned with the interaction of work environment and workers. The observers could be job analysts, supervisors, or workers. The observation process was able to be assisted by the use of structured instruments which focus on whether certain observable environmental behaviours exist in that setting. A second method used was that of estimation. Ratings are obtained from individuals who are considered to be informed about that occupation. This method involves developing valid and reliable rating instruments like the MJDQ but using environmental style variables. A third method was one of inference which uses employee data from a work environment that describes individuals in terms of personality style. The characteristics of work environment style are inferred from these descriptions.

Each of the three methods are considered to have some limitations. It was therefore recommended that at least two be used in conjunction to provide a description of work

environment style. Dawis and Lofquist (1984) also pointed to earlier studies of the US Department of Labor which have described work environments in their 1965 Dictionary of Occupational Titles, in terms of requisite personality traits and the reinforcer characteristics present. Other earlier psychological studies have related the description of occupations to the typical personalities of their members (Harrower and Cox, 1942; Roe, 1946, 1949, 1950, 1952; and Steiner, 1948).

3.10 Measurement of the correspondence itself and its outcomes

The operationalisation of the formal propositions of Dawis and Lofquist's theory of work adjustment necessitated the operationalisation of the key construct of correspondence and those associated with it, the indicators of satisfactoriness and satisfaction and their hypothesised outcome, tenure.

3.10.1 The measurement of correspondence

Research in the Work Adjustment Project has principally concentrated on the need-reinforcer correspondence and satisfaction. When satisfaction is predicted from need scores, the closeness of the observed satisfaction to that predicted is employed as a measure of the correspondence between the reinforcer pattern of the work environment and the individual's needs.

The relationship of correspondence has been inferred and expressed technically as a correlation coefficient. Correlations have been used to assess the closeness of predicted satisfactoriness to observed satisfactoriness as a measure of the correspondence between an individual's abilities and the work environment's ability requirements.

Correspondence has been expressed as a difference score, the square of the differences, an example being the difference between vocational needs and job rewards for the same 20 work aspects. Also correspondence between individual's needs and the reinforcer pattern has been estimated by comparing satisfaction predicted from need scores with observed satisfaction.

3.10.2 The measurement of job satisfaction

Job satisfaction has been measured using many different instruments (Robinson, Athanasiou and Head, 1969) and the authors of early examples of such instruments as listed by Dawis and Lofquist (1984, p 72) were "Hoppock (1935), Kerr (1948), Brayfield and Rothe (1951), Baehr (1953), Morse, (1953), Johnson (1955) and Twery, Schmid, and Wrigley (1958)". Hoppock's Job Satisfaction Blank (JSB), a four-item measure of job satisfaction, was believed to be the most used. Each item consisted of seven statements and the statement which best represented a respondent's feelings about their job was endorsed. The seven statements were on a continuum with extreme dissatisfaction at one end and extreme satisfaction at the other. The reported reliability of the JSB is in the .80s. Other instruments included the Cornell Job Descriptive Index (JDI) of Smith, Kendall and Hulin (1969) and the Minnesota Satisfaction Questionnaire (MSQ) of Weiss, Dawis, England and Lofquist (1967).

The JDI uses five scales consisting of nine to eighteen items. The items measure satisfaction with work, supervision, pay, promotion and co-workers and are descriptions, using a word or phrase, of these five aspects of a job. The respondent indicates whether the items describe the job. Reliabilities for the JDI were claimed to be satisfactory. The MSQ assesses satisfaction via 100 items taking into account 20 different features of the work environment. These different aspects represent the work reinforcers and they pertain to the 20 psychological needs as shown in appendix H. Each item is rated on a 5-point scale ranging from *not satisfied* to *extremely satisfied*. Dawis and Lofquist (1984) claimed the reliability and validity data supported the use of the MSQ in research and in practice. The instrument is advocated for use in work adjustment theory research because it was designed to assess dimensions of job satisfaction which exactly parallel the dimensions of needs the Minnesota Importance Questionnaire (MIQ) measures.

3.10.3 The measurement of satisfactoriness

Satisfactoriness as a standardized set of work behaviours required of the employee rather than representing their contribution towards the achievement of the greater goals of the employer was assessed in terms of the degree to which task requirements are met and rules are followed. It was noted that usually in the majority of organisations, satisfactoriness of employees is judged via supervisor ratings. It was considered desirable to facilitate the

assessment by developing a single measuring instrument, the Minnesota Satisfactoriness Scales (MSS). This instrument allows the theory to be tested in different types of work environments but under similar conditions. The MSS was developed from a literature search to identify the type of information which may show satisfactoriness, Gibson, Weiss, Dawis and Lofquist (1970). Experimental rating forms used indicators such as quantity and quality of work, job suitability, promotability, merit in relation to pay rises, and frequency of absences, lateness, accidents and disciplinary actions. Two factors were identified in preliminary analyses which accounted for the variance in most groups of employees. These factors were labelled performance and conformance. The former was represented by quality of work, promotability and meriting a pay rise and the latter by frequency of absences, lateness and accidents. The experimental scales, resulted in the development of the MSS as a 28-item rating questionnaire.

The rater compares an employee in relation to their work group on a 3-point scale using the categories of not as well, about the same, or better; or the categories of less, about the same, or more (Dawis and Lofquist, 1984 p 71). The comparisons were made about the 20 work needs. Refer to Appendix H.2 for examples of presentation of these in the MSS.

Other items ask about promotability and whether a pay rise is merited. A rating of the employee's satisfactoriness on the whole when compared with others doing the same work is obtained. This rating asks in which quarter of the distribution of other workers a particular employee would be placed, in terms of certain factors. These factors are listed in Appendix H.2. This judgement was to be made with respect to overall competence, the effectiveness of the job performance, proficiency and general overall value. All the elements of successful job performance were to be taken into account and these were specified as knowledge of the job and functions performed, quantity and quality of output, relations with subordinates, equals, and superiors, ability to get the job done, intelligence, interest and response to training. The rater was asked "In other words, how closely does he/she approximate the ideal, the kind of worker you want more of?" (Dawis and Lofquist, 1984, p 206).

The MSS is scored using five scales, general satisfactoriness, performance, conformance, dependability, and personal adjustment. Internal consistency reliabilities for the scales were given as ranging between .69 and .95 with a median of .87.

Two criterion variables of performance and effectiveness have been identified, as noted by Campbell, Dunnette, Lawler and Weick (1970). Performance referred to the evaluation of on the job behaviour, and effectiveness referred to the way in which the employee contributed to the objectives of the organisation. Of the two criteria, the MSS measured the performance-criterion variables. Dawis and Lofquist justified their choice of measuring performance-criterion variables over effectiveness criteria by emphasising that the theory of work adjustment relates more to individual performance than to organisational objectives. They also noted there are greater difficulties associated with measuring effectiveness criteria. Some factors were expected to be beyond an employee's control, such as those of a market, technological and/or social nature. Problems have been found in at least three areas, those of definition, data collection and use. Dawis and Lofquist gave an example where in a sample of 620 manufacturing firms an enormous variation was found in the formulae. Up to 17 different formulae were being used to calculate absenteeism (Vander Noot, Kunde, and Heneman, 1958).

3.10.4 The measurement of tenure

Tenure was claimed to be one of the easiest indicators of work adjustment to observe and measure. In practice, already recorded information and reports of tenure are often depended upon. Because considerable time must pass in some cases before an actual measure of tenure can be obtained, the shorter term indicators of satisfaction and satisfactoriness have been the measures often relied upon. In defining tenure Dawis and Lofquist (1984) identified three kinds. They were position or job tenure, organisational tenure, and occupational tenure. The most frequently used meaning or meanings of tenure in work adjustment research were said to be those related to position or occupation (Strong, 1943; Cherry, 1974; Hunt and Smith, 1945; Thorndyke and Hagen, 1959; Porter and Steers, 1973; Farris, 1971; and Rabowitz and Hall, 1977).

Position or job tenure from a work adjustment theory perspective is identified as the least ambiguous of the tenure measures, because it can be seen as directly dependent upon the interaction of an individual with a specific work environment. However, because position or job tenure is often limited to a shorter time period it is regarded as being less representative of career adjustment than is occupational tenure. It was concluded that studies of job satisfaction and tenure naturally use position tenure while studies concerning career

satisfaction employ occupational tenure. But in the broadest study of work adjustment, both kinds of tenure were believed to be needed as outcome criteria (Dawis and Lofquist, 1984).

CHAPTER FOUR

WORK ADJUSTMENT THEORY: PREVIOUS RESEARCH, CRITICISMS, AND THE PRESENT STUDY

4.1 Work adjustment theory research

Dawis and Lofquist have grouped research pertinent to their theory into that relevant to the formal propositions and that which relates to aspects of the theory and its application. Some of the research discussed relating to the propositions has been conducted to test these specifically. The research of others, usually not designed to test the theory, has been reinterpreted in relation to it. Dawis and Lofquist have grouped research other than that relating to their formal propositions into those areas concerned with needs, values and reinforcers, and adjustment styles.

4.1.1 Proposition related research

Proposition I, in Table 3.1, was said to lead to the expectation that measured satisfaction and satisfactoriness are relatively independent. Data showing correlations between sets of scores of satisfaction and satisfactoriness have been interpreted as confirming the expectation. Weiss, Dawis, Lofquist and England (1966) found the range of the correlations between the two measures to be .13 to .31 with the variance common to both not exceeding 10% for any of the six occupational groups involved. Studies in the applied psychology literature have also been found to support the independence of constructs very similar to satisfaction and satisfactoriness, that is, those of job performance and job satisfaction (Brayfield and Crockett, 1955; and Pervin, 1968). Support for Proposition II, see Table 3.1, was shown by the closeness of predicted satisfactoriness, from ability test scores, with observed satisfactoriness expressed as a correlation coefficient for groups of four occupations. Studies in the literature have shown significant relationships between other measures of satisfactoriness such as supervisor ratings of job performance and grades in occupation training programmes (Ghiselli, 1966; and U.S. Department of Labor, 1970). Support has been found for a corollary of Proposition II, knowledge of individual's abilities and satisfactoriness allows the determination of the ability requirements of the work environment. This corollary is believed to be corroborated by the development of occupational aptitude patterns (U.S. Department of

Labor, 1970) and selection test batteries which have established cutoff scores which describe the ability requirements of the relevant environment.

In part, Proposition III states that satisfaction is a function of the correspondence between the reinforcer pattern of the work environment and individual's values. Much of the research in the Work Adjustment Project has concentrated on need-reinforcer correspondence. Support has been found for this proposition using the closeness of satisfaction predicted from need scores, to observed satisfaction as a measure of correspondence between needs and reinforcer patterns (Dawis and Lofquist, 1984; and Betz, 1969). Elizur and Tziner (1977) found a canonical correlation of .84 between 20 work aspects satisfaction scores and their corresponding job rewards.

A corollary of Proposition III, knowledge of values and satisfaction of individuals allows the effective reinforcer pattern of the environment to be identified, has been supported by studies concerned with the development of the U.S. Employment Service's Occupational Aptitude Patterns. The reinforcer pattern of an occupation is inferred from the correlation of need and satisfaction scores.

Proposition IV, Table 3.1, has received support (Dawis and Lofquist, 1984). A Work Adjustment Project study found that the prediction of satisfactoriness from ability scores was more accurate for a high satisfaction group than for a group with low satisfaction scores. The levels of prediction of job performance criteria from scores on the Employee Aptitude Survey were found to differ for different types of satisfaction, that is job performance was moderated by satisfaction. If satisfaction is regarded as an indicator of motivation, the work of Locke, Mento and Katcher (1978) can be taken to support Proposition IV. Ability was found to predict performance better when groups were homogeneous in their motivation.

Proposition VI, the probability that an individual will be forced out of the work environment is inversely related to their satisfactoriness, was supported for satisfied but not dissatisfied groups. Proposition VII received some support in a study by Taylor and Weiss (1972). The degree to which job termination could be predicted from satisfaction, and biographical items, age, number of dependents, education and gender, was investigated using the MSQ. Only satisfaction had some success in predicting job leavers. Dawis and Lofquist referred to reviews of employee turnover research having shown job satisfaction to be consistently

negatively related to turnover for a wide variety of occupational groups (Munchinsky & Tuttle, 1979; and Porter & Steers, 1973). These same reviews have shown absenteeism to be similarly related to job satisfaction. Dawis and Lofquist (1984) argued that if absenteeism is viewed as the beginning of departure from a job, Proposition VII is supported further.

Dawis and Lofquist (1984) reported that Proposition VIII, a combination of Propositions VI and VII, see Table 3.1, has been supported. It was found that individuals who were both satisfied and satisfactory at time one were more likely to remain in a job at time two than individuals who were either unsatisfactory, dissatisfied, or both.

Proposition IX, see Table 3.1, has been undergoing longitudinal study by Dawis and Lofquist. Indirect evidence has been found in the studies concerned with changes in abilities and interests with tenure (Bentz, 1953). Interests have become more similar to characteristics of the occupational group (Strong, 1955). For long-tenured individuals the relationship between job satisfaction and vocational interest-occupation congruence has been found to be positive, Weiner and Klein (1978).

4.1.2 Research not relating directly to the propositions

Dawis and Lofquist's discussion of research other than that directly related to the propositions focused on their reference dimension or values, that is the factor structure of the MIQ as determined by factor analysis.

Using a principal factor solution with squared multiple correlations as communality estimates and orthogonal rotation to a varimax criterion, the factor structure of the MIQ was able to be organised around six dimensions (Gay, Weiss, Hendel, Dawis and Lofquist, 1971). Table 4.1 summarises the factor structure for the large group (N = 5,358). Four factor analyses of MIQ data were performed on the MIQ data of vocational rehabilitation clients (N=1,621), employed workers (N = 3,033), college students (N = 419) and a heterogeneous group of individuals (N = 5,358) that included the three groups above plus 285 vocational-technical school students. The negative loadings in factors I, III, IV, V, and VI were said to be an artifact of the analysis that can be reversed by reflecting the dimension to give positive loadings. The size of the loadings, positive or negative, were said to give the significant information to identify the factor dimensions.

The factors were interpreted as representing, in the case of factor I, safety in a work environment which is predictable, factor II autonomy, factor III a preference for comfort, factor IV opportunities for altruism, factor V achievement and accomplishment and factor VI opportunities for status. Factor VII was considered a residual factor because of its lack of meaningful content.

Table 4.1 Varimax Factor Loading Matrix for Total Group (n = 5,358)

MIQ SCALE	FACTOR							R^2
	I	II	III	IV	V	VI	VII	
Ability utilisation	-.16	.38	-.21	-.25	-.56	-.11	.00	.60
Achievement	-.18	-.28	-.20	-.34	-.56	-.17	-.03	.61
Activity	-.27	.07	-.67	-.14	-.19	-.11	.04	.59
Advancement	-.37	.33	-.08	.03	-.41	-.37	-.12	.58
Authority	-.21	-.54	-.17	-.04	-.02	-.40	.06	.53
Company policy/practices	-.64	.14	-.09	.33	-.12	-.07	-.09	.58
Compensation	-.49	.13	-.20	.01	-.09	-.34	-.29	.50
Co-Workers	-.22	.05	-.37	-.44	-.07	-.28	-.06	.46
Creativity	-.10	.77	-.12	-.19	-.22	-.05	-.02	.70
Independence	-.16	.22	-.58	-.01	-.05	-.12	-.04	.43
Moral values	-.22	.18	.03	-.47	-.05	-.00	-.04	.28
Recognition	-.33	.28	-.19	-.05	-.32	-.45	-.05	.54
Responsibility	-.11	.79	-.20	-.13	-.19	-.14	-.03	.75
Security	-.44	-.09	-.42	-.03	-.20	-.26	-.23	.54
Social service	-.03	.18	-.28	-.51	-.22	-.06	.11	.44
Social Status	-.24	.21	-.23	-.13	-.12	-.55	-.00	.45
Supervision-human	-.74	.21	-.12	-.18	-.05	-.10	.05	.66
Supervision-technical	-.70	.13	-.24	-.17	-.12	-.11	.14	.63
Variety	-.08	.34	-.56	-.16	-.05	-.17	.01	.49
Working conditions	-.49	-.00	-.41	-.12	-.16	-.25	-.24	.58
Contribution of factor	2.71	2.26	2.03	1.16	1.21	1.28	.27	10.91
Proportion of common variance	.25	.21	.19	.10	.11	.12	.02	1.00
Proportion of total variance	.14	.11	.10	.06	.06	.06	.01	.51

Note. From Dawis and Lofquist (1984), p 83.

The generalisability of the factor structure was found to be similar for age groups but differed between the sexes in each age group. Separate factor analyses for male ($N = 1,609$) and female ($N = 1,674$) data were said to elicit factor structures as for the total group. It was concluded that six dimensions were sufficient to describe the common variance in the 20 MIQ need dimensions. Dawis and Lofquist noted that the value dimensions tended to suggest areas of importance which may go beyond those the MIQ assesses. An example given was that the safety values assessed by the MIQ touched on the importance of company policies and practices and of supervision. It was felt that more complete assessment may identify other reinforcers in a job that contribute to a safe environment, such as stability of management, company size and reputation and position of the company in the marketplace. It may be more appropriate to say that their label of safety is not particularly descriptive of the needs representing that factor. The needs, company policies and practices, and supervision both technical and to do with human relations, could equally well be interpreted as a management factor.

In the factor analysis of 6,000 raters (Shubsachs, Rounds, Dawis and Lofquist, 1978) on reinforcer patterns for 109 occupations that represented the distribution of the U.S labour force, perceptions of work reinforcers paralleled the six-value structure of need-reinforcer preferences. The data was represented well by three factors, a self-reinforcement factor, an environmental/organisational factor and a reinforcement via altruism factor. The three factors were believed to correspond to the achievement-autonomy-status, safety-comfort, and altruism need factors (values) of the MIQ. This study was regarded as providing confirmation of the validity of the construct of values as reference dimensions for needs. It was believed to also extend the usefulness of the construct to describe reinforcers in the work environments via reinforcer factors that parallel values.

The six-value way of representing work reinforcers provided a basis for developing a taxonomy of work environments (Dawis, Lofquist, Henly and Round's Minnesota Occupational Classification System II (MOCS II), 1979/1982). This involved the clustering of 1,100 occupations into 78 taxons according to the similarity of reinforcer patterns and ability-requirement patterns. The six-value system was regarded as a meaningful way of differentiating among occupational groups in terms of their identifying reinforcer characteristics.

Reliable but modest relationships have been found between needs and activities (Dawis and Lofquist, 1984). Factor analysis arrived at 27 biographical factors which were used to develop biodata-factor scales enabling the prediction of 18 of the 20 MIQ needs and all 6 of the MIQ values. Dawis and Lofquist (1984) have concluded that needs as measured by the MIQ can be predicted from biographical data for both sexes.

Gender differences in the development of needs from experienced reinforcement have been found in some cases (Rounds, Dawis and Lofquist, 1979) but not in others. The perception of reinforcers in male dominated, female dominated occupations and occupations which were not dominated by either gender have been examined. Equal numbers of male and female raters in each occupation were used and highly similar occupational reinforcer patterns emerged. Correlations between the profiles of both sexes ranged from .91 to .98 which is very similar to the median random split group reliability for Occupational Reinforcer Patterns (Borgen, Weiss, Tinsley, Dawis and Lofquist, 1968). The vocational needs of distinctly different groups, such as neuropsychiatric patients, rehabilitation clients, and college students, have been studied with regard to their assumed different reinforcement histories with the aim of assessing whether these have produced different reinforcer preferences or needs. Differences have been found for groups on 13 of the 20 MIQ scales (Eberly, Rounds, Dawis and Williams, 1976). The relationship between vocational needs and other personality dimensions has been investigated. Thorndike, Weiss and Dawis (1968) looked at the relationship between MIQ measured needs and interests as measured by the Strong Vocational Interest Blank (SVIB; Strong, 1943). Maximum canonical correlations of .78 (for a student group) and .74 (for a rehabilitation) group were found. It was thought that these canonical correlations were sufficiently high to show that needs and interest measured in this manner were part of the same domain of personality variables but not high enough to indicate the same construct was being measured by these instruments.

The research on adjustment style has concentrated on the construct validity of the adjustment style measures of flexibility, activeness and reactivity. Dawis and Lofquist (1984) discussed the development of threshold measures of flexibility, tolerance of discordance and evidence of the convergent and divergent validity of the constructs. The development of instruments for assessing the adjustment styles has been ongoing. One instrument is the Life Experiences Questionnaire (LEQ). This obtains self-report data on life experiences which

reflect tolerance for discrepant situations, actions to alter environmental situations and actions to change the expression of one's personality.

Another instrument undergoing development is the Work Situation Questionnaire (WSQ). In this, individuals are presented with response choices for coping with a number of work environment problems. The problems were included to allow for the appropriateness of either an active or reactive response choice. Both the LWQ and WSQ have received preliminary validation when compared to self-report ratings other than adjustment style dimensions.

4.1.3 The need for further research

Dawis and Lofquist have not regarded their theory as a definitive account of work adjustment and themselves expected to further explore the area. They acknowledged the need to further refine the assessment instruments by expanding their coverage and continuing to develop the assessment of adjustment styles. Dawis and Lofquist suggested that a promising way to validate the LEQ and WSQ adjustment style measures might be to use them to test the newer propositions in the theory of work adjustment which are to do with adjustment style. Occupations could be identified which clearly need workers who are active, or reactive, and the satisfaction and satisfactoriness of the workers in each group assessed to see if the expected higher levels occurred. It was also suggested that adjustment style might be assessed by inferring style characteristics from the configuration of scores from existing personality measures for satisfactory and satisfied workers in environments which can be clearly identified as requiring workers which are reactive or active.

As well as the need for research as identified by Dawis and Lofquist (1984), further research appeared to be necessary in the light of the minor criticism their theory has attracted (Neff, 1985; and Hackett, Lent and Greenhaus, 1991). Similar limitations had been noticed (prior to Neff's publication) in preparing to apply aspects of the theory to university graduate groups in the present research. Despite the criticisms outlined next, Dawis and Lofquist's theory remained the most appropriate to use with the population of interest. However, additional constructs to describe work adjustment behaviour were introduced in the present research as an attempt to better describe and predict work adjustment behaviour.

4.2 Criticisms

4.2.1 The importance of assessing Dawis and Lofquist's theory

The little theory in existence in vocational psychology before the 1950s was found to be limited in scope (Crites, 1969). The field had been dominated by the generally atheoretical approach of the trait and factor perspective. The next two decades saw more systematic and varied theoretical efforts. Developmental theories (Super, 1953, 1957; Super, Crites, Hummel, Moser, Overstreet and Warnath, 1957; and Tiedeman and O'Hara, 1963) emerged. Then vocational development was approached from a personality perspective (Roe, 1956; and Holland, 1959). Needs and personality characteristics in relation to vocational behaviour were investigated, for example by Hoppock (1957). Psychodynamic interpretations of vocational choice continued, such as in the work of Bordin, Nachmann, and Segal (1963). Others, Gelatt (1962) and Hershenson and Roth (1966), for example, applied decision-making models to vocational choice.

Hackett, Lent and Greenhaus (1991) have identified the major theories before the 1970s as developmental, trait and factor, personality based theories and Holland's typology theory. They noted the emergence of three dominant perspectives, Super's developmental theory (1953, 1957), Holland's typology approach and development of the trait and factor tradition as represented by work adjustment theory (Dawis and Lofquist, 1984). They listed the current dominant perspectives as developmental theories (Super, 1980; Nevill and Super, 1986, 1988; Brown, 1990; Levinson et al, 1978; and Super and Kidd, 1979), Holland's theory and work adjustment theory (Dawis and Lofquist, 1969, 1984).

Hackett, Lent and Greenhaus (op. cit.) have identified work adjustment theory as one of the current dominant theoretical perspectives without elaborating the reasons for their choice. However, as an approach which is considered dominant, it needs to be evaluated to a greater extent. It has undergone revisions and extensions (Dawis and Lofquist, 1976, 1984) as a result of research in the 1970s and these included positing the influence of personality style variables on the work adjustment process. Osipow (1983) noted that although their theory was operationalisable and testable, its potential had remained uncertain and difficult to assess because few independent tests of Lofquist and Dawis' (1969) propositions had occurred. As already indicated, most of the research testing aspects of the theory, was undertaken by Dawis

and Lofquist and their associates. Hackett, Lent and Greenhaus have noted that little empirical work related to the theory has appeared in the published literature in the 1980s. In view of this the categorisation of the theory as a dominant perspective appears to have arisen from its apparent conceptual importance, the degree it is referred to and perhaps the amount of its instrumentation, rather than the extent of its empirical support outside that proffered by the theorists and their associates.

4.2.2 The conceptual and empirical limitations

The theory may have certain limitations which impair its suitability, not only for the university student and graduate population, but generally. The limitations, identified while reviewing the literature and planning the present research, and taken into account in applying aspects of the theory to the population in question, were of both a conceptual and empirical nature. Some of the areas of concern were not unexpected in view of Dawis and Lofquist's own expectations for further research and the exploratory nature of their adjustment style measures. Other areas of concern, to do with the factor structure of needs and the lack of a cognitive perspective, could be regarded as more serious, having conceptual, methodological and theoretical modelling implications for the acceptance of their theory.

The conceptual issues related to the symmetry of the theory, to the adequacy of the constructs themselves, to the use of tenure as a work adjustment outcome variable, to the proposed relationship between job satisfaction and satisfactoriness and to the extent to which the adjustment styles may not represent the full range of responses to conflict and frustration which can categorise work adjustment behaviour. Dawis and Lofquist regarded their study of adjustment styles and their measurement of these in particular to be in the exploratory stages, as such, this area of their theory was expected to be more susceptible to criticism. The construct of tenure, its use as an outcome variable and its operationalisation needed to be examined further as did the interrelationships of constructs such as satisfaction and satisfactoriness and their use as moderators. One of the assumptions underlying the application of the theory, that is a mature work personality as judged by the stability of work needs, may not allow it to be applied to the early stage of employment, as for example, represented by graduates beginning work.

An issue of both a conceptual and empirical nature and one which is more a criticism of the research techniques of Dawis and Lofquist, related to the underlying factor structure of work needs, which was seemingly not examined appropriately. An oblique rotation of the extracted factors was not conducted, or if it was, has not been reported. The possibility of the presence of higher order factors, therefore, has neither been raised nor examined. Conceptualising work factors as having one or more underlying factors would have implications for the instruments and their interpretation, which would be different from the six factor work need model assumed.

The main empirical issues of concern were the lack of research outside that of the theorists and their associates and that the theory has not been tested in its entirety. Tziner (1983) has noted that the theory generally has received inadequate attention. The little criticism it has incurred appertained to its abstract theoretical position, which does not appear to match the disorder of the real world (Neff, 1985; and Hackett, Lent and Greenhaus 1991), and the low correlations generally found among the key variables in the model (Neff, *op. cit.*). Low correlations may be indicative of important variables not having been included.

Some of the variables identified in the planning of the present research as of potential importance to the work adjustment process involved cognitive and social aspects in particular, and the potential interrelationship of work and non-work variables in the work adjustment process. Obviously if any aspects of the theory lack empirical support or have not been adequately investigated to date, there will be implications for the validity of generalising the theory in the way Dawis and Lofquist have advocated, that is across career stages and to settings other than work.

4.2.3 The symmetry of the theory

The criticisms above were also among those noticed independently at the time the present research was designed. Hackett, Lent and Greenhaus (1991) had concluded that the theory is very symmetrical in nature, particularly in relation to the concept of correspondence. They suspected that in reality the relationships may not conform to such a well-ordered pattern. Although Dawis and Lofquist did not specify their expectations, the theory's symmetry could imply that similar amounts of correspondence between work needs and reinforcers and between abilities and ability requirements are needed to produce similar levels of satisfaction

and satisfactoriness. Correspondingly, satisfaction and satisfactoriness could be interpreted as having an equal role to play in the prediction of tenure and work adjustment. However, Dawis and Lofquist did not specify their expectation with regard to the relative contributions of satisfaction and satisfactoriness.

If the model intended to suggest that a similar degree of correspondence is required to achieve similar amounts of satisfaction or satisfactoriness, this has not been supported empirically to date. In the case of person-environment congruence affecting both satisfaction and performance, congruence has been found to almost always affect satisfaction, but the findings have been inconsistent with respect to performance (Spokane, 1987).

Again the theorists did not specify if all the needs and abilities would be involved to the same extent. There may be particular needs and abilities which are critical with some not always being required, a critical factors type of model. There may be a certain, if differing, proportion of each required if one postulates a threshold type of model. Alternatively a hierarchy of needs may exist. A weighted sum of needs might be an appropriate model. A combination of the hierarchical and threshold concepts might apply such that a minimum number of needs at any level might need to be met before satisfaction and satisfactoriness are achieved. Some of these alternatives were raised by Campbell, Converse and Rodgers (1976) in choosing among models of how domains of satisfaction might combine to produce well-being, but the models could also be investigated with respect to work adjustment.

4.2.4 Use of constructs

A simple choice among models may be inappropriate, however, because many of the models could be valid for different individuals or for the same individuals at different points in time. Dawis and Lofquist's theory does not address these considerations but they could be important in any attempt to increase the probability of achieving work adjustment.

With respect to some of the constructs themselves, in particular the use of satisfaction as an indicator of the relationship between work needs and reinforcers and of the work adjustment process, there was a cognitive element lacking in the descriptions of job satisfaction of Dawis and Lofquist (1984) and others upon which their descriptions were based (Schaffer, 1953; Hoppock, 1935; Vroom, 1964; Maslow, 1954; Roe, 1956; and Smith, Kendall and Hulin,

1969). Dawis and Lofquist only hint at such a possibility by referring to 'one's appraisal' of the way in which the job matches expectations. Cognitive influences of importance might be self-efficacy for achievements which lead to job satisfaction and perceptions about job satisfaction relative to those of significant others, such as family and peer group.

Although tenure has come to be regarded as a criterion measure in the prediction of work adjustment (Dawis and Lofquist, 1984), it is unlikely to be the only predictor and may in fact not be the best. In particular the role of satisfaction in both absenteeism and turnover has been questioned. Porter and Steers (1973) treated them as different responses and in their review, Nicholson, Brown and Chadwick-Jones (1976) regarded the relationship between satisfaction and absenteeism as artifactual. Alternative models have been proposed, for example, Steers and Rhodes' (1978) process model which related concepts other than satisfaction to absenteeism and Chadwick-Jones, Nicholson and Brown's (1982) social exchange theory which has absence rates depending upon group norms and expectations. With respect to tenure, Mobley, Horner and Hollingsworth (1978) found job satisfaction played a greater role earlier in the quitting process when an individual contemplates leaving a job. Landy (1985) noted that even under good conditions for leaving, the relationship between satisfaction and turnover has been found to be only modest. He also concluded that a major controlling factor with respect to turnover is how widespread unemployment is generally, as well as in an individual's occupational area. Other tenure related concepts such as career commitment, job involvement and organisational commitment may be of greater importance. If the main objective was to predict tenure, satisfaction and satisfactoriness may not be ideal or even the important indicators. The literature would suggest others such as organisational commitment may perform more reliably.

For a recent university graduate population, which is in the early stage of employment and work adjustment, job satisfaction and any influence it may have upon tenure could be expected to be moderated by the stage of employment. This is consistent with the influence of employment stage as advocated by Gould and Hawkins (1978). Specifically, there may be factors external to the work environment which affect work adjustment and tenure in a recently graduated university population, specifically. Factors external to the work environment, such as living circumstances, may exert an equal or greater importance on tenure than the factors proposed by Dawis and Lofquist. Distance travelled to work and mode of transport, for example, may be a physical factor which strongly influences the amount of

work adjustment which is achievable. The importance of tenure as an outcome of job satisfaction and satisfactoriness may be context specific, moderated by the work environment or individual factors.

4.2.5 Relationships among constructs

In terms of relationships among constructs, a relationship between satisfaction and performance is not one which has been supported in the literature, as discussed in section 2.3 (Landy, 1985; Brayfield and Crockett, 1955; Vroom, 1964; Locke, 1976; and Iaffaldano and Muchinsky, 1985). Satisfaction and satisfactoriness are stated by Dawis and Lofquist (1984) themselves to be relatively independent. However, the size of the correlation and the proportion of the variance accounted for may not be too dissimilar from other constructs in the model Dawis and Lofquist claim interdependence for. The magnitude of the correlations among the constructs in Dawis and Lofquist's model are not high and on that basis could themselves be said to be 'relatively independent'.

More serious however, is the apparent logical inconsistency in one aspect of their theory. Satisfaction and satisfactoriness are said to be 'relatively independent', a claim which is inconsistent with the notion that the two constructs act as moderators in relationships in which each is involved. To elaborate upon this, Dawis and Lofquist maintain that *given satisfactoriness* correspondence between work needs and reinforcers will affect job satisfaction and similarly *given satisfaction* correspondence between abilities and ability requirements will affect satisfactoriness in the work environment. This means that satisfaction and satisfactoriness need to be at certain levels before the correspondent relationships can affect satisfactoriness and satisfaction, respectively. Thus satisfaction and satisfactoriness are expected to act as moderating variables in the relationships concerned. For these variables to be moderators some degree of correlation between them (satisfactoriness and satisfaction) would be expected, certainly greater than the term 'relatively independent' would imply. For example, when work needs correspond with work reinforcers, job satisfaction is expected to result. For this to occur a reasonable level of satisfactoriness is assumed always to be present. In other words, job satisfaction being affected by work need and reinforcer correspondence is conditional upon job satisfactoriness. Consequently when job satisfaction exists a level of satisfactoriness (probably moderate at least) must also exist and the two would be correlated (as shown in Figure 4.1) at least to a moderate degree. For example, high satisfactoriness

would be expected to be associated or correlated with satisfaction. Conversely, when satisfactoriness was low, need-reinforcer correspondence would not affect job satisfaction.

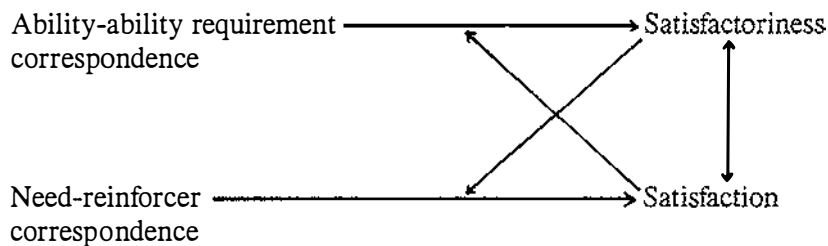


Figure 4.1 Moderating variables producing interdependence between satisfaction and satisfactoriness

To reiterate, the argument takes the following form: if either satisfaction or satisfactoriness exist they each act as moderators for a) ability and ability-requirement correspondence in the case of satisfaction and b) need-reinforcer correspondence in the case of satisfactoriness. If any of these conditions exists satisfaction and satisfactoriness could not be independent. Where satisfaction resulted from some other cause or is only partly determined by need-reinforcer correspondence it may not correlate with satisfactoriness, but in the context of Dawis and Lofquist's theory (because they did not postulate other causes of satisfaction), the two would need to be interdependent for the theory to be internally consistent.

Taking the example of satisfactoriness as a moderator, the work-need-work-reinforcer correspondence would affect satisfaction only when satisfactoriness existed (moderate to high levels of satisfactoriness). This is saying that satisfactoriness is a moderator of the relationship, that is, the level of satisfactoriness affects the relationship. Under those circumstances when correspondence was high (as shown in Figure 4.2) satisfaction would also be high, therefore satisfactoriness and satisfaction would covary and not be independent of each other. When satisfactoriness still existed but correspondence was low (as depicted in Figure 4.3) thus causing satisfaction to be low, satisfactoriness would be related to satisfaction differently. Moderate to high satisfactoriness would then be associated with low satisfaction. Satisfactoriness would then be inversely related to satisfaction, but they would still exhibit a dependent rather than the relatively independent relationship Dawis and Lofquist advocated. In the case of low satisfactoriness (as shown in Figure 4.4) the correspondence-satisfaction

relationship may not hold (Dawis and Lofquist proposed this relationship only given satisfactoriness) and either high, medium or low satisfaction could be occurring independently. In the case of the latter, satisfactoriness and satisfaction (both being low) would still correlate and not be independent. In the case of satisfaction being high, independent of a correspondent relationship, satisfactoriness and satisfaction would be inversely related (satisfactoriness low and satisfaction high). It is only in the situation of satisfaction being moderate and satisfactoriness either low or high that satisfaction and satisfactoriness might be relatively unrelated. It is only under conditions of low satisfactoriness (outside the assumption of Dawis and Lofquist's model where satisfactoriness was given) that satisfactoriness and satisfaction might be relatively independent. Dawis and Lofquist's model was in this way conceptually inconsistent, satisfactoriness and satisfaction could not both act as moderators and be independent of each other in their respective relationships.

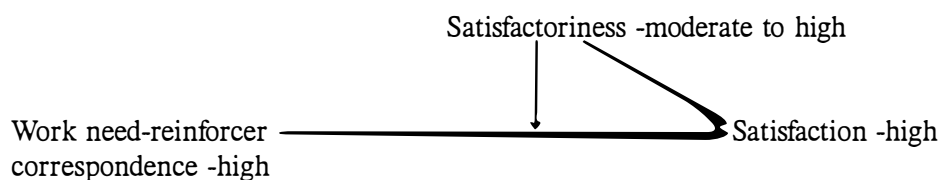


Figure 4.2 Satisfactoriness and Satisfaction correlating when satisfactoriness exists

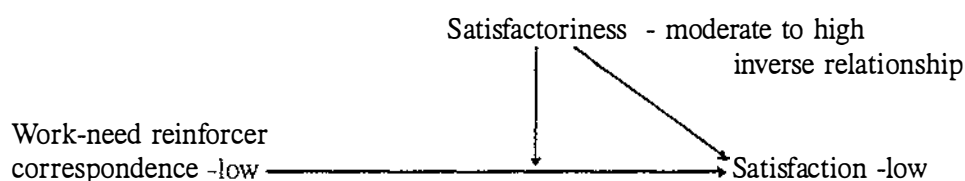


Figure 4.3 Satisfactoriness and Satisfaction correlating inversely when satisfactoriness exists and correspondence is low

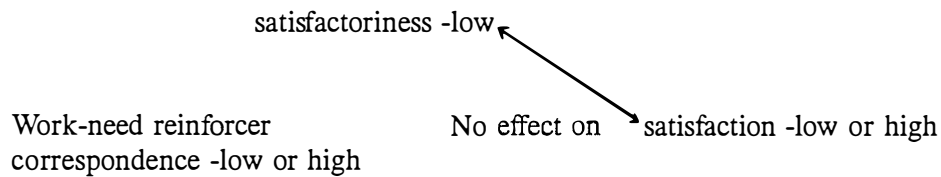


Figure 4.4 The possible effects of low satisfactoriness on the satisfactoriness-satisfaction relationship

Because independence of satisfactoriness and satisfaction appears inconsistent with these variables acting as moderators, one of the two following outcomes would be logical. Firstly satisfactoriness may be related to satisfaction, even if performance is not, and may therefore be correlated and free to act as a moderator of the need-reinforcer correspondence affecting satisfaction relationships. Alternatively, satisfaction and satisfactoriness may be independent, as has been the case with satisfaction and performance, and satisfactoriness will not operate as a moderator.

Another concern about the relationship among constructs in Dawis and Lofquist's model is that the parts both job satisfaction and satisfactoriness play together in determining tenure has not been specified. Intuitively one might expect satisfaction and satisfactoriness to affect tenure to differing degrees and their respective effects to be modified by still other factors. Some individuals may be only minimally satisfactory but be highly satisfied. Also, if the importance an individual attaches to satisfaction and satisfactoriness is different, the respective influence of these two variables on tenure may also be expected to differ. Therefore, can we expect symmetry with both these variables contributing equally to tenure and therefore being of equal importance in the work adjustment process? It was unlikely that Dawis and Lofquist were implying that equal amounts of satisfactoriness and satisfaction were involved in influencing tenure, but some specification of the minimum levels of satisfaction and satisfactoriness required for tenure would have made their theory more specific and therefore more readily testable.

4.2.6 Adjustment styles

The questions on Dawis and Lofquist's (1984) experimental rating form for obtaining data about adjustment styles appear too complex, see Appendix A.3. Moreover, their interim alternative estimates of adjustment styles did not always seem to be appropriate. Their use of success in a wide range of jobs as an estimate of high flexibility may not always be appropriate, particularly if an individual has changed jobs often as a result of dis correspondence. If such dis correspondence has been caused by inflexibility, then a wide range of jobs would, in that case, be an indicator of inflexibility rather than flexibility.

Although the extent to which an individual adopts a leadership role was expected to be associated with the use of the active mode, it may not necessarily follow. Individuals with leadership skills, who influence others and make changes on behalf of them, are not necessarily willing or able to do the same for themselves. Abiding by the rules and carrying out assignments according to prescribed procedures may suggest the preferred use of a reactive mode as Dawis and Lofquist postulate. However, the rules and procedures of a social group or organisation may actually sanction attempts to change the work environment where appropriate. In this case members of such groups could have a history of abiding by the rules, but because the rules support or even encourage the use of an active mode their adherence to the rules would predispose them towards activeness rather than reactivity.

Although Dawis and Lofquist have not advocated the exclusive use of styles, some of the research relating to adjustment styles they reported has, by focusing upon identifying particular adjustment styles typically found in certain occupations and organisations. Carrying out research in organisations where only one style is identifiable may produce results from atypical organisations which do not generalise well to other settings. Dawis and Lofquist's notion that individuals may have a propensity towards the use of a particular adjustment style suggests that where an individual feels more able to use a particular mode they may be more satisfied with work environments where this mode is more easily used and accepted.

Although Dawis and Lofquist do not take their analysis further, it seems to suggest that an individual who is able to assess which is the most appropriate style, able to use this regardless of their own personal preference and able to decide upon and execute this response speedily may be more likely to be considered a satisfactory worker. Such an individual might be

valued for their adaptiveness rather than for the propensity to use a particular adjustment style, especially in work environments where there is not an optimal style. Similarly, the organisation which is able to respond appropriately and quickly using the style or combination of styles which most suit the needs of the individual would be capable of providing the individual with closer to optimum satisfaction. Where both the individual and the work environment are highly adaptive one would expect compromises to be made on both sides without one or the other needing to make most of the changes thus achieving work adjustment more rapidly.

It seems another adjustment style dimension may be needed that involves this notion of adaptiveness. This would refer to the employment of the adjustment modes themselves, that is, the individual or the work environment choosing from among them or employing them in sequence appropriately. This is not covered by Dawis and Lofquist's notions of flexibility or perseverance, but rather involves the ideas of tolerance, or delay before a response is made and of a sequence of responses or a pattern of adjustment styles. At times an individual who is highly adaptive may need to exercise delay through flexibility or perseverance. Although these have been used as a type of adjustment response or in relation to using adjustment responses, they have not been used to describe the choice of adjustment modes themselves.

Although a notion of adaptiveness is not included in either of Dawis and Lofquist's concepts of *personality structure* or *personality style* which make up the *work personality*, aspects of adaptiveness are present within the description of personality style. For example, the dimension of celerity, that is the speed of interacting with the environment, could also be made applicable to the speed of choice of adjustment style and the speed of adapting the use of different adjustment styles in response to the environment. Similarly celerity could be used to refer to speed with which the environment selects adjustment styles and thus adapts to the needs of the individual.

Further theoretical clarification of the personality style dimensions and their interrelationships is required. Flexibility, for example, may be confounded with need level such that highly flexible individuals may simply have a lower need level so that they appear more flexible when compared with individuals with a higher need level. Because of the dynamic nature of the adjustment process and the interaction of the individual's attempts with those of others in the work environment while attempting to reduce discorrespondence, activeness needs to be

examined in conjunction with reactivity. In describing adjustment styles responses, their source needs to be clearly identified, that is, as the individual or the environment.

Moreover, the locus of the response and its target need to be stipulated. The dimensions of these two change factors of locus and target have been classified in a two dimensional schema. Such a labelling system can not only assist in describing work behaviour but also in identifying behavioural strategies which might be in use in the work adjustment process. Within the schema as discussed by Hesketh (1982, 1985) both the locus for change and the target for change can be the individual, for example, where a decision is made to dress in keeping with the work environment. Alternatively both the locus and the target for change can be the environment, for example, the boss purchases equipment to lighten the load for the individual by using ergonomic principles. The locus for change can be the environment and the target for change the individual, for example where an organisation arranges exposure to key role models in the job through formal and informal training on the job. Alternatively, the locus for change can be the individual and the target for change the environment, for example, an individual reorganises work to delegate more routine tasks.

4.2.7 Conceptualisation and measurement of needs

Needs as a focus of criticism occupy a particular place of importance, because the conceptual and operationalisation issues of defining and measuring work needs are critical to the application of the theory. As has been pointed out earlier, one of the assumptions of the application of the theory, that the work needs have reached maturity, may not be fully met by a group such as recent university graduates, which is in the early stages of employment. Because Dawis and Lofquist believe the maturation of needs to coincide with physical maturity and employment, but do not specify when this occurs, for the university population, physical maturity and employment in a career related to their studies probably would not coincide. For them work-need maturity may have occurred at the time of vacation employment during their university studies. However, the amount of change which would be expected to occur at certain times, such as would accompany graduating and possibly moving to another location, may still affect work needs and assessing their maturity. Dawis and Lofquist's criteria of the work needs remaining stable may be the best indicator of their maturity. However, longitudinal study might be necessary to determine if there are significant

changes in work needs during an individual's working life and when they are most likely to occur.

A very important issue in the conceptualisation and measurement of needs is the number and structure of the needs as reference dimensions, or underlying factors, of work values. An inappropriate method of rotation had been used by Dawis and Lofquist in the development and interpretation of their instruments. They sought a principal factor solution using an orthogonal rotation to a varimax criterion. By using Varimax, the work need factors were assumed not to be correlated in any way. It seems inappropriate to assume there would not be any intercorrelations involving at least some of the factors. Of course some work needs must have been more highly correlated for factors to be identified but also some of the factors might be expected to correlate to some extent with each other, some significantly. Also with a construct such as work needs it seems possible, if not even likely, that an underlying general factor might be in existence. Thus the presence of nonorthogonal factors should be investigated.

More importantly, close examination of Dawis and Lofquist's tables of varimax factor loadings indicate that some work needs could have been equally well placed in another factor. This suggests some factors might be correlated and it highlights the arbitrariness of assigning factors within the constraints of a varimax rotation technique which attempts to minimise correlations among factors. Another apparent problem was that differences with respect to factor loadings on the male and female loadings of work needs were not always reflected in the factor loadings for studies using a total group. Seaburg and Round's tables for separate male and female groups are reported in Dawis and Lofquist (1984), pages 84 and 85.

Table 4.2 presents the varimax factor loadings for vocational rehabilitation clients ($N = 1,621$), employed workers ($N = 3,033$), college students ($N = 419$), and 285 vocational-technical school students, giving a total group ($N = 5,358$) from Gay, Weiss, Hendel, Dawis and Lofquist (1971) as in Table 4.1. These are compared with a male group ($N = 1,609$) and a female group ($N = 1,674$) of Seaburg, Rounds, Dawis and Lofquist's study (1970).

Table 4.2 Comparing Varimax Factor Loadings for the Male (N = 1,609), Female (N = 1,674) Groups (Gay et al., 1971) and the Total Group (N = 5,358) of Seaburg et al. (1970)

Work Need	Factor	Total group	Males	Females
Security	Comfort	-.42	.43	.61
	Safety	.44	.52	.16
	Status	-.26	.28	.44
Working conditions	Comfort	-.41	.41	.49
	Safety	-.49	.54	.33
	Status	-.25	.34	.43
Advancement	Comfort	-.08	.51	.30
	Safety	.37	.41	.18
	Status	-.37	.51	.58
	Autonomy	.33	.22	.18
	Achievement	-.41	.37	.27
Authority	Status	-.40	.47	.42
	Autonomy	.54	.45	.51
Co-workers	Comfort	.37	.31	.18
	Safety	-.22	.31	.22
	Status	-.28	.33	.32
	Altruism	-.44	.42	.58

Note. The factors the studies assigned the work needs to are in bold type.

Table 4.2 shows that the security work need was included in the comfort factor on which it was loaded for the female but not the male group. For the male group the security need better correlated with the safety factor. Although the comfort factor loading was clearly the highest for the female group, the security work need was related to the status factor to a similar

degree that it had related to the comfort factor for the male group. For the male group it is apparent that correlations between the comfort and safety factors would be expected.

The working conditions need was included in the comfort factor for the total group but had achieved the highest loading for the female rather than the male group. The male group's working conditions need seemed to better belong to the safety factor. The working conditions need in the female group was allied mainly to the comfort factor followed by the status and safety factors. For both the male and female groups the comfort and safety needs would be expected to correlate and for the female group the status factor would also be related to these factors.

The advancement need loaded most highly on the status factor for both genders, but in the total group this work need loaded similarly on a number of factors, all of which could be correlated. The authority need being included in the status factor for the total group better represented the loading for the male rather than the female group. For the female group authority loaded more highly on the autonomy factor. Certainly the two factors of status and authority would be expected to be correlated for both genders. The friendly co-worker need did load most highly on the same factor for the male, female, and the total group, but there were other factors which were related to a reasonable degree. These were the comfort, safety, and altruism factors among which some correlation might be expected.

The implications of the factor structure being different across studies has implications for the stability and interpretation of the factors generally but also suggests some gender specific difficulties. In relation to particular work needs the underlying factors associated with them would be gender dependent. The interpretation of the MIQ in measuring needs would be complicated and gender dependent for some needs also.

Although McNab and Fitzsimmons (1987) found correlated factors, higher order factors did not emerge. The fact that needs were measured using a single instrument (the MIQ) should be reason enough to expect at least some correlation among items which arises from the method of measurement itself. The correlation of factors may be different for different samples, for example recent graduates. But apart from any substantive reasons for looking for higher order factors, it is usually considered good practice to perform both orthogonal and nonorthogonal rotations for comparison purposes (Gorsuch, 1983).

Gorsuch (1983) identified the main difference between primary and higher-order factors as the former being concerned with limited areas of generalisation and high accuracy and the latter as being concerned with greater generalisation accompanied by a loss of accuracy. The amount of reduction in accuracy that can occur in moving from primary to higher-order factors is said to be data dependent. Either level of factors can be more basic in a causal sense and as such higher-order factors are not considered to be superior to lower-order factors (Cattell, 1966).

All oblique rotations imply higher-order factors and Gorsuch recommended that higher-order factors be extracted and looked at in order that the data be understood. They are said to be of definite interest if they contribute 40% to 50% of the variance extracted. A discovery of higher-order factors in MIQ scores would have implications for the use of values as reference dimensions for work needs. Determining the relationship of the test items to each level of higher-order factors may be important, especially if a higher-order factor is found to have a stronger relationship with an original variable, a test item, than with any of the primary factors. Dawis and Lofquist in using varimax assumed no correlation between factors. However, using varimax would have had the self-fulfilling effect of minimising any correlation, perhaps erroneously, between factors.

Conceptually it may be inappropriate to assume a lack of correlation among work need factors. It has been shown that some work needs are more highly correlated with each other and this may be the same for relationships among factors also. In addition it might be reasonable to assume that some groups of needs are more intercorrelated, perhaps significantly, with each other than are other groups. Similarly, some of the factors might be clearly identified as more dependant upon the individual than the organisation, be more highly correlated with each other than with other factors and therefore be grouped together on this basis as higher order factors. On this somewhat intuitive basis alone the investigation of factors seems justified.

Although McNab and Fitzsimmons (1987) did not find higher order factors emerged from their correlated factors it was important for them to have checked and to know this. Otherwise they could not be as confident about the way in which they had interpreted the factors. Once correlated factors are found, their interpretation would be less clear and

questions about differences in correlations among different factors and the relative contribution of each to the variance would be of concern.

An alternative and more sophisticated statistical modelling technique which may be more appropriate than factor analysis in examining latent variables and their interrelationships is the covariance structure model. The factor model is described (Long, 1983a) as estimating latent variables without taking the structural relations among these latent variables into account. However, it is these structural relations which are often of the greatest interest theoretically. The structural relations model on the other hand by focusing on structural relations assumes error free measurement of all the variables. But the very use of the factor model indicates that this assumption may not be justified. The covariance structure model is hailed as overcoming the complementary weaknesses and combining the strengths of the factor analytic and structural equation models by merging them into a single model. The resulting model investigates, simultaneously, latent and observed variables and their structural relations.

Models for the analysis of covariance structures try to explain the relationships among a set of observed variables in terms of a smaller number of unobserved variables. Long (1983b) noted that

"..the relationships among the observed variables are characterised by the covariances among the variables, contained in a matrix Σ . This matrix is decomposed by a model that assumes that *unobserved* variables are generating the pattern or structure among the *observed* variables. Using a measurement model linking the observed variables to the unobserved variables, and a structural model relating the unobserved variables, an analysis of the covariance matrix Σ is made to describe its structure." (Long, 1983b, p 11)

The term "analysis of covariance structures" was introduced by Bock and Bargmann (1986) to describe what would be called a confirmatory factor model now, according to Long (1983b). The model has grown in generality and complexity from the factor analytic model of Bock and Bargmann to one in which the covariance matrix is considered to be any function of any set of parameters, with many forms of the model along the way. Bentler and Weeks (1979) and Bentler (1980) have reviewed these models. A description and specification of the general model appears in chapter five and Appendix K herein.

In the case of the operationalisation of person-environment fit theory, some concerns have been raised in the literature. Rounds et al. (1987) in focusing on a reciprocal influence among person-environment fit theory and measurement, have discussed three types of commensurate measurement, commensurate concepts, commensurate units and commensurate structures. Commensurate concepts referred to the way person characteristics and environmental properties are related logically, commensurate units to the equality of person and environment units and commensurate structures to equivalent structural person characteristics and environment properties. Commensurate concepts were regarded as being necessary for fit measurement.

4.2.8 People-environment fit measurement issues

The need for commensurate units and structure to vary with the method of person-environment fit quantification was emphasised. If a profile shape measure is used, only commensurate structure was believed to be necessary. However if a distance measure, such as a difference score, is used both commensurate units and structure are said to be required. Needs and reinforcers were found to be structurally equivalent, but the two metrics used in both cases were not equivalent. The reason offered for this was that the environmental assessment used a consensual or aggregate method. Such methods were thought to decrease the psychological space between some intervals.

Rounds et al advocated the re-scaling of environment units, if the units are affected uniformly, and the calibration of these to the individual's own perception of the amount or level of the reinforcers in the environment. They warned against the incautious use of difference scores in that they can be unreliable, and be systematically correlated with components of need-reinforcer correspondence, such as profile elevation, shape, and scatter.

Spokane (1987) identified some common themes in person-environment fit research. These involved questions of whether fit is a matter of matching, whether relationships are linear and whether over the longer term high congruence might have some negative effects. A methodological issue was that the range of congruence in many studies is restrictive because incongruent individuals may depart from a work environment that does not suit. This leaves only congruent individuals to become the subject matter of person-environment fit research. Although subjective measures are believed to be less of a problem than originally thought,

the use of different measurement methods with individuals and environments has resulted in different findings.

Commensurate methods of measuring people and environments have been accepted as desirable, but independence of the measurement of people and environments is advised. Spokane recommended that the common moderators of congruence relationships should be established. Person-environment congruence has been found to almost always affect satisfaction, but the findings in relation to other domains, such as performance, have been inconsistent. The lack of uniformity of the effects of congruence was said to need further attention.

On a more general note, some of the problems associated with person-environment fit research have been noted, for example, by O'Brien (1986). He commented on the problem that most of the person-fit measures do not have a uniform and inclusive set of variables to describe the dimensions on which a match occurs. O'Brien noted that many types of needs, motives and abilities have been measured but that there is no theory about which is important. He considered it important to identify the degree to which jobs use individuals' skills. Another problem with the person-environment fit model was said to be that it cannot account for the direct effects of Environment and of Person. It was thought that the person and the environment measures themselves might be 'fit' measures. Another problem O'Brien discussed was that the person-fit approach tends to think that fit alone determines strain (strain is defined as an interactional concept, as an imbalance or lack of fit between job demands and capabilities of the employee. A third difficulty O'Brien raised was that cross-sectional studies show few effects of fit on physiological measures of strain.

4.3 The Present research

4.3.1 The present research and the direction of work adjustment theory research generally

In the context of economic uncertainty and conditions of rapid social change in work environments and technology, work adjustment may be particularly desired. For organisations employee satisfactoriness might be of particular importance. For the individuals, factors such as job security might be paramount. Certainly the identification of important factors could benefit both employers and employees. If work adjustment can be better predicted and

information about the respective contributions of the individual and the environment be made available, this will enable positive change to occur.

In terms of an appraisal of where the theory and research in the area has been leading, Hackett, Lent and Greenhaus (1991) have noted that the general trends in the 1980s have been an increased attention to person-environment fit and cognitive issues, two foci of the present research. Counselling psychologists have been said to make forays into areas traditionally regarded as organisational behaviour topics, such as adult career development, career adjustment, work-place justice and occupational stress (Fitzgerald and Rounds, 1989; Osipow, 1986). The areas receiving greatest emphasis in counselling psychology in the latter part of the 1980s were identified as involving the person-environment fit and life-span research (Fitzgerald and Rounds, 1989), relating to the two most dominant approaches, of Holland and Super, respectively.

Hackett, Lent and Greenhaus maintain that the important differences in both the research and theoretical emphasis among the two traditions are that in the counselling tradition a small number of theoretical frameworks have shaped the research questions pursued. On the other hand vocational/counselling research has involved topics that are related in some degree to the major theoretical perspectives, such as the study of congruence (Holland's theory) and career maturity (Super's work). The major career development model is said to continue to persist as an influence, despite the concerns about its formal scientific adequacy (Crites, 1969; and Osipow, 1983) and the tendency to exclude interdisciplinary advances in developmental and cognitive psychology (Hackett, Lent and Greenhaus, 1991).

The counselling perspective is embodied by theories of career choice and development which highlight career decision making content and process and which tend to concentrate on vocational outcomes from the worker's perspective with implications for vocational counselling. On the other hand, vocational research in organisational settings attempts to explain performance in, and adjustment to, work settings. The theories are concerned with organisation-centred themes, such as conditions promoting productivity and worker retention, and often are from other areas in psychology (Hackett, Lent and Greenhaus, 1991).

The approach taken in the present research is congruent with Hackett, Lent and Greenhaus' analysis of trends in the counselling and organisational behaviour traditions in the 1980s. The

present research included attention to person-environment fit, cognitive issues and career adjustment. It has covered areas traditionally the domain of both counselling and organisational psychology. It has been driven by research topics of the counselling tradition, such as the study of congruence and individual decision making in educational and career choices, and organisational approach topics such as job satisfaction and performance. It has been theory based in line with Staw's (1984) observation of trends, that is, the emergence of more basic theory-building and research which is theory based. The use of theory as a framework for research in vocational psychology is important as a departure from what Fitzgerald and Round (1989) noted, in their review of research in the area, to be the common practice of invoking theories in a post hoc fashion. The choice of a theory for investigation which accommodates two of the major theoretical approaches, counselling and organisational psychology, is of value in the light of Hackett, Lent and Greenhaus' (op. cit.) comments that one tradition's strength has been the other's weakness. Work adjustment theory generally represents one of the dominant approaches in the area over recent decades and by incorporating career entry, career stages, career adjustment and performance processes, represents an integration of counselling and organisational traditions that is currently regarded as a vital aim by reviewers such as Hackett, Lent and Greenhaus (1991).

Some of the failings of the two approaches as noted by Staw (1984) have been avoided here. The contextual factors have not been underplayed, as has occurred in counselling research, and managerial perspectives have not been overemphasised as has happened in organisational psychology. The individual well-being and social issues have not been ignored. The converging themes of the two traditions are represented here to some extent by using a developmental career framework, but more so by the use of the cognitive perspective, particularly in the form of the self-efficacy construct. The cognitive emphasis has been said to contrast with prevailing modes of person-environment interaction and to increase the complexity of the conceptual frameworks by recognising the active participation of individuals in the construction of their environments.

Of the conceptual, methodological and statistical advances in vocational research listed by Hackett, Lent and Greenhaus (1991) which included integrative research reviews, meta-analytical procedures for synthesising findings across studies and sophisticated multivariate and causal modelling techniques, the latter two are evident in the present research.

4.3.2 The present research and Dawis and Lofquist's theory specifically

Dawis and Lofquist's approach has from the beginning been within the domain of industrial and vocational psychology, as we saw in chapter one. The present research aims to consider social psychological perspectives in an attempt to address the theory's limitations and to increase its predictive validity. That individual's responses in the case of work adjustment cannot be studied adequately without reference to the social groups involved and the power of the informal groups to influence behaviour, as noted by Fincham and Rhodes (1980), has been taken into account.

Some integration of levels of analysis, the individual, the group, and the organisation, has occurred in Dawis and Lofquist's use of a systems perspective to describe the work adjustment process. However, their propositions did not enter into the complexity that feedback into the system (Gowler, 1969; Legge, 1970) would entail. The present research attempts some integration of individual and group levels by adopting an overall systems perspective and by examining group differences relevant to some of the key concepts such as job satisfaction.

With respect to the context of the theoretical approaches to the individual and the organisation, Dawis and Lofquist, in the human relations tradition, recognised the importance of psychological characteristics and the personal perspective, making constructs like satisfaction a key issue. Another human relations approach key issue emphasised was that of motivation and the need theories. Although some of the problems of need theories had been resolved in Dawis and Lofquist's approach, such as a lack of empirical testability, others, including the difficulty of identifying and measuring needs and the failure of data generally to support any one need approach entirely, had not been resolved.

Aspects of a more sociological approach, as discussed in chapter one, are recognisable in Dawis and Lofquist's work, such as the social structures involved in identifying the sets of conditions required for satisfactoriness that the organisation expect to establish. Their environmental style construct has some similarities to organisational climate research in the drawing of parallels between the individual and the environment in relation to style, although different factors are identified. But the focus of the present research is confined to those aspects of Dawis and Lofquist's theory which involved the individual over the organisation,

thus excluding these, no less important, group and organisational factors and the role conflict and ambiguity approach of a more sociological analysis.

Although the direct application of personality theory to vocational and work psychology has been limited, its influence in describing the psychology of individuals at work has been apparent in the work of Holland. A particular example is his Vocational Preference Inventory (1965), as a personality approach to matching individuals and jobs. In Dawis and Lofquist's (1984) theory the satisfaction and satisfactoriness of workers is dependent upon the extent to which aspects of their so-called work personality (namely, their abilities and their work needs) match the work environment (skill requirements and work need reinforcers).

As a theory of work adjustment which looks at the match between an individual's work personality and the work environment, Dawis and Lofquist's theory can be compared with the basic dimensions of personality theory generally. In their theory, consciousness and cognition are not emphasised. It deals with both the ways in which behaviour is modified and the acquisition or structure of personality, the outcomes of learning. They have not excluded genetic factors entirely. By taking abilities into account the heredity component of abilities is being recognised. With respect to past or present factors determining behaviour they acknowledge that past behaviour has contributed to present functioning. They appear to view the individual as a total functioning unit in interaction with their environment from somewhere between an holistic and analytic perspective. One holistic notion, that everything people do is related to everything else they do and to their entire physiological functioning, is unlikely to be evident in a theory which deals with one aspect of an individual's experience, namely work adjustment. The second basic holistic notion that an individual and his or her behaviour can be understood only with reference to the environmental context, is evident in their theory in its focus on the adjustment of the individual to the work environment. Dawis and Lofquist do not go as far as some in this respect, they are prepared to separate aspects of behaviour without relating them to all other aspects of the individual's behaviour. On the other hand, they do not go to the analytical extreme of Skinner or Miller and Dollard, or Bandura, who begin with small and discrete units of behaviour, such as reflexes, and build up to more complex analyses.

With respect to the person versus the situation issue, Dawis and Lofquist have assumed a degree of consistency in the personality over time, adopting an interactionist framework.

Their theory is purposive to the extent that the satisfaction of work needs are sought, but it also has mechanistic aspects, the acquisition of needs, for example, is explained in terms of antecedents. Motivation is explained in terms of only a few variables determining the achievement of satisfaction and satisfactoriness, that is work needs and abilities. Within these variables, however a large number of skills and needs are taken into account and then reduced through taking a factor analytic approach. Their theory as one of work personality can be characterised as describing and predicting both normal and abnormal work behaviour but it has been developed from the normal end of a normal-abnormal continuum.

In the context of Industrial/Organisational Psychology, Dawis and Lofquist have drawn on the testing movement of Personnel Psychology and its reliance on the individual differences approach, and on the human relations movement, but less so on the Experimental/Industrial engineering approach. However, the cognitive revolution as discussed in section 1.3.2 has had little impact upon their research. The present research attempts to redress this imbalance as a way of both better integrating the work adjustment literature and accounting for more variance in the work adjustment model by including such previously omitted but potentially important variables.

With respect to the relationship between the individual and work and the associated theoretical approaches, as outlined in chapter two in relation to work antecedents and motivation, section 2.2, Dawis and Lofquist's theory could be categorised as a need approach and a reinforcement approach. As such it is not surprising that the more cognitive approach (which asks the question *why* a reinforcer reinforces) of instrumentality theory, goal-setting theory, and balance theory, is not represented in Dawis and Lofquist's work. As suggested in the comparison of approaches in section 2.2.6, there has been a mixture of useful and useless propositions. Because of this, research aimed at the acceptance or rejection of an entire theory without some alteration would probably be inappropriate.

In relation to work outcomes, job satisfaction and productivity, section 2.3, Dawis and Lofquist's theory did not differ from previous approaches except in its inclusion of the construct of satisfactoriness which is distinct from performance or productivity. Job satisfaction excluded the cognitive element of Converse, Campbell and Rodgers, which had it depending upon the way an individual perceives the objective characteristics of the job and on the more indirect use of standards of comparison. Thus both need levels and concepts such

as reference group and equity levels became important. The relationship between job satisfaction and tenure was not as strongly advocated in other theories discussed in section 2.4. We are left in doubt that tenure is a useful explanatory concept in work adjustment. Some alternatives such as career involvement, job involvement, and organisational commitment are expected to be of more value. The conditions requiring an adjustment type of response touched on in section 2.5.1, were not described in either Dawis and Lofquist's research or in the present study. Focusing on such conditions would not be inconsistent with either approach. For example for Dawis and Lofquist they would be treated as stimulus conditions and described as cues for reinforcers.

In the present research the preconditions were not focused on, not because they were considered unimportant but because they formed a large area on their own. Likewise the area of work personality development and maturation received attention only in terms of applicability to the present research, that is in relation to the first stages of employment.

4.3.3 General outline of the present research

Although Dawis and Lofquist responded adequately to problems associated with the trait and factor tradition being atheoretical and not accounting for career development, as discussed previously in section 1.3.3, they do not appear to have entirely achieved their intent of integrating the literature. The additional constructs examined in the present research aimed to include previously neglected areas, such as the cognitive and social psychological perspectives. The study also reintroduces an earlier approach (for example Crites, 1969) that of relating work adjustment to general adjustment. In this case the concept of subjective well-being is used to assess general adjustment. The effect on the individual of stress associated with mismatches between the person and the environment in the person-environment fit model was seen as dependent upon the cognitive emphasis of the *perception* of the imbalance. By taking social factors into account, the present research is more in line with the theory and application of other person-environment approaches as represented in the work of Holland (1965), Friedman and Roseman (1974) and Karasek (1979).

The exploration of the type and use of adjustment mechanisms is continued in the present research. Comparisons of Dawis and Lofquist's work with that of others highlight possible omissions in their theory. One work need not included was Nicholson's concept of the job

fitting in with an individual's lifestyle. Although his analysis of role demands and their importance and the addition of the affective component to work adjustment theory seemed a reasonable extension of Dawis and Lofquist's theory, the present research in the interests of size alone was confined to Dawis and Lofquist's adjustment mechanisms.

The study, a two-stage longitudinal one, used a group of volunteer students from a range of academic disciplines to examine aspects of Dawis and Lofquist's theory and additions aimed at improving its predictive validity. The aspects of particular interest were work need/work reinforcer correspondence and its effect on job satisfaction and tenure and ability-ability requirement correspondence and its effect on satisfactoriness and tenure. The additions proposed were aimed at representing a better integration of the conceptual areas influencing work adjustment and included cognitive aspects (such as self-efficacy for obtaining needs) and social aspects (such as degree of social support and the influence of social reference groups). The areas called into question by the propositions examined were: the job satisfaction/satisfactoriness or performance relationship, tenure as a work adjustment outcome, the abstractness and symmetry of the constructs not being mirrored in reality, and the comprehensiveness of the adjustment styles and the adequacy of their operationalisation.

The first stage of the study was a questionnaire for the students to complete about two-thirds of the way through their final year prior to graduation. This questionnaire surveyed work needs (by administering the MIQ), self-efficacy for obtaining work needs and use of Dawis and Lofquist's adjustment styles of active, reactive, perseverance and flexibility. It sought biographic data, previous work history and work plans, leisure activities, parent's socio-economic status and degree of life satisfaction and subjective well-being. The second stage of the study took place six months into the post-graduate year and consisted of a mailed questionnaire to determine the respondents' employment status, their confidence about work needs being met, their job satisfaction (by administering the MSQ), their perception of the reinforcers available, the usual tenure associated with their position and their expected tenure. Subjective well-being, locus of control measures, and Holland's VPI were repeated. Other information sought concerned leisure activities and satisfaction with these and living circumstances, satisfaction with the various domains in life, the nature and degree of social support available, and the relative importance of work and non-work. In addition, an alternative estimate of work adjustment and tenure, the extent to which individuals are

attached to their jobs, was used and the factor structure of the work needs questioned and explored.

Because that part of Dawis and Lofquist's theory relating to adjustment styles was the more recent, they regarded their adjustment styles and the measurement of them in particular as experimental. In view of this a small study, as described in Appendix J, was undertaken with two objectives. One was to identify the range of adjustment styles in use, to see if any had been omitted by Dawis and Lofquist. The other objective was to evaluate Dawis and Lofquist's exploratory instruments comparing these with other ways of measuring adjustment styles.

CHAPTER FIVE

DESCRIPTION OF PRESENT RESEARCH

5.1 Introduction to the study

The principal object of the present research was to investigate the application of Dawis and Lofquist's theory of work adjustment in an attempt to increase our understanding of the concept. The main areas explored were the latent structure of the work needs revealed in the subject sample and their relationship to other personal, social and environmental variables. In this study, modifications of the theory and its concomitant measurement model were made, to take into account the findings of the literature review.

Within this context, therefore, an exploration of the structure of work needs was made in response to Gorsuch's (1983) general comment that the failure to investigate whether factors are correlated (as occurred in Dawis and Lofquist's factor analyses of work needs) could be considered poor practice. The present researcher concludes, from the review evidence and an examination of Dawis and Lofquist's work need factor loadings that some of the underlying work factors could well be correlated (a belief supported by the research of MacNab and Fitzsimmons, 1987) resulting in the presence of second or even third order factors. The implications of finding a factor structure different from that of Dawis and Lofquist could be far reaching, certainly for their specific theory and its instrumentation.

MacNab and Fitzsimmons proposed in their general model that the factors of the Minnesota Importance Questionnaire (MIQ) were correlated. In their examination of alternative models via Confirmatory Factor Analysis (CFA), they found those which required the factors to be uncorrelated, either in combination with uncorrelated or correlated method factors, produced a poorer fit to the data. Such models were significantly different from the general model, leading the researchers to conclude that the trait factors are truly correlated. However, when two of the most highly correlated factors were combined, a significant difference between this and the general model did not arise, suggesting that traits are not strongly enough correlated to be combined. Such conclusions should more properly be confined to the MacNab and Fitzsimmons study only because just eight of the total 20 needs of the MIQ were used in the instrument comparisons.

It may not be particularly meaningful to combine only some traits to form conclusions. The eight traits used to match those of the other instruments did not represent all the six factors of the MIQ. The two factors omitted were achievement and safety. The achievement factor consists of needs to do with ability utilisation and achievement, and the safety factor consists of the needs relating to company policies and practices and technical and human relations supervision. The omissions are especially serious if they are found to be important factors which can account for a large proportion of variance with respect to a number of variables.

The suggested changes to work adjustment theory were aimed at having it take into account factors already regarded as important in research in other aspects of occupational and social psychology, that is those of a cognitive, social, non-work and vocational nature. These considerations, although having general importance also, appear to have particular relevance for university graduates who are typically in the young adult age group from a range of disciplines at the beginning of their careers. The cognitive perspective has been unevenly represented in the counselling and organisational approaches generally (Hackett and Lent, 1991). The areas explored in the present research were, personality factors such as those of self-efficacy and locus of control; social influences relating to social support and social reference groups; vocational factors of job preference-actual job congruence and job fantasy-occupation congruence; and the often non-work related influences of subjective well-being, work-lifestyle compatibility and the relative importance of work and non-work. The social and vocational factors may be of particular importance to the younger adult.

To date, the organisational perspective has included the cognitive element more, but has been limited to extensions of self-efficacy theory. Hackett, Lent and Greenhaus (1991) argued that research on social cognition and other cognitive theory should enhance our understanding of many vocational phenomena. As already discussed the contribution of non-work factors to work adjustment should not be overlooked.

5.1.1 The cognitive perspective: self-efficacy, subjective well-being

It would seem inappropriate to consider work adjustment without taking the affect of an individual's subjective perception into account. An individual's belief in their own ability, the extent to which their needs can be met and the extent to which they perceive they can achieve need-satisfaction are all important influences on work satisfaction and satisfactoriness. Such

a factor relates most closely to the self-efficacy construct. However, the use of self-concept variables, such as self-efficacy, has been controversial. Pryor (1985) and Gottfredson (1985) disagreed about the relevance of self-concept to vocational behaviour, for example. Pryor maintained that it is an unacceptable construct because it is typically defined in terms of the self's relationship to other variables, for example perceptions, and expectations, rather than in terms of its inherent properties. Because the self-concept has meaning only in terms of other entities it is said not to be able to truly explain human behaviour and should be exorcised from vocational behaviour and from psychology. On the other hand Gottfredson (1985) viewed the relational nature of the self-concept as its strength, because it reflects people's views of themselves in relation to the larger society. Those who are similar otherwise were said to often pursue different career directions because of their views of themselves and their associated self-efficacy expectations and self-esteem.

Self-efficacy

In the application of social learning theory to career decision making, which has been heralded as one of the most significant innovations to have come out of research in the 1970s, little empirical evidence had been sought by the mid 1980s (Robbins, 1985). But Robbins regarded Hackett and Betz's (1981) work, positing a self-efficacy model to explain gender differences in vocational aspirations, as promising in this regard. However, it was said to be limited by results which only partially supported the differences in self-efficacy expectations, by the unknown influence of ability and vocational interest variables, and by a not very clearly defined sample.

By way of definition, Bandura (1977a) originally distinguished between the construct of outcome expectancy and that of self-efficacy expectation. The former was defined as an individual's estimate that a given behaviour will lead to certain outcomes. The latter was defined as the conviction that one can successfully execute the behaviour required to produce the outcomes. It is because individuals believe that a particular course of action will produce certain outcomes, that is outcome expectations, that behaviour can be influenced differentially by outcome expectancy and efficacy expectation. Bandura (1982) said self-efficacy expectations affect "thought patterns, actions and emotional arousal" (p 122) by increasing performance, lowering emotional arousal and accounting for change in a wide range of coping behaviours in response to a wide range of differing stimuli.

Bandura saw self-efficacy expectations as affecting both the initiation and the persistence of coping behaviour by affecting the choice of behavioural settings. Situations believed to exceed one's coping skills could be avoided by controlling coping efforts once initiated, by controlling both how much effort is expended and how persistent the behaviour will be. The amount of effort expended and the persistence involved could be seen to have a parallel in Dawis and Lofquist's notions of intensity and perseverance, respectively.

Self-efficacy expectations were described by Bandura as varying on the dimensions of magnitude, strength and generality. Expectations were said to vary in their magnitude such that different individuals may attempt different tasks, some simpler, others moderately difficult, and others very difficult. With respect to the concept of generality, some experiences were said to create mastery expectations while others produced a more generalised sense of efficacy. The strength of expectations were said to vary such that weak expectations are easily extinguished by disconfirming experiences whilst individuals tend to persevere in their coping efforts when expectations are strong.

Efficacy expectations and performance were viewed as having reciprocal effects, successes raising mastery expectations and failures decreasing efficacy expectations. Once strong efficacy expectations have developed, the negative impact of occasional failure was expected to be reduced. The effects of failure on self-efficacy are believed to partly depend upon the timing and the total pattern of experience in which the failure occurs. An individual's sense of self-efficacy is thought to be increased by having a serviceable coping skill at their disposal.

In the context of Dawis and Lofquist's theory, self-efficacy might be increased by having a wide range of adjustment styles available and being flexible in their use. Bandura emphasised that successes are more likely to enhance self-efficacy if the performance is perceived as resulting from skill rather than fortuitous or external events. Whereas, failures were said to more likely reduce self-efficacy when they are attributed to ability rather than to unusual circumstances. Some work needs individuals can exercise control over, or are able to influence on some occasions. Work variety, for example, might be expected to be determined by the nature of the work but where individuals can choose when to perform which of their job tasks, they can have control over the variety in their work. For some work needs or for other work needs on some occasions, individual's self-efficacy for obtaining these needs could

influence whether the needs are met. In Bandura's (1977a) terms, self-efficacy for obtaining those needs the individual is able to influence, would be the conviction or belief that the behaviour required to produce the outcomes would be successfully executed.

Bandura concluded that under conditions of perceived self-determination of outcomes, the impact of performance attainments on self-efficacy varies according to the attributions made. Where there is success with minimal effort, ability ascriptions are fostered and these reinforce a strong sense of self-efficacy. Where success is achieved through a high expenditure of effort a lesser ability is connoted and the effect on perceived self-efficacy is likely to be weaker. Therefore, attribution factors and locus of control would need to be explored as possible moderators of the effect of success and failure on self-efficacy. Cognitive appraisals of the difficulty level of tasks are thought to further affect the influence of performance accomplishments on perceived self-efficacy.

Comparisons of self-efficacy and expectancy models in the area of occupational preference (Wheeler, 1983) have found expectancy models to be characterised by relating individual work values and the availability of desired rewards in different occupations to occupational preferences. "The expectancy model describes occupational preferences as a function of occupational valence, (V_j) , the algebraic sum of the products of the valence of each outcome, (V_k) , and the instrumentality of an occupation for the attainment of these outcomes, (I_{jk}) " (Wheeler, 1983, p 73). On the other hand self-efficacy models have emphasised personal perceptions of capacities to perform in different occupations to occupational preferences (Wheeler, 1983; Mitchel, T. R. and Beach, L. R., 1976).

O'Brien (1986) in reviewing Bandura's theory of competence or 'self-efficacy' classified such beliefs as concerned with personal control. He stated that competence beliefs are concerned with an employees's belief about his or her ability to perform tasks. In Bandura's approach self-efficacy is measured separately from performance and he viewed Rotter's (1966) theory of internal-external control as neglectful of efficacy beliefs for outcome beliefs. O'Brien maintained it is possible that outcome expectations can mediate the effect of performance on self-efficacy. O'Brien noted the paucity of studies testing self-efficacy in the work situation. One study directly related to work situations (Locke et al., 1984) found self-efficacy beliefs to be positively related to performance on creative tasks even when ability was controlled for. Self-efficacy was found to be related to past performance also. In the area of work

performance Brief, Stumpf and Hartman (1983) in testing a model of self-efficacy for use in employment interviews, and examining alternative conceptual links among the constructs of self-efficacy, task performance and coping methods found the model unable to predict actual performance levels. Self-efficacy for mastering job interviewing tasks was found to predict reliance on what was referred to as emotion focused ways of coping.

O'Brien examined Bandura's theory and Korman's (1968a, 1968b, 1970, 1971a, 1971b, 1976) theory of self-esteem and task performance. Korman's theory of work motivation predicts the level of task performance of an individual will reflect their reported level of competence or chronic self-esteem. There has been support for Korman's theory but the results have been equally well interpreted in terms of another theory (self-enhancement theory of Dipboye, 1977). O'Brien found some difficulties associated with interpretation of Bandura's and Korman's work. He noted ability has not usually been controlled for in studies that have showed competence/self-efficacy to have positive effects on performance. Those studies where ability was controlled for have usually found no effect of perceived competence on performance. O'Brien and Pere (1985) found high-self esteem subjects performed better in both easy and difficult tasks but when self-esteem and ability were used as joint predictors of performance, self-esteem was unrelated to performance. However Locke et al's (op. cit.) study did find self-efficacy effects on performance when ability was controlled for. Such mixed results demonstrate the need for further studies looking at the joint effects of ability, efficacy and competence on performance.

O'Brien argued that self-efficacy theory can go beyond locus of control theory only where a clear distinction between beliefs about response-outcome relationships and beliefs about ability to perform the required behaviours can be made. It was noted that if outcomes are visible rewards then the distinction is clear but if they are, as in Bandura's case, 'desired' outcomes the distinction is less clear, as Bandura himself noted, "expected outcomes cannot be dissociated from judgements about performance. Beliefs about degree of competence can determine what desired outcomes will be. O'Brien concluded that

"To the extent that Bandura's theory is confined to perceived outcomes (as it seems to be) and since work activities involve both intrinsic and extrinsic perceived rewards it must be considered that perceptions of self-efficacy at work cannot be disconnected from perceptions of control over rewards (outcomes)." (p 176)

Because Bandura's theory was said to not include an analysis of the task situation it was described as restricted. Although O'Brien believed it likely that Bandura's theory was preferable to those just based on response-outcome expectancy, especially in situations where desired outcomes are independent of performance. O'Brien expected self-efficacy theory to be useful when employees have the ability to do the job but cannot because they do not *believe* they have the ability.

Hackett and Betz (1981) have regarded self-efficacy as a principal mediator in developing a causal model of career choice. It was found that the career interests and pursuits of women are restrained by self-beliefs that traditionally male occupations are inappropriate for them because they lack the capabilities to master the skills needed. In contrast, the males were equally efficacious for having the educational requirements and carrying out the tasks of both traditionally male and female vocations.

Studies have suggested that women more than men are likely to rely upon luck as an explanation for both successes and failures (Bar-tal & Frieze, 1977; and Simon & Feather, 1973), that in academic achievement the lower self-efficacy expectations of women may be affected by their personal responsibility for their successes (Betz and Hackett, 1981). High levels of anxiety have been found debilitating in terms of performance and efficacy expectations, and female anxiety scores have tended to be higher than males. Beck and Hackett (1981) saw anxiety as a co-effect of low self-efficacy rather than a cause. Anxiety was thought to further lower both self-efficacy and the probability that the behaviours will be successful and lead to increased self-efficacy. The self-efficacy model, as a perceived match of personal abilities to occupational requirements, was found to be more highly related to occupational preference than to occupational valence. Because support for both models was found (Wheeler, 1983), however each having separate and independent relationships to occupational preference, it was concluded that a more complete model of occupational preference was needed which would include elements of the two.

Lent and Hackett (1987) concluded that the empirical support for the extension of self-efficacy theory to career-relevant behaviour is growing. They claim that it surpasses others of the more established variables like interests and abilities in its ability to predict career behaviour, even although not all findings have been favourable. The use of different samples, self-efficacy measures and criterion variables were thought to have been responsible for the

discrepancies. Many of the future research suggestions of Lent and Hackett (op. cit.) made after the data had been collected for this present study were congruent with its aims and foci. Lent and Hackett's (1987) suggestions were, clarification of the causal links between self-efficacy and career behaviour and investigating the relationship of self-efficacy variables to career adjustment, vocational interests, career salience, work values, locus of control and occupational outcome expectations.

Factors which have been shown to be of importance to an occupational preference model also might be of importance to work adjustment. Because self-efficacy expectations are believed to affect the choice of behavioural settings, the initiation of coping efforts, the amount of effort expended and the persistence of those efforts in general, it would seem logical to expect similar effects in the specific case of the work setting. Therefore, self-efficacy expectations would be expected to affect satisfaction and satisfactoriness and thus the degree of work adjustment attained. With respect to occupational valence, as defined above, Dawis and Lofquist's notion of correspondence bears some resemblance to the expectancy model. By adding the self-efficacy construct, the two elements Wheeler (1983) recommends as necessary for a complete occupational preference model would be present in the work adjustment model.

Subjective Well-being

The second cognitively oriented construct introduced in the present research, and one which is an expected outcome in work adjustment is that of subjective well-being. Such a relationship might be expected because subjective well-being could be regarded as a measure of self-perceived general adjustment, part of which would be expected to be determined by work adjustment. In her review of the theory and measurement of subjective well-being Grainger (1985) noted that the concept has developed from two sources. One was that of social indicators. Researchers initially focused on measurable units such as income levels, but from the late 1960s began to ask how satisfied individuals were with their lives. Quality of life came to be defined then not only by physical, but also by subjective variables concerned with how people perceive their lives and conditions. From this a focus upon the measurement of perceptions of well-being that define the quality of people's lives developed (Andrews and Withey, 1976).

The second source of the development of the theory and measurement of perceptions of subjective well-being was said to come from what Bradburn (1969) called the 'happiness problem'. Happiness, it was suggested, had been debated as a religious, a political and an economic problem, first becoming the subject of social scientific research in the twentieth century. It has been defined through the use of a normative framework, such as an individual possessing desirable qualities. Bradburn viewed happiness as affect balance, as the experiencing of more positive than negative affect. He defined psychological well-being by incorporating the emotional components to a greater extent than did the definitions of the life satisfaction literature.

Researchers in the area of subjective well-being have generally focused upon two components, life satisfaction and affect balance. Deiner (1984) described three hallmarks of 'well-being'. Firstly, that it is subjective in nature, because it is as perceived by the individual and not measured by some criteria external to the individual. Secondly, that it includes positive as well as negative measures. And thirdly, that it usually includes a global assessment of an individual's life. Subjective well-being has been defined as an individual's perception of how they feel about life which is separate and distinct from the objective circumstances which may affect these perceptions (Grainger, 1985).

There has been extensive debate about the components and dimensions of subjective well-being which have had implications for the construct both conceptually and in terms of its operationalisation. Deiner (1984) proposed that positive and negative affect tend to suppress each other at particular moments in time, but that this suppression is less likely with graded responses, than the yes/no response of Bradburn's 1969 multi-item measure. A graded response asks if a feeling is present, at all, not at all, occasionally, some of the time, often, or all the time. Studies that have used a longer time span are thought to have blurred frequency of positive affect, and the intensity with which affect was experienced. Deiner demonstrated that scales measuring only frequency will be correlated but that those scales measuring mean levels of affect, both frequency and intensity, will be independent.

Viet and Ware (1983) in developing a Mental Health Inventory based upon Dupay's General Well-being Schedule used a single mental health factor made up of psychological distress and psychological well-being. Chamberlain (1984) believed this to be simply negative and positive affect renamed. Viet and Ware included a social support component in psychological

well-being and viewed psychological distress and psychological well-being as being distinct and separate. Tanaka and Huba's (1984) factor analysis of Viet and Ware's Inventory, found distress and positive well-being factors to be indicators of a general mental health construct. The presence of a higher order factor is consistent with Kammann's (1983) criticism of Viet and Ware's concept of mental health as being merely subjective well-being with its component dimensions, positive and negative affect. The methodology was criticised as failing to separate frequency and intensity data. A third dimension of subjective well-being has emerged from factor analysis of the Affectometer 2 (McFarland, 1984). This extra dimension was less important statistically and was labelled social-loving feelings.

Evidence has been found of a cognitive dimension in subjective well-being which involves individuals' appraising their life situation relative to some standard or situation about which they either have expectations, hoped would exist, or have seen in others' lives (Chamberlain, 1984; Deiner, 1984). Beiser (1974) found three principal factors, negative affect, pleasurable involvement and long term satisfaction. He believed these three factors represented an affective dimension which is related to emotional and family ties. However, Grainger (1985) believed this dimension to be closer to cognitive evaluation in the light of research. Bryant and Veroff (1982) in a longitudinal study found a stable three-factor structure of positive affect, negative affect and perceived competence in handling one's life. McKennell and Andrews (1983) looked at models in terms of how cognition and affect operate in the perception of well-being. The models which contained a cognitive factor were found to fit the data better. They suggested that affect, unlike the cognitive dimension, is an immediate feeling state not anchored to the same extent to cognitive frames of reference.

Subjective well-being has been discussed in relation to several different factors. It has been predicted by some personality factors, for example, extroversion and neuroticism, locus of control and self-esteem (Costa and MacCrae, 1980). Unemployment has been found to reduce subjective well-being (Campbell, Converse, and Rogers, 1984), but it appears unrelated to factors of psychological maturity (Costa and McCrae, *op. cit.*), gender (Andrews and Withey, 1976), or intelligence (Deiner, 1984). A positive but somewhat inconsistent relationship between income and subjective well-being has also been found (Deiner, 1984). Other identified predictors of subjective well-being have been marital status (Kammann, 1983) and social contacts and friendships (Deiner, 1984). Employment or unemployment, and marriage have been regarded as related to subjective well-being variables, but on their own have not

been expected to completely account for the relationships. Factors such as financial strains and loss of status have been found to be associated with diminished subjective well-being (Grainger, 1985).

Campbell, Converse and Rodgers (1976) highlighted the degree of self-esteem as a component of a sense of well-being. They chose the word component to avoid definitively stating that self-esteem is either a cause or an effect of well-being. They believed that feelings of self-esteem are established early in life and as such are more likely to be causative of current satisfaction, but at the same time they acknowledged there probably is a major element of reciprocal causation.

Both well-being and self-efficacy have been investigated together (Stumpf, Brief and Hartman, 1987) in an attempt to better understand how individuals become motivated to cope with career-related stressful events such as the job interview. Psychological well-being, as indexed by self-report, was found to be affected directly by the ways in which individuals cope and indirectly through the development of positive efficacy expectations. Self-report measures of coping showed reduced levels of psychological well-being accompany the use of emotion-focused ways of coping.

Deiner (1984) advocated the need both for the development of more theory and the application of suitable methodology in the area of subjective well-being. The above discussion shows support for the approach taken in the present research of exploring interrelationships among subjective well-being, self-efficacy and locus of control variables.

5.1.2 Personality: personality factors, and locus of control

The effect of personality factors on the process of work adjustment may be one of the most important influences and one which has previously lacked emphasis. Personality factors would be expected to help determine, firstly, the work needs which are important to any one individual, and secondly, the part an individual can play in having their needs met. With respect to the part the individual may play, two important personality related factors could be, the degree of individual self-confidence or self-efficacy about having needs met and their locus of control (the degree of control over having their needs met).

Anastasi (1964) indicated that research on occupational personality using need measures, as opposed to interests, has frequently shown there to be gross differences among occupations. However, these have appeared trivial in nature when compared to the differences among members of the same occupation. It was suggested that the type of individuals for whom the concept of the occupational personality might be the most appropriate are high self-esteem 'normals' and those for whom the concept might be least appropriate are so called low self-esteem, high self-dislike 'abnormals'.

An approach in vocational psychology which has been primarily oriented towards personality factors and their congruence with the work environment and which has generated much research has been that of Holland (1973). Of the more than 150 studies which used the theory as a basis, over 90 of these offered some support (Lackey, 1975). Taylor, Kelso, Cox, Alloway and Mathews (1979) argued that Holland's theory, as described earlier, might be generalisable to non-vocational behaviour.

Elton and Smart (1986) found job satisfaction to be positively related to congruence between personality types of individuals and their environment (person-environment congruence), as consistent with that proposed by Holland (1965, 1973). In contrast to earlier findings of Mount and Muchinsky (1978) and Wiggins et al (1983), job satisfaction, however, was not found to vary with personality type. Elton and Smart noted that reconciling the discrepancies appears a problem, but that the type of measures used may in part help to explain those differences. Mount and Muchinsky used measured interest to look at congruence whereas Elton and Smart used respondent expressed or perceived congruence.

Smart contended that although Holland's theory provides a sound framework, several refinements are needed. Multiple dimensions of job satisfaction were recommended because person-environment fit hypotheses have not been found to be equally applicable to all dimensions of job satisfaction. This finding also encourages the examination of Dawis and Lofquist's need-reinforcer dimensions for their potentially differing effects on job satisfaction. Further research was said to be required with respect to the gender specific findings and the relationship between person-environment congruence and job satisfaction being gender dependent. Also, non-linearity had been found in the relationship between person-environment congruence and the extrinsic job satisfaction of males, involving income, fringe benefits and job security.

In the case of recent graduates, personality dimensions, whether approached from a trait-state or behavioural perspective, may be as important as or even more relevant to work adjustment than Dawis and Lofquist's congruence of work needs and abilities with the work environment. It may be difficult for a group of respondents to know which needs are important to them if their work history shows little relevance to their position taken upon graduation. Even if their work needs have matured they may undergo change in response to the situation of immense change associated with graduation and employment. Instead, the broader categorisations of Holland may be of more assistance in predicting congruence between the individual and the environment.

A personality factor expected to influence individuals' adjustment to work is the degree to which they tend to have control over their interaction with the work environment in terms of the causal attributions they make about themselves. The concept of locus of control is regarded as being based upon a social learning theory or 'interactionist' view of the individual, the individual learning through past experience and 'modelling'. Locus of control, in referring to the amount of perceived control an individual has over a situation, distinguishes between an *internally* oriented individual who believes that personal actions and decisions influence outcomes and an *externally* oriented individual who believes in fate or luck as influencing outcomes. Scales such as that of Rotter (1966) assess where the locus of control lies. Sutherland and Cooper (1988) reported that research has found the locus of control scale to be multidimensional. Examples of different domains suggested were *personal* or *socio-political*. This is more readily apparent when outcomes are likely to be negative. They regarded locus of control as only one expectancy construct which on its own should not expect to account for a large proportion of the variance in any relationship. One important aspect of self-esteem has been said to be the degree to which an individual feels in control of his or her life as opposed to being subject to control by chance factors or external forces, such as the government or superiors. When measured in different social science contexts it has become a strong predictor of many important social behaviours and noted as a possible important moderator of self-efficacy. Locus of control has also been referred to as personal competence (Campbell, Converse and Rodgers, 1976).

O'Brien (1986) categorised locus of control measures (along with self-efficacy measures) as 'personal control beliefs'. He discussed his own work and that of others to conclude that personal control beliefs have an effect on performance. 'Internals' tended to perform better

than 'externals'. However the effect of locus of control was found to depend upon the type of situation and the ability of the individual. O'Brien postulated a model which specified the manner in which locus of control, skill utilisation, influence (or degree of autonomy) and ability could determine individual work performance. It was suggested that Rotter's scale be revised to make it a better measure of generalized expectancies and to sample a wider range of situations. Rotter's (1966) scale was found to have underlying factors of personal control and system or political control. O'Brien recommended that a revised scale classify situations on the basis of the objective source of determination, that is, personal, structural, or a mixed personal-structural source. O'Brien warned that results of locus of control studies should not be interpreted as indicating that 'internals' are best. Such extreme individuals who believe all situations can be determined by them could be inflexible and uncooperative. O'Brien (op. cit.) advocated more research relating to the 'realist' who "is able to differentiate between situations where personal effort is effective and situations where structural factors preclude individual freedom of movement" (p. 179).

Work has been viewed as coercive from a sociological perspective (Friedmann and Havighurst, 1954) and as involving the surrendering of control (Blauner, 1969). Significant cultural differences have been apparent in the need for control and for independence in employment. In relation to different occupations, lack of control over work and its conditions have been identified as the most pronounced for industrial workers. Blauner used the concept of control in a vague manner to cover a wide range of phenomena. These included, control over the use of one's *time*, control over *physical movement*, and freedom from *hierarchal authority* or the control of others. These dimensions were recognised as being interrelated such that an individual high in occupational status would tend to be high on these dimensions. It was believed that the higher the degree of control the greater the job satisfaction. Skill was viewed as control over the technological process of work. But the apparent contradiction of a low-status occupation such as railroading in America exhibiting high job satisfaction was thought to relate to the high degree of control of the incumbents, especially in terms of freedom from supervision.

5.1.3 Relevant social factors: social relations, social support and social reference group

Korman (1971c) maintained that there is considerable evidence suggesting psychological needs tend to be related to the social roles of an individual, whether the role is a level or a position

within an organisation. Occupational differences in job satisfaction have been explained in part by an important factor, that of the nature of social relations on the job (Blauner, 1969). Higher satisfaction was expected for workers who are members of an integrated group or work team. The nature of the non-work association of workers was identified as a factor in job satisfaction. Levels of satisfaction were found to be higher in industries where the types of jobs, one example being mining, have resulted in workers making up an *occupational community*, a residential area made up mainly of their fellow workers. These communities can develop in response to conditions such as physical isolation, the nature of the work, or atypical work hours. They can be characterised by workers socialising outside work hours more than do a cross-section of other kinds of occupations. The workers tend to 'talk shop' and occupational communities can become like little worlds in themselves.

It is believed that when workers know their co-workers off the job that they will gain increased social satisfactions on the job. Occupational isolation can instill a sense of pride and devotion to that particular line of work. Workers are insulated from outsiders and from the image the public have of their occupational status, an image which is often lower than their own perception. The assembly line worker's work and nonwork activities tend to be separate whereas the leisure and work interests of those in occupational communities are integrated to a higher degree. Blauner argued that if the integration of work and non-work is as important to general psychic adjustment in the way others have maintained, then workers in occupational communities should show higher job satisfaction because the two are more integrated in such communities.

For the recent graduate population, the degree to which social relations will affect their job satisfaction would be expected to depend upon the type of occupation and the extent to which off-the-job social contacts are established. The graduate population's job satisfaction might be influenced by both their social reference group and their social support. As mainly young adults their social relationships may also predominantly involve their peer group. As with other occupational communities where they are working with their peers, work and nonwork is better integrated and higher job satisfaction might be expected. Regardless of the extent of work/non-work integration, however, such a group might be content with their level of job satisfaction if it compares favourably with that of others in their reference group. Such a notion is consistent with social reference group theory.

Social reference groups have been regarded as important in relation to subjective well-being (Deiner, 1984). Because of this, social reference groups could be expected to have a role to play in work adjustment as well. This approach employs a similar framework to that of need-fulfilment theories, but takes as its point of departure not the desires, needs and interests of an individual but the opinions and perspective of the 'group' to which the individual looks for guidance. Such groups are defined as the *reference group* of an individual, serving to define the way in which the world should be perceived and how various phenomena in the environment should be evaluated (Korman, 1971c).

According to this theory, individuals predict that if a job meets the interests, desires, and the requirements of their reference group then the individuals will be satisfied with their job. It could be argued that not all people will be influenced by group opinions and as such the approach on its own would be an incomplete explanation of job satisfaction. Where the individual is influenced by a reference group, a likely assumption for a graduate group, their satisfaction may be affected by the extent to which a job situation matches a reference group's conception of what is appropriate and proper for an individual in that group (Korman, 1971c).

Little systematic knowledge exists about how people choose and accept reference groups as a basis for evaluating themselves or their jobs. Individuals were thought to seek out those who are similar to themselves in order to evaluate themselves clearly (Festinger, 1950; Patchen, 1961; and Pettigrew, 1967). Most of the research in the area has been aimed at demonstrating the existence of reference groups and that they affect evaluation. Pettigrew (1967 op. cit.) noted that many questions have been left unanswered such as: what kind of similarities affect reference group selection? what are the areas of influence which different groups have and how are these different among individuals? how do such influences alter over time and as a function of different circumstances? and how do these different effects combine with each other?

Early research tended to suggest the most important social influences are socio-economic class (Centers and Bugental, 1966), race (Bloom and Barry, 1967), urban or rural residence (Katzell, Barrett and Parker, 1961), national culture and location (suburban versus central city residence) (Korman, 1971c). In discussing the correlates and determinants of job satisfaction generally, Korman believed the positive relationship between occupational level and job satisfaction commonly found seems to stem in part from social-reference-group theory, in that

over all a society values some jobs more than others. He also suggested that jobs can increase in range and spread of activities, the higher one climbs an occupational hierarchy. Greater satisfaction can then result, for these reasons, rather than the influence of the importance of a job to the social reference group. Certainly more research is required relating to the influence of social psychological variables, such as attitudes of parents, spouse, and friends towards the work situation.

On the basis of reviews of the social support literature by Broadhead et al, (1983), Berkman (1986) and Pearson (1987), Pearson concluded that social networks have played an important role in physical health and emotional adjustment, and that social support has assisted individuals to cope with change. Definitions of social support have been either affective or process oriented (Gore, 1981; Thoits, 1982; Leavy, 1983; House and Kahn, 1985; Kessler, Price and Wortman, 1985; and Pearson, 1983). Vaux (1988) regarded social support as a metaconstruct subsuming the theoretically distinguishable constructs of subjective appraisals of support, specific supportive behaviour and support network resources. Rook (1990) in reviewing Vaux's (1988) work concerning the theory, research and intervention concerned with social support, recommended a balance in the need for both complexity and parsimony in social support theory. This was in response to Vaux advocating social support as a metaconstruct. Social support was viewed not as a static property of person or environment but as a dynamic transactional process with many contextual factors able to influence it. Contextual factors included the composition of social networks, norms regarding help-seeking, roles available to individuals in particular social settings and the physical design features of some settings.

There has been a move away from focusing on simple undifferentiated models of social support to an emphasis on increasingly intricate, context-specific models. Social support has been found to vary as a function of gender and marital status. Ethnicity or socioeconomic status have been found to moderate effects of marital status but not gender, but Vaux was less clear about the involvement of other moderators. The investigation of developmental continuum and discontinuum in social support via longitudinal studies has been recommended and the suggestion is that social networks expand throughout adolescence and young adulthood then shrink with age. The implications for psychological well-being is thought to be less well understood, (Vaux, 1988).

House (1981) maintained that a supportive social relationship can reduce stress and improve health by satisfying needs for affection, approval, social contact, and security, and act as a buffer and effect modifier. Moderation effects of social support have been found to be specific rather than general and perceived social support has been believed to influence subjective reporting of stress and to operate as a confounding factor (Mackay and Cooper, 1987). La Rocco, House and French (1980) did not find social support to moderate job-related strains such as job dissatisfaction and boredom. Social support was found to influence the impact of critical life events on depression and anxiety but only for individuals with an internal locus of control (Sandler and Lakey, 1982). Support from the boss rather than the family has acted as a buffer (Kobassa and Pucetti, 1983). Support for buffering effects have been found in some studies (Karasek, 1982; Abdel-Halim, 1982; and Seers, McGee, Serey and Graen, 1983), but not in others (Aneshensel and Stone, 1982; Blau, 1981; Ganellan and Blaney, 1984; and LaRocco and Jones, 1978). Some of the critical factors have involved settings, measurement of stress, and locus and type of support (Henderson and Argyle, 1985). The availability of social support is said to be affected by factors such as ethnic and social class values, expectations about helpers and helping, ability to reciprocate, self-disclosure, and social competence (Gottlieb, 1983). The new developments in types of social support all of which have relevance for the graduate population are, networking, mentor relationships, peer counselling and self-help groups (Pearson, 1987).

Social support has been identified as an important factor in subjective well-being (Viet and Ware, 1983). In New Zealand studies, Voges (1984) found social support to affect employees reaction to stress and to vary with housing and living circumstances. Social support was recognised as an external moderator of stress in a particular group of New Zealand occupations. Voges also found social support from a spouse to be the best at reducing the effect of perceived stress on health. The high correlations between marital status and well-being that have been noted (Kammann, 1983) may have arisen in part from the support that a marital relationship might offer.

The particular relevance of social support to a work adjustment theory is that it may act as a moderator with respect to, in work adjustment theory terms, the amount of discordance an individual can tolerate in relation to the work environment before initiating adjustment behaviour and the degree of perseverance with adjustment behaviour

before taking up the option of leaving the work environment. The moderators possibly affecting social support itself, such as locus of control, also need to be considered.

5.1.4 Vocational factors: preference, choice and fantasy

Another construct potentially important to work adjustment for recent graduates is that of vocational preference and its effect on the choice of vocation. The degree to which an individual's occupation is similar to their fantasy about the occupation they would like to pursue, the more an individual could be expected to be satisfied with their choice of occupation. One might also expect an association between fantasy occupation and type of leisure activities chosen. Leisure may begin to compensate for being in a job different from the fantasy position, the interaction of leisure and work is discussed further in section 5.1.5. Job satisfaction itself may be affected by the degree to which occupational fantasy matches occupational choice; job satisfaction would be expected to increase as a job more closely approximates or matches occupational fantasies.

The degree to which work adjustment is affected by job satisfaction and subjective well-being may be affected by the degree to which an individual's vocational fantasies correspond to the occupation they take up. This would suggest that those who experience high correspondence between occupational choice and fantasy may at least initially be satisfied. However, if the fantasy job does not meet expectations and other factors such as the needs are not reinforced, or ability requirements of the environment differ from the individual's abilities (creating correspondence problems) satisfaction from such a source may not endure.

5.1.5 Non-work factors

Although the importance of non-work activities for work processes has been increasingly recognised, Dawis and Lofquist have generally not taken them into account in their theory of work adjustment. They have, however, examined one of the indicators of work adjustment in relation to life satisfaction. In a study using the Minnesota Satisfaction Questionnaire, life satisfaction was found to influence job satisfaction rather than the reverse (Weiss, England and Lofquist, 1967). Hackett, Lent and Greenhaus (1991) have observed that the interdependence between work and non-work roles has formed the basis of other topics within organisational behaviour research. The study of withdrawal behaviour was said to have

benefited from taking a multiple role approach. Job attitudes as the only determinants of work withdrawal, have been replaced with absenteeism and turnover models which have recognised withdrawal decisions as often being a response to non-work role demands (Steers and Rhodes, 1978; and Mobley, 1982). The potential influence of non-work factors has been recognised by Nicholson (1984) in his emphasis on the role of non-work variables, such as changes in family and community involvements.

The interdependence of work and family has been emphasised (Nieva, 1984, 1985) and growing evidence of it found (Burke and Greenglass, 1987). The need for a two-part approach to investigate life-space activities has been advocated (Shouksmith and Hesketh, 1986) and Burke and Greenglass (1987) noted that research supports the increasing recognition of an *open systems* approach, that is, that events in one part of life are likely to affect and be influenced by events in another sphere.

Greenhaus and Parasuramans (1986) expected the emphasis on work/non-work interdependence to continue and they thought it desirable to apply the link to areas of job design, career planning, organisational culture and the quality of work life. They expected multiple role pressures to continue, and advocated further examination of the impact of organisational and personal influences on the integration of work and non-work.

The relationship between work and non-work has been approached in a number of different ways, not all of which allow a relationship between work adjustment and non-work to be fully assessed. The variables which have been used to operationalise work aspects of the work/non-work relationship have included work satisfaction, work activities, work involvement, work role demands, job satisfaction and work adjustment. The variables used relating to the non-work part of the relationship have been leisure activities, psychological well-being, personal life stress, leisure satisfaction, life satisfaction, general adjustment, personal adjustment and general satisfaction. The more recent term of subjective well-being seems to have replaced the use of terms such as psychological adjustment and even general adjustment, in the same way that the term work adjustment has superseded vocational adjustment.

Some terms, such as vocational adjustment and general adjustment, have subsumed other variables. The criterion for vocational adjustment has been given as degree of satisfaction and satisfactoriness (Heron, 1952a, 1952b, 1955), which is similar to Dawis and Lofquist's (1984)

definition of work adjustment. Similarly, Super (1957) defined general adjustment as a composite of personal and social adjustment. The variables relating to a work/non-work relationship have been paired in various ways in the literature and have often addressed different questions.

Although the influence of activities external to work were examined by theorists such as Super (1940, 1941), Kanter (1977) is credited with destroying the myth of the separate worlds of work and family. An extensive body of research in the 1980s identified links between work and non-work. A common pair of variables examined together were *work satisfaction* and *leisure*. The debate about this relationship tended to examine the relative value of each (McDaniels, 1977; Allen, 1980; Parker, 1983; Stothart, 1984; and Weiner and Hunt, 1983) assuming a unitary and direct causal relationship between the two, (Brook, Kesha and George, 1987).

Three hypotheses, each gaining some support tended to emerge from this type of research. One hypothesis, known as *spillover* or *generalisation*, had individuals engaging in leisure activities similar to their work. Another proposed a *compensatory* relationship which had people choosing leisure activities which compensate for unfulfilling work experiences. A third, the *segmentalist* or *neutral* hypothesis, regarded work and leisure as distinct domains of life. Since Wilensky (1960) first introduced the notions of compensation and spillover, most studies, largely occurring in the early 1980s, debated the relative worth of the first two hypotheses. Support has been found for the compensation hypothesis (Mansfield & Evans, 1975; and Snyder & Spreitzer, 1974), for the spillover hypothesis (Meissner, 1971; Orpen, 1978; Rousseau, 1978; Evans and Bartolomé, 1980; Staines, 1980; Kremer & Harpaz, 1982; Crouter, 1984; and Jackson, Zedeck, and Summers, 1985), and one or other of the hypotheses conditional upon other factors (Champoux, 1978, 1980, 1981a; Payton-Miyazaki and Brayfield, 1978; Melamed and Eichanan, 1981; and Evans and Bartolomé, 1986).

Some findings have shown a negative spillover from work to non-work (Bartolomé and Evans, 1980; and Jackson, Zedeck and Summers, 1985) such that a stressful work environment can reduce the quality of family and personal life. Negative spillover, from non-work to work, has also been found (Crouter, 1984). Evans and Bartolomé (1980, 1984) found support for their expansion of the spillover and compensation constructs to involve both negative and positive spillover; the work and family could be in conflict with each other,

independent of each other, or satisfaction in one setting could be instrumental in maintaining satisfaction in the other. Other studies supported the segmentalist hypothesis (Bacon, 1975; and Gupta & Beehr, 1981). One model of work/non-work stress (Greenhaus and Parasuramans, 1986) looked at explaining relationships among stressors, stress and strain in the two domains of work and non-work.

More sociologically oriented approaches have challenged the over-simplicity of the work/non-work dichotomy (Parker, 1971) with work and leisure instead being examined in terms of roles, role activities, role involvement and subjective role reactions (Staines, 1980). Structural features, like community type, degree to which work and leisure activities are separated in the community have been emphasised (Shamir and Ruskin, 1983). For Newman (1983), the work/leisure distinction has been superseded by a triad made up of work, leisure and consumption. A role conflict perspective looking at the demands of competing roles has been adopted (Hackett, Lent & Greenhaus 1991). The demands of the work role and the family are seen to compete to the extent of being incompatible (Greenhaus and Beutell, 1985). This assumption has guided research to focus upon negative features of spillover. Positive aspects of multiple roles have been the focus of an alternative approach (Marks, 1977; and Sieber, 1974). Multiple roles have been regarded as promoting emotional well-being (Thoits, 1983).

O'Brien, Dowling and Kabanoff (1978) had already concluded there were weak and confusing levels of support for the compensation, generalisation and segmentation approaches. No unequivocal support for either of the three major hypotheses has emerged (Zuzanek and Mannell, 1983) to explain work/non-work relationships in all situations (Kabanoff, 1980). In investigating social status, job scope and personality variables, multiple determinants of non-work behaviour specific to social, political and religious segments of non-work life have been found (Champoux (1981b). Also personality characteristics, such as the need for achievement, were found to interact with job scope to affect the work non-work relationship (Champoux, 1981b).

Zuzanek and Mannell (1983) have advocated more complex and flexible research designs viewing work-leisure relationships as reciprocal and multi-dimensional while proposing demographic and cognitive moderating variables. With respect to relationships between work and family, these have been identified as *compensatory*, *reciprocal*, and *independent*. A further three called *incompatible*, *instrumental* (one setting is instrumental in gaining what is

desired in the other) and *integrative*, have been added (Payton-Miyazaki and Brayfield, 1976).

Rather than searching for a single model to explain work and non-work relationships, Burke and Greenglass (1987) recommended placing emphasis on understanding psychological and social factors, such as marital status and stages in both life and career cycles. Adopting a developmental perspective may be of relevance in studying populations representative of different stages, such as a recent university graduate population. Relevant also would be Evans and Bartolomé's (1984) moderating factors of emotional outcomes of work and the importance of work in the life of an individual, both of which could vary with career stage. In Kabanoff's (1980) review (highly regarded by Landy, 1985) of the work/non-work relationship, a broader view of satisfaction was recommended. An understanding of the complex relationship between work and leisure was expected to come from the identification of patterns of activity and satisfaction based on work, leisure and family pursuits.

In the work/non-work relationship, Korman (1980) focused on the effect of unrealistic expectations on behaviour and happiness and the depression that can accompany success. Individuals can be ill-prepared for success and find it to be in conflict with their goals. Contrary to their expectations success can allow individuals less time with family and friends, thus potentially leading to a deterioration in health and to less self-determination.

Rather than simply looking at the relationship between work and non-work, the contribution of job and leisure to the overall quality of life perceptions has been examined. The attempt is usually made to establish the predictive uses of work and leisure and their relative importance to individuals. With the exception of disadvantaged groups, individuals have tended to segment their experiences (London, Candall and Seals, 1977). Leisure satisfaction was found to better predict life satisfaction than job satisfaction (Near, Rice and Hunt, 1978; and Rice, Near and Hunt, 1979). American university students were found to be more positively oriented towards leisure than work, and a representative sample of the American workforce stated a willingness to exchange future pay increases for more non-work time (Best, 1980). In the New Zealand context, Stothart (1984) regarded leisure as undervalued and recommended it be regarded as essential to balanced development and personal satisfaction. Shouksmith and Hesketh (1986) in their two-part approach to life-space activities, viewed adjustment and psychological well-being as dependent upon total life activity being

congruent with and therefore satisfying the individual's main needs. Such an approach could be viewed as an application of work adjustment theory to the general adjustment process.

In the early research work adjustment was regarded as one aspect of other partially interrelated aspects of general adjustment (Super, 1951) and as a function of it (Pruette and Fryer, 1923; Fisher and Hanna, 1931; Paterson and Daley, 1936; Menninger, 1942; Shafer and Shoben, 1953; Clark, 1953). Others maintained they were not related under certain conditions (Gellman, 1953), such as the less debilitating types of mental illness (Ginzberg, 1962). Moreover, only moderate correlation between the two adjustment constructs has been found (Super, 1957; Hoppock, 1963).

The direction of the relationship between work and general adjustment has been assessed. Hoppock (1963) argued against assuming all work maladjustment is caused by emotional maladjustment and for a reverse relationship in some cases. Shouksmith and Hesketh (1986) in a sample of New Zealand veterinarians found that although job satisfaction and mental health were related to the nature of the job, lack of factors positively related to these did not affect overall adjustment. Life satisfaction was obtained through non-work activities instead. Adjustment was believed to depend on factors like the degree to which needs could be satisfied and how aspects of job and lifestyle were valued. The relationship between such value systems and general well-being were moderated by factors such as gender, variety in a job and control over job activities.

A relationship between job satisfaction and well-being or general adjustment, has been found (Oates, 1971) in some cases, and not in others (London et al., 1970). Landy (1989) noted the assumption that job satisfaction influenced life satisfaction has not been generally supported. But life satisfaction has been found to affect job satisfaction (Orpen, 1978). Campbell, Converse and Rodgers (1976) investigated domains of life experience or quality of life variables in relation to subjective well-being using a national American sample. Using smallest space analysis of the intercorrelations of domains they found satisfaction with non-work activities to be the domain closest to their index of well-being. The next closest in order were financial concerns, then work, which included housework. The domain of satisfaction with work was found to be one of the strongest predictors of well-being. The friendship domain was less central. Early adulthood friendship patterns, as expected in a graduate

sample perhaps, were found to be relatively open and often determined by factors such as physical proximity.

Of the many models of the relationship between satisfaction domains and well-being, Campbell, Converse and Rodgers (1976) concluded that a weighted summation of satisfaction domains best represented the relationship. A linear additive model was found to be appropriate, such that dissatisfaction with one domain could be compensated for by satisfaction with other domains. Their set of seventeen domain scores were found to account for about 10 percent more of the variance in well-being for a group of college graduates and professionals, to about 63 percent.

Self-reports of importance of the various domains did not perform well as weighting factors. It was thought that the reason was because they are less stable than satisfaction measures, because individuals change their minds about the importance of different domains and that the measures contain uncommon error. Domains were also expected to differ in importance as life circumstances change. Campbell, Converse and Rodgers concluded that global reports of well-being can be regarded as composite measures of satisfaction and dissatisfaction of a range of more specific domains of life. They noted that both global and specific domain measures were biased towards positive reports, which is consistent with Zarjone's (1968) findings that the frequency of positive words in the English language vastly outnumber negative ones. They found the more intensely personal domains attracted greater bias.

Certainly Kabanoff's (1980) suggestion that a broader view of satisfaction be taken to facilitate understanding the complex work/non-work relationship should be taken up. In this way patterns of activity and satisfaction associated with work, leisure and family pursuits would be examined. The role of leisure activities in work adjustment should be continually examined in a context where the nature of work is changing, and when individuals are in any stage of transition in their career, such as recent graduates are. Such an approach of interdependence is also consistent with the highly valued systems perspective.

Unlike Dawis and Lofquist's earlier work the present study examined the effect of the wider non-work environment on work and the relative importance of work and non-work. When a new position is taken up, previous general and work adjustment would be expected to have a role to play in work adjustment. Factors such as gender, importance of work, stage of

employment, and value systems might therefore be examples of moderators in the relationship between work and previous adjustment, general and/or work adjustment. The potential of the relative importance of work to moderate the effect of work and non-work factors on work adjustment was of special interest.

5.2 Aims of the present study

Within the general aim of the study to test aspects of Dawis and Lofquist's work adjustment as applied to a particular respondent group (recent graduates from a variety of academic disciplines in the early stages of their employment) there were four specific aims. Briefly, the first of such aims was to examine certain Dawis and Lofquist's propositions. The second specific aim, in response to the potential limitations of Dawis and Lofquist's theory as identified in the process of reviewing the literature, was to consider the effect of including previously omitted but potentially important concepts. These were the cognitive, social, vocational and non-work factors. The third specific aim was to examine the structural relations among the key concepts of Dawis and Lofquist's basic paradigm (as shown in Figure 5.3), in an attempt to develop a structural model representing the co-variances of the various factors included. It was hoped to develop such a model using LISREL statistical analysis techniques described in Joreskog and Sorbom (1984), Saris and Stonkhorst (1984), and Hayduk (1987). The fourth specific aim was to examine the factor or latent structure of work needs using factor analysis and LISREL, where appropriate. The time at which the variables of the research propositions and hypotheses were measured are given in Table 5.1.

5.2.1 Aim 1: An examination of Dawis and Lofquist's propositions

A complete list of the propositions of Dawis and Lofquist's theory is detailed in Tables 3.1 and 3.2 in section 3.3.1. Those propositions selected for investigation in the present study are shown together with their interrelationships, as suggested by Dawis and Lofquist, in Figures 5.1 (Propositions I to IX) and 5.2 (Propositions XI to XVII). Excluded from investigation were most of the propositions which entailed measures needing to be obtained from the work environment, such as the work environment adjustment styles.

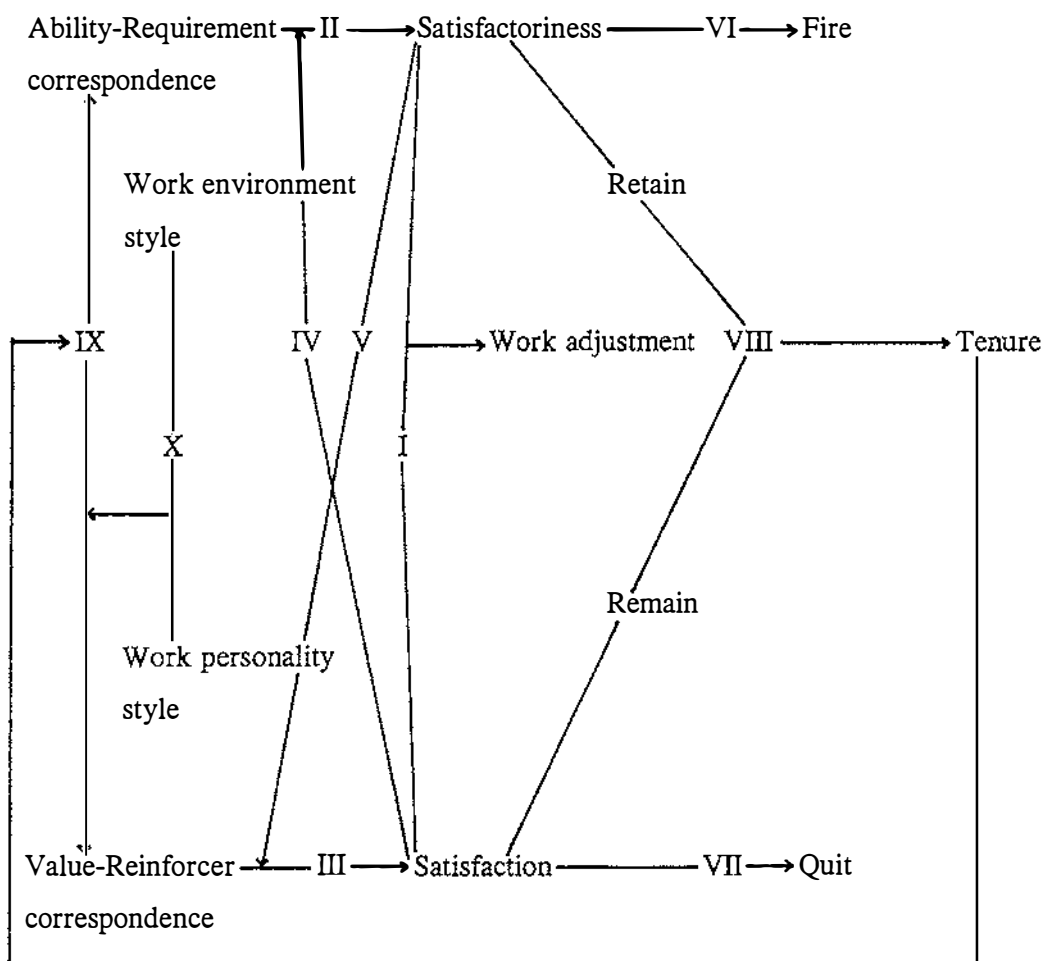


Figure 5.1 A Causal Flow chart of the Theory of Work Adjustment (first ten propositions).

The propositions included for examination were mainly those concerned with needs-reinforcer correspondence, and its effects on job satisfaction and tenure. Some of the propositions involving the work environment concept of satisfactoriness were examined but Dawis and Lofquist's instruments could not be used for satisfactoriness in the present study because to do so would have necessitated taking measures from supervisors or others in the work place. Instead satisfactoriness was operationalised using measures of *self-perceived* satisfactoriness. Similarly, a selection of ability-requirements was investigated using self-perceived measures

Table 5.1 Time at which variables were measured

Stage One of Research		Stage Two of Research	
Background data	Age, Gender, Marital status, Children Citizenship Secondary schooling Parental income & qualifications Work history Accommodation, Health	Where living Occupation Own salary, friends' salaries Course of study Future occupational plans Friends' jobs	
Work and qualification plans		Work and qualification plans	
Salary expectations			
Job fantasies			
Work needs (MIQ)		Importance of 20 work needs	
Self-efficacy for	Obtaining work needs Being satisfactory Adjustment style use Lifestyle fits job	Self-efficacy for	Obtaining work needs Being satisfactory Adjustment style use Lifestyle fits job
Leisure company and activities		Leisure company and activities	
Subjective well-being		Subjective well-being	
Happiness		Happiness	
Health		Health	
Life satisfaction		Life satisfaction	
Personal competence/Locus of control		Personal competence/Locus of control	
Friendship patterns		Friendship patterns	
Vocational Preference Inventory		Vocational Preference Inventory	
Self-efficacy for use of adjustment styles		Adjustment Style self-efficacy and use	
		Job satisfaction (MSQ)	
		Relative importance of leisure and work	
		Satisfaction with and importance of various domains (quality of life)	
		Social support	
		Tenure related measures	Expected tenure Job attachment Job's usual tenure

rather than those of Dawis and Lofquist. The propositions investigated are listed below, stated in the manner in which they were tested in the present research with the modifications to Dawis and Lofquist's wording in italics. The propositions can be grouped together according to the constructs they concern. Some relate mainly to job satisfaction, others involve variables which are believed to moderate these relationships, and a third group relate to the joint effects of job satisfaction and satisfactoriness on tenure and work adjustment.

Job satisfaction propositions

In the following propositions *job satisfaction* was measured by the Minnesota Satisfaction Questionnaire (MSQ) at stage two of the study, about six months into the first year of employment after the final year of study. *Work values* were measured by the Minnesota Importance Questionnaire (MIQ) at stage one of the study, the few months prior to graduation. *Work reinforcers* were measured at stage two and using a checklist requiring a yes or no answer as to the presence of the different reinforcers for workers in their job. The correspondence between work values and reinforcers was measured by taking the square of the difference between the reinforcers present and the importance of that particular need for each individual. *Voluntarily leaving* the work force (or the likelihood of this) was measured by low expected tenure. Expected tenure was how long respondents expected to remain in their present job. *Adjustment modes* were operationalised asking respondents the extent to which they used each of the modes of active, reactive, perseverance and flexibility.

Proposition III was "Satisfaction is a function of the correspondence between the *perceived* reinforcer pattern of the work environment and the individual's values, provided that the individual's abilities correspond to the *perceived* ability requirements of the work environment" (Dawis and Lofquist, 1984, p 60).

Proposition VII was "The probability that an individual will voluntarily leave the work environment (*demonstrate low expected tenure*) is inversely related to the individual's satisfaction" (Dawis and Lofquist, op. cit. p.60.).

Proposition XIV was "The probability that the individual will use adjustment modes is inversely related to the individual's satisfaction" (Dawis and Lofquist, op. cit. p 67).

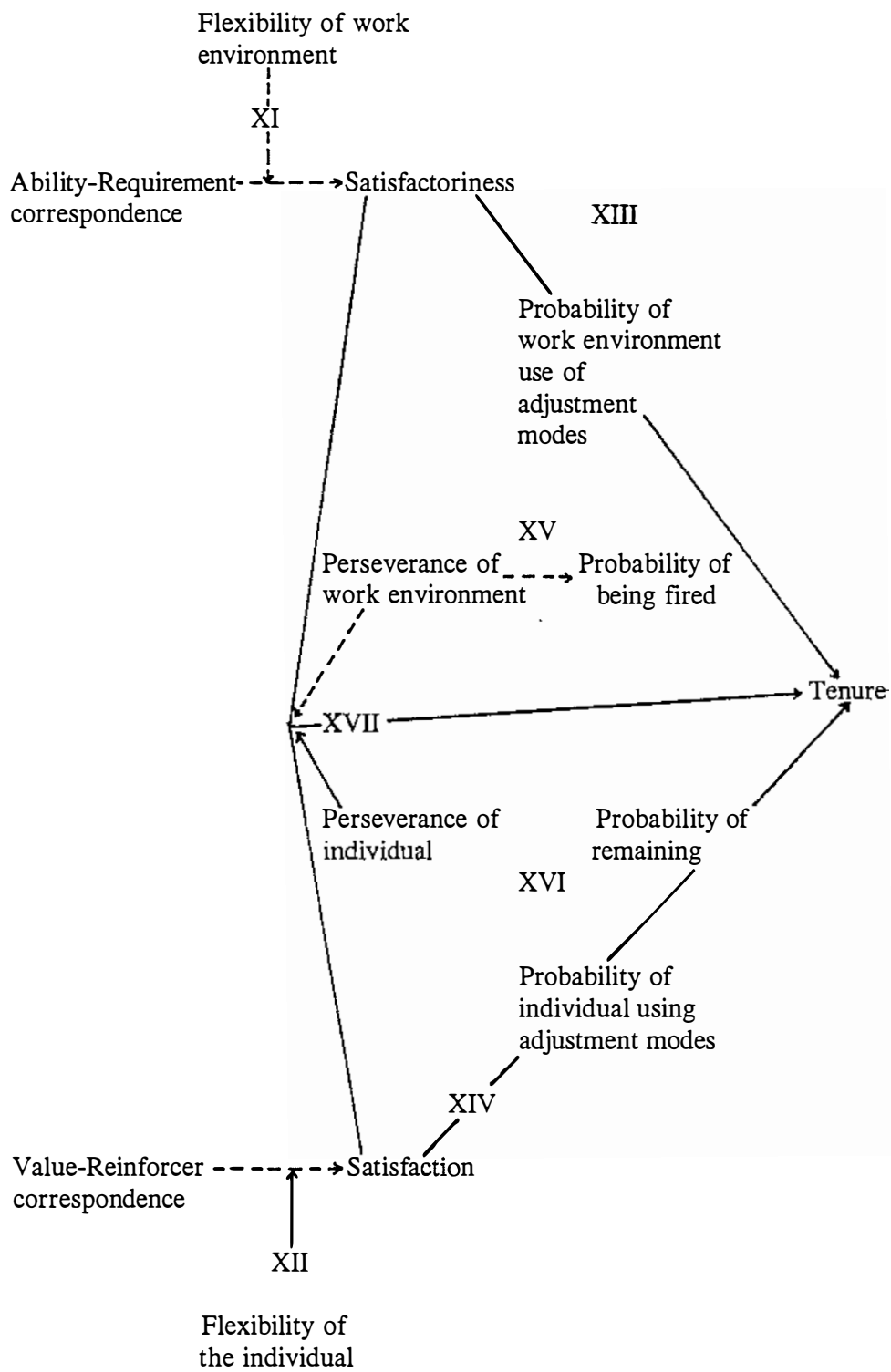


Figure 5.2 The Theory of Work Adjustment Propositions XI to XVII

The Moderating relationships

Proposition V was "Self-reported satisfactoriness moderates the functional relationship between satisfaction and value-*perceived* reinforcer correspondence.", Dawis and Lofquist, op. cit. p. 60).

Satisfactoriness was operationalised, as described in the section concerned with the instrumentation, by using a measure of self-rating of satisfactoriness developed from items of the Minnesota Satisfactoriness Scales (MSS).

Proposition XII was "The flexibility of the individual moderates the functional relationship between satisfaction and value-*perceived* reinforcer correspondence" (Dawis and Lofquist, op.cit. p 67).

Job satisfaction and satisfactoriness together

Proposition I was "Work adjustment at any time is indicated by an individual's concurrent levels of *self-reported* satisfactoriness and satisfaction" (Dawis and Lofquist, op. cit. p. 60).

Proposition VIII was "*Expected* tenure is a joint function of *self-reported* satisfactoriness and satisfaction" (Dawis and Lofquist, op. cit. p. 61). (This is a combination of VI and VII, that is, the probability that an individual will be forced out of the work *and* the probability that an individual will voluntarily leave the work environment is inversely related to the individual's satisfaction).

Proposition XVII was, that is "given proposition VIII, XV ("The probability that the work environment will act to remove the individual is inversely related to the perseverance level of that work environment" Dawis and Lofquist, op. cit. p. 67), and XVI it follows that: "Expected tenure is a function of satisfactoriness, satisfaction, and the perseverance levels of the individual and of the work environment" (Dawis and Lofquist, op. cit. p. 68).

In their wording, Proposition I and VIII appeared very similar. Proposition I stated that "Work adjustment at any time is indicated by an individual's concurrent levels of satisfactoriness and satisfaction" and Proposition VIII stated that "Tenure is a joint function

of satisfactoriness and satisfaction". The concept of work adjustment itself is not presented on any of Dawis and Lofquist's diagrams to help distinguish between the two. However, Proposition I seems to represent the dynamic and on-going process of work adjustment by emphasising the potential for differences in levels of work adjustment which are dependent upon the concurrent levels of satisfaction and satisfactoriness. Work adjustment is viewed as an outcome of work satisfaction and satisfactoriness, without reference to tenure. Proposition VIII on the other hand appears to propose tenure as an outcome of achieving satisfaction and satisfactoriness. Dawis and Lofquist appear to be saying levels of satisfaction and satisfactoriness both indicate degree of work adjustment and determine tenure. However, in Proposition I satisfaction and satisfactoriness seem to be treated as *indicators* or variables which are associated with work adjustment and which allow its level to be assessed. Whilst, in the case of Proposition VIII, satisfaction and satisfactoriness are treated as *independent* variables causing tenure.

Dawis and Lofquist's definition of work adjustment and tenure help clarify the similarities and the differences between the two propositions. "The continuous and dynamic process by which the individual seeks to achieve and maintain correspondence with the environment is called work adjustment" (Dawis and Lofquist, 1984, p 55). Work adjustment refers to attempting to gain correspondence and to maintaining it once achieved. Therefore, Proposition I focuses on achieving and maintaining correspondence. With respect to tenure, it is regarded as the most basic indicator of correspondence and the achievement of correspondence is said to enable an individual to remain in an environment and therefore achieve further correspondence until the correspondent relationship becomes stable. The stability of correspondence between the individual and the work environment was expected to be manifested as tenure on the job. Therefore tenure, like work adjustment, is regarded as an indicator of achieving and maintaining correspondence. Proposition VIII focuses on tenure both as an outcome of correspondence and an indicator of the stability of correspondence. The propositions are similar in that they both focus on maintaining correspondence, but Proposition I looks at achieving it to attain work adjustment whilst Proposition VIII looks at its outcome (tenure).

Not only do the two propositions differ in terms of which constructs they focus on but also in terms of which part of the work adjustment model they refer to. In addition, the two concepts which are at the centre of the difficulty in distinguishing between the propositions,

that is tenure and *work adjustment*, themselves are different substantively. Proposition I seems to refer to the point in the process involving levels of satisfaction and satisfactoriness (achieved through correspondence) as indicators of degree of work adjustment and Proposition VIII refers to the point at which satisfactoriness and satisfaction determine tenure. Because tenure further affects the correspondent relationship it also indirectly acts as an indicator of further work adjustment. Proposition I refers to an earlier part of the process, at the levels of satisfaction and satisfactoriness whilst Proposition VIII refers to the next point in the process, tenure. Although both tenure and work adjustment appear to have similar effects in the model, Dawis and Lofquist's use of two different words tends to indicate they did not equate them. On the face of it, tenure would appear to refer simply to information about length of time on the job whereas work adjustment would refer to the state (physical and psychological) or response to the job. It is unfortunate that Dawis and Lofquist did not include work adjustment in the diagrams of their theory as this would have helped clarify the differences and similarities between the two propositions.

5.2.2 Aim 2: To investigate potentially important missing variables and their interrelationships.

Hypothesis 1: Given Dawis and Lofquist's proposition XVI (The probability that the individual will act to leave the environment is inversely related to the perseverance level of that individual) tenure is also a function of use of adjustment styles.

An estimate of voluntarily leaving the work place was taken by measuring expected tenure, respondents were asked the time they expected to remain in the job. Adjustment styles were measured by asking respondents whether they were active, reactive flexible and persevered, and about their celerity, pace, rhythm and endurance on a rating scale of 1 to 7.

Hypothesis 2: Locus of control (as measured by Converse, Campbell and Rodgers's Personal Competence Scale) is a function of those aspects of personality measured by Holland's (1965) Vocational Preference Scale.

- Hypothesis 3:** Self-efficacy for obtaining work needs (using the instrument developed for this study and discussed in the instrument section) is a function of locus of control (as measured by the Personal Competence Scale).
- Hypothesis 4:** Self-efficacy for the use of adjustment styles (measured as in hypothesis 1) is a function of locus of control (as measured in hypothesis 2).
- Hypothesis 5:** Use of differing adjustment styles is a joint function of locus of control and self-efficacy for use of adjustment styles.
- Hypothesis 6:** Job satisfaction is a function of (a) vocational preference/training correspondence (a score on Holland's VPI was compared to the position trained for); (b) perceived satisfaction, (as measured by the Minnesota satisfaction Questionnaire (MSQ)); (c) social reference group, (a measure of respondent's job satisfaction compared with that of their friends); and (d) the degree of social support as operationalised by the social support instrument and group of questions described in the instruments section.
- Hypothesis 7:** Non-employment satisfaction (operationalised by a question asking the degree of non-employment satisfaction on a scale of 1 to 7) is a function of (a) the number of leisure activities and (b) the degree of social support (as measured in the previous hypothesis).
- Hypothesis 8:** Subjective well-being (operationalised by Campbell, Converse and Rodgers' indices as described in the instrument section) is a function of; (a) employment satisfaction (as measured by degree of satisfaction on a scale of 1 to 7); (b) the degree of social support; (c) non-employment satisfaction (as previously measured in the above hypotheses); and (d) health (self-ratings of health).
- Hypothesis 9:** The relationship between employment satisfaction and subjective well-being is moderated by the relative importance of work (as measured

by respondents rating the relative importance of work and non-work). Employment satisfaction is expected to have less of an effect upon subjective well-being where employment is considered less important than leisure activities.

Hypothesis 10: Job satisfaction (as operationalised by the MSQ, individual scores on each of satisfaction areas and a composite score, known as general satisfaction, of a number of the satisfactions) is a function of degree of correspondence between occupational fantasy (a measure of the positions or positions respondents would take up if there were no obstacles) and occupational reality.

Hypothesis 11: Job satisfaction is a function of the degree of correspondence between planned occupation (occupation planned the previous year) and actual occupation (position taken up upon graduation).

5.2.3 Aim 3: Investigating structural relationships among Dawis and Lofquist's key concepts using LISREL

Dawis and Lofquist's model has not been investigated using a statistical technique which examines the whole model, or even the relationships among its key concepts, at once. Although not all of the constructs of the basic paradigm were operationalised using Dawis and Lofquist's measurement instruments, other operationalisations were available in the present study to investigate the paradigm using LISREL. The LISREL technique was used in relation to this and the fourth research aim (although different models of LISREL were involved in each case, the general model and the confirmatory factor analytic model, respectively). A description of LISREL and a justification for its use follows whilst the mathematical representation of LISREL is given in Appendix K.

A description of LISREL

The LISREL model (Jöreskog, 1973; Jöreskog and van Thillo, 1972; and Wiley 1973) has been referred to also as an analysis of covariance structures, a linear structural relations model, the moments structure model, latent variable equation systems in structured linear

models, but is most commonly known as LISREL (an acronym for Linear Structural Relationships), or the Covariance structure model.

Models can be estimated by the use of sophisticated software. A most frequently used programme to assess structural relations has been LISREL (Jöreskog and Sorbom, 1981, 1984). The importance of this programme is evident by the fact that the term LISREL has come to represent not only the computer software but also the statistical model and the approach to the analysis of data.

It is not easy to give a definition and description of LISREL which is both accurate and not over-simplified without resorting to mathematics. However, the following description is an attempt to do this while the mathematical representation is given in Appendix K. Hayduk (1984) has also noted that description of LISREL remains opaque until it is applied to a real model.

LISREL is a computer programme for estimating unknown coefficients in a set of linear structural equations. Structural equation models¹ are models of relationships among variables. The variables in the equation system may be either directly observed variables (indicators) or unmeasured latent variables (hypothetical construct variables) which are not observed but related to observed variables. It has long been recognised that variable values gathered during data collection do not exactly correspond to the variables of theoretical interest. The discrepancy between desired and achieved measurements is typically considered under topics of *reliability* and *validity*. Each latent variable, construct or concept is classified as *endogenous* or *exogenous*. If a concept always acts as a 'cause' in the model and never as an 'effect' then it is labelled exogenous. If a concept acts as a 'cause' in one link among relationships and as an 'effect' in another, it is labelled endogenous because it has not always acted as a 'cause' in that model.

The computer programme is based on a general model which is particularly designed to handle models with latent variables, measurement errors and reciprocal causation. In its most general form the model assumes that there is a causal structure among a set of latent

¹ The equation $Y = a + Bx$ is a structural equation and the coefficients a and b are structural coefficients. Hayduk (1984) notes it is sometimes of assistance to consider such equations as structural equation models, "the term 'models' is usually not applied until at least two equations simultaneously describe the set of variables under consideration" (p 25).

variables. The latent variables appear as underlying causes of the observed variables. Latent variables can also be treated as caused by observed variables or as intervening variables in a causal chain. Other submodels of LISREL allow the analysis of different models.

The LISREL model consists of two parts : the *measurement model* and the *structural model*. The measurement model specifies how the latent variables or hypothetical constructs are measured in terms of the observed variables and is used to describe the measurement properties (validities and reliabilities) of the observed variables. The structural equation model specifies the causal relationships among the latent variables and is used to describe the causal effects and the amount of unexplained variance. Equations involving variables imply links between the *distributions* of those variables and, in particular, how the *structural coefficients* in equations control various aspects such as the *location*² and *spread*³ of the variables concerned.

The means, variances and covariances⁴, of the observed indicator variables make up the known data which are used in the estimation of the unknowns which are the means, variances and covariances of the concepts, the structural coefficients among the concepts and the structural coefficients linking the concepts to the indicators. LISREL can be described using three basic equations and four additional covariance matrices which provide a general mould into which it is claimed that almost any model can be fitted. The matrices are denoted by Greek letters. The three basic equations are structural equations indicating how the scores on

² "The location of a distribution is determined by the kind of x values likely to appear. The likelihood or probability, $p(x_i)$, of any particular value x_i appearing is defined and calculated as the frequency with which that value appears (f_i) divided by the total frequency (N); hence $p(x_i) = f_i/N$." (Hayduk, 1984, p 3-4). The combined set of variable values and accompanying probabilities are called a *random variable* by statisticians. 'Random' refers to the hypothetical random selection grounding the probabilities and 'variable' refers to the dimension underlying the particular set of values. The best guess of the value of the randomly selected case is the mean.

³ To find out how correct the best guess of a randomly selected value might be we consider the *spread* of cases which is provided by the *variance*, the average or expected value of the squared (to avoid positive and negative deviations cancelling out) deviations from the mean.

⁴ *Covariance* between two variables (X and Y) is defined and calculated as the expected value (average size) of the product of the deviations of the X and Y scores from their respective means.

some variables (X , for example) can be obtained as the weighted sum of the other variables (exogenous, endogenous and error variables). If one or more variables can be created as weighted sums of other variables, the variances and covariances of the created variables can be expressed as functions of the structural equations which link the variables with the variances and covariances among the original variables.

We can ask, what is implied about the variances and covariances among the observed x and y indicators if these variables function in the way indicated by the structural equations of the LISREL model (and the four extra matrices as shown in Appendix K figure K.1)? In Appendix K these are equations 1, 2, 3 and the four extra matrices are the variance/covariance matrix for the exogenous concepts and the matrices for the covariance among error terms in the three equations (the structural equation, the x and the y measurement equations). The model-implied variance and covariances of the observed indicators, which are recorded in a covariance matrix called sigma, can be compared to the variances and covariances calculated from the data on the observed indicators. This comparison of the model's predictions (sigma) with observed reality (the actual observed covariances) provides the fundamental basis for testing the particular model's adequacy and for obtaining reasonable estimates of the coefficients of the model.

In applying LISREL the process is one of specifying a model, estimating its coefficients (the computer programme employing an iterative technique such as Generalised Least Squares or the Maximum Likelihood Procedure), then assessing the adequacy of the estimated model. Using chi-square, the fit between a matrix of variances and covariances that the model would imply and the observed data variances and covariance matrix is assessed. Smaller X^2 values indicate better fitting models and a nonsignificant X^2 is desirable. Degrees of freedom for the chi-squares are calculated as the difference between the total number of unique entries in the covariance matrix (of the observed variances and covariances) and the total number of the coefficients in the model⁵. Finding a nonsignificant chi-square is not said to prove that the right model has been located, it instead shows a model has been located and a set of coefficients that are consistent with the observed covariances. However, it does show that the model has survived a challenge that many models do not.

⁵ d.f. = $1/2[(p + q)(p + q + 1)] - t$, where t is the total number of estimated coefficients, $p + q$ is the total number of observed indicators (p endogenous, q exogenous).

The chi-square test assessing the fit between the model implied matrix and the observed matrix provides an omnibus test of the model⁶. If maximum likelihood estimation is used we can claim that the estimates maximise the likelihood of the observed matrix arising as a sampling fluctuation around the model implied matrix. LISREL creates maximum likelihood estimates by selecting as estimates those coefficient values implying a variance co-variance matrix (a model-implied matrix) which maximises the likelihood that the observed data variances and covariances could arise by chance sampling fluctuations. If more than one set of coefficient estimates imply the same best fit we have encountered the identification problem.

Maximum Likelihood estimates result from a combination of model and data constraints. The theoretical model constrains the estimates by specifying the variables included in the model and the location of the free coefficients linking the variables. The data constrains the estimates since comparison of the model-and-estimate implied matrix of variances and covariances with the data matrix ultimately selects the best set of coefficient estimates.

The general LISREL model subsumes many other models as special cases. A submodel is obtained when one or more of the y -variables, the x -variables, the η -variables, or the ξ - variables are not included. Some of the more common submodels are (1) specifying only latent variables (this is a "measurement model" or factor analytic model), (2) specifying only the x and y variables (a structural equation model for directly observed variables) and (3) specifying only the y -variables, the endogenous and the exogenous variables. This third submodel is a second-order factor analysis model with first-order factor loadings given by the coefficient linking observed variables and endogenous variables (namely, λ) and second-order factor loadings given by γ (a coefficient linking the exogenous variables to endogenous variables).

The LISREL model covers a wide range of models, for example those of particular relevance for psychology are, exploratory and confirmatory factor analysis models, path analysis models, recursive and non-recursive models for cross-sectional and longitudinal data and covariance structure models. Using factor analytic models to illustrate one use of LISREL, a distinction between exploratory and confirmatory factor analysis needs to be made. The

⁶ Tests of significance for single coefficients are made via t-tests or as a special instance of the difference between chi-squares for nested models.

basic idea underlying factor analysis of either type is that some variables of interest cannot be observed directly. Information about these latent variables or factors can be obtained indirectly by noting their effects upon observed variables. The factor analytic procedure uncovers a smaller number of latent variables by examining the covariation among a set of observed variables. The exploratory factor model consists of common factors (their effects are shared in common with more than one of the observed variables) and unique factors (or errors) the effects of which are unique to one and only one observed variable. These unique factors are assumed to be uncorrelated with the common factors and with one another. This model is referred to as exploratory because other than the specifications of the number of common factors and observed variables to undergo analysis, the researcher does not specify the structure of the relationship among the model's variables. It has been this model's inability to take into account substantively meaningful constraints and its imposition of constraints which may be meaningless that has according to Long (1983a) earned it the label of 'garbage in/garbage out' model.

In the confirmatory model, the common factors are assumed to be uncorrelated. In contrast, the exploratory model assumes the common factors to be either all correlated or all uncorrelated. In the confirmatory model, the observed variables are affected by only some of the common factors rather than all as in the exploratory model. The confirmatory model can allow correlations among 'unique' factors and observed variables do not have to have an error factor associated with them. Where a single compelling model is not evident, or a model suggested by theory does not fit, the confirmatory factor model can be used in an exploratory fashion. The common factors in factor models are often of significant interest theoretically and researchers are usually interested in the structural relations among these factors. While the confirmatory factor model can provide correlations among common factors, these are usually insufficient for determining what the structural parameters of interest are. It is the estimation of structural parameters which requires that a structural equation model be applied to the common factors (in the same way that structural equation models are often applied to observed variables). The incorporation of structural relations among latent variables can be achieved by the *covariance structure* or LISREL model.

Although the confirmatory factor model is said to be limited by not allowing structural relations among the common factors, it is still regarded as an extremely flexible model which can deal with important applications such as: (1) measurement models in which latent

variables are estimated to exclude error in measurement, (2) multiple indicator models where several indicators of the latent variables are available and the factor model is used to determine the correlations among the common factors and (3) multimethod-multitrait models where each factor is measured by various methods to attempt to eliminate the distorting effects of methods of measurement.

Why use LISREL?

Part justification for the use of the LISREL model lies in the need to consider reliability and validity issues. It is common knowledge in the social sciences that the values of variables recorded through data collection do not correspond precisely to the variables of theoretical concern. Discrepancy between desired and actual measurements have been usually confronted by examining reliability and validity issues. Reliability estimates have assessed the stability of replicated measurements, and validity estimates whether the measure is a true representation of what it is supposed to measure as opposed to a measure of some similar but conceptually distinct variable. Certainly the issue of measurement has been so central that both the practitioners and the philosophers of science frequently treat the investigation of measurement as synonymous with scientific progress (Blalock, 1982). According to Hayduk (1987), however, discussions of measurement have characteristically degenerated into recording the types of reliability and validity which is simply listing the different forms of replication, re-test, inter-item and split-half, and the strategies for checking measures, face validity, construct validity and criterion or predictive validity. Hayduk has argued that discussions of measurement often are separate from other stages of research, those of theorising, model development and model estimation.

Hayduk referred to considering latent versus measured variables as a new way of thinking. LISREL represents an integration of measurement considerations with structural equation modelling, by incorporating both latent theoretical concepts and observed or measured indicator variables into the one structural equation model. Knowledge of the methodological adequacy of the process of gathering data, in particular the quality of particular measurement issues and questionnaire items, can be directly incorporated into LISREL models. This is achieved by specifying, or fixing, a proportion of the variance in an indicator variable to be error variance. In this way measurement concerns become an integral part of model development, estimation, evaluation and interpretation concerns.

LISREL in its body of statistical theory and computer programme makes it possible to fit a wide range of structural models to observed variance/covariance matrices. Hayduk (1987) claimed LISREL's three basic equations which contain four matrices of coefficients and its four additional covariance matrices (the general structural equation model summarised in Appendix K) allow almost any model to be fitted. The three basic equations require that all concepts or latent variables are classified as either endogenous or exogenous. As defined previously, a concept is classified as endogenous if it ever appears as the effect or dependent variable. If a concept always acts as a cause and never as an effect or dependent variable, it is classified as exogenous. Fluctuations in its values are not the object of explanation by the model, although they may be used to explain fluctuations in the values of the endogenous concepts. Hayduk noted that 'cause' is used to mean that we are imagining a system in which the dependent concept's values are derivable from or determined by the values of other concepts. Causation is regarded as part of our abstract conceptual system and not necessarily as a property of the real world.

While structural equation models describe causal theory of the structure of a set of variables in terms of an explicit solvable set of linear equations, Fergusson and Horwood (1986) noted that structural equation models seldom provide a direct test of causal assumptions on which models are based. They argued it is better to think of the models as a formal statement of an investigator's beliefs about the causal structures which underlie observed variables. The beliefs can be formulated on the basis of intuition or on strong evidence. Models can be subjected to indirect tests via attempts to falsify them on the basis of model fit. This is the logic of falsification of Popper (1961) who proposed that while it is possible to reject false theories on the basis of evidence which contradicts them, there is no certainty that a theory which has survived testing is the accurate theory of the observed data. Fergusson and Horwood (1986) characterise good models as those which "summarise the structure of a set of variables in a realistic, informative and parsimonious way and which are able to withstand concerted attempts at falsification using both goodness of fit criteria and external evidence of the plausibility of model assumptions" (p 3).

Fergusson and Horwood noted that it is not immediately obvious why the LISREL model would be chosen in view of the highly abstract account of the way in which covariance matrices of observed variables may be analyzed in the model to obtain estimates of the parameters of linear equations. It is not obvious at first sight why it would be chosen to

analyze longitudinal data or survey data when less complex methods of analyses would appear to be appropriate. Three major justifications of the use of such an approach relate to explicitness of model formulation, latent and observed variables and testability.

Because the LISREL model necessitates making explicit all the assumptions required to impose a given causal interpretation on a set of the data, the likelihood of overlooking or ignoring these assumptions becomes less. The assumptions involved are described as being of two types. There are assumptions about linearity of relationships, distributional forms of variables and the disturbance or error terms of exogenous and endogenous variables. There are also assumptions about the restrictions on the LISREL parameter matrices which specify the causal linkages assumed.

In causal analyses based upon statistical examination of data through techniques such as multiple regression analysis, the lack of an explicit model can lead to faulty inference. Because theory occupies such a central role in causal data analysis, integrating theory and the statistics used to analyze the data is regarded as a valuable step. LISREL type of models provide this integration.

With respect to latent and observed variables, most of the variables chosen by social scientists refer to hypothetical constructs or latent variables rather than to directly observable characteristics. Such a distinction between latent and observed variables raises the question of the rules of correspondence existing between the latent variables and the observed variables which supposedly represent them (Costner, 1985). LISREL is regarded as making a major contribution by clearly distinguishing between what investigators observe, fallible indicator variables and what they would like to observe, errorless measures of latent constructs, and by estimating the relationships between these variables, given a model specification. Distinguishing between latent and observed variables is important not only for conceptual clarity but because it also has implications for estimating the coefficients of a causal model. The distinction has tended to be resolved by assuming that the structural relationships between the latent variables are represented by the observed variables. However, there are according to Fergusson and Horwood (1986) virtually no grounds for such an assumption. Costner (1985) noted that a subsidiary theory to link the observed and latent variables is needed permitting estimation of the structural relationships between the latent and observed variables. LISREL measurement model components provide this subsidiary theory.

The third important justification for employing LISREL is that testability is an important feature in establishing how plausible a causal model might be. In causal analysis models are normally tested by establishing whether specific coefficients are non zero. Using the LISREL model, all of the causal model predictions can be evaluated.

The specification of the model can be provided by a description of the free, fixed and constrained LISREL parameters which imply the model or, for those unfamiliar with the LISREL model these more difficult to interpret specifications can be represented by path diagrams. These diagrams show linkages between the observed, latent and disturbance terms of the model. The conventions used in the path diagrams are summarised in Appendix K.

Structural relationships among Dawis and Lofquist's key concepts

In the case of the present research the interrelationships of the variables as proposed by Dawis and Lofquist were initially examined as a whole rather than individually, proposition by proposition. The aim was to allow examination of Dawis and Lofquist's basic model as a preliminary one. In view of the literature reviewed their model seemed unlikely to provide an integration of the key aspects of work adjustment.

The structural relations among the latent variables of Dawis and Lofquist's basic model are presented in Figure 8.2. This model represents the key concepts of Dawis and Lofquist's model as they described it but depicted in a diagrammatic form which is consistent with their propositions. The moderating relationships are missing from the model at this point because models involving these are handled differently in LISREL. This basic paradigm represents a preliminary position in the iterative and interactive modelling process characteristic of LISREL and can be represented by what is referred to as the general LISREL model (as specifically defined in Appendix K). In this LISREL analysis of Dawis and Lofquist's entire basic model, because Dawis and Lofquist's ability and satisfactoriness measurement instruments were not used, the constructs were operationalised using academic performance as a measure of ability and the self-report satisfactoriness measures of the self-efficacy scale as a measure of satisfactoriness.

5.2.4 Aim 4: Exploring the underlying structure of work needs by both factor and latent structure analysis

The factor analyses of work needs undertaken were firstly, a replication of Dawis and Lofquist's factor analytic model, section 8.1.1, and secondly, a nonorthogonal rotation of factors assuming a correlated factors model of work needs, section 8.1.2.

The work needs operationalised as the responses to the Minnesota Importance Questionnaire (MIQ) items (described in the instruments section), were first factor analyzed in the same way Dawis and Lofquist's had analyzed their MIQ results. These were exploratory factor solutions which assumed no theoretical knowledge relevant to guide the factor extraction or produce hypotheses to be tested. The procedures for extraction are based entirely upon mathematical criteria. Dawis and Lofquist (1984) reported using a principal factor solution with squared multiple correlations as communality estimates and orthogonal rotation to a varimax criteria, as shown in Tables 3.5 and 4.1. This same procedure was employed with the present data.

A reinterpretation of the factor structure appeared to be needed, to allow for the possibility of correlated dimensions. It seemed reasonable to expect, intuitively, some of the work need factors would be correlated because they are influenced by similar external events in the work place and included aspects of work which are likely to be interrelated. Just as importantly, it is good practice in exploratory factor analysis to test any assumption of orthogonality, which Dawis and Lofquist have not reported doing. Gorsuch has (1983) suggested that such a test of orthogonality still encourages the selection of the simpler uncorrelated model.

The plan for investigating the factor structure of work needs, as an iterative process, was to begin by attempting to replicate Dawis and Lofquist's factor structure from the present data using their factorial model. On the basis of the outcome of that analysis, the factor structure would be modelled using LISREL until the best fit for the data could be found. In the event of a considerably less than perfect fit, higher order factor analysis would then be undertaken and a nonorthogonal or oblique model be investigated.

5.3 The Research design and procedure

The research was conducted employing a within-subject or repeated measures two-stage longitudinal design with volunteer subjects completing a first questionnaire about half-way through their final year of study prior to graduation and a second questionnaire a year later. The research was planned to comply with the University's requirements for research using human subjects and be consistent with the ethics for research of the New Zealand Psychological Society. The first questionnaire was handed to the respondents and the second mailed. To encourage return of the first questionnaire, the researcher arranged to attend the next and following classes to collect completed questionnaires. This resulted in a gap of a week between each collection time and involved up to three visits to each class. Where respondents did not attend classes or had forgotten to return questionnaires they received up to two reminder phone calls asking that they please take the questionnaires to the Psychology Department. Respondents were thanked again at the beginning of their second questionnaires for participating in the first part of the study. Up to three reminder letters requesting the return of the second questionnaire were sent.

5.4 The respondent group

The respondents were 475 final year university student volunteers enrolled in the different faculties at Massey University, Palmerston North, New Zealand, during 1985. Only those who agreed to take part in a follow up study the following year were selected. The faculties were those of, Science, Computer Science (the new Mathematics Information Services), Business Studies, Agriculture, Horticulture, Technology, Humanities, Social Sciences and Veterinary Science. A small group of College of Education students, that is, student teachers, also took part. Table 5.2 shows the structure of the volunteer group, both the volunteer rate (the percentage of those present from each class roll who volunteered) and the response rates for the questionnaires for both stages of the study. The then First Supervisor of the researcher contacted each of the Faculty Deans by phone to inform them the present researcher would meet with them individually to discuss the possibility of involving their students in research concerning work adjustment. Initial contact with the Deans was made by phone and all agreed to meet with the researcher. During these meetings an outline of the research proposal was presented and permission was given in all cases for Departmental Heads and Lecturers to be approached for their cooperation. The classes, and therefore the Lecturers, to be approached

Table 5.2 Frequency and Percentage of Respondents Present, Consented and Returns.

RESPONDENT GROUPS	PRESENT	VOLUNTEERED		QUESTIONNAIRES		ONE		TWO	
		N	%	N	%	N	%	N	%
Respondents	Roll	N	%	N	%	N	%	N	%
Zoology, Botany	36	32	88	24	75	21	88	16	76
Microbiology, Genetics	25	25	100	22	88	21	96	18	86
Chemistry	14	12	86	03	25	03	100	02	67
Computer Science	52	42	81	35	83	26	74	24	92
Accountancy	90	84	93	71	85	62	87	41	66
Marketing	57	37	65	25	68	15	60	10	67
Horticulture	130	105	81	91	87	74	81	47	64
Plant pathology	25	22	88	19	86	15	79	11	73
Amenities Management	11	10	91	08	80	08	100	08	100
Agriculture Economics & Farm Management	25	22	88	16	73	13	81	09	70
Management in Industry	37	32	87	29	91	27	93	23	85
Quality control	27	18	67	14	78	11	79	10	91
French	04	04	100	none elig- ible	0	0	0	0	0
German	01	01	100	01	100	01	100	01	100
Japanese	02	02	100	02	100	02	100	0	0
English	27	19	70	15	79	11	73	07	64
History	28	20	71	09	45	07	78	06	86
Psychology	30	25	83	14	47	08	57	07	88
Social Work	35	24	69	18	75	17	94	13	76
Veterinary Science	58	47	81	34	72	22	65	22	100
Student teachers	26	24	92	21	88	13	62	13	100
Total	740	607	82	471	77.6 ^a 63.7 ^b	377		288	

(continued)

Note.

^a	Percentage of those present over all classes
^b	Percentage of those on the roll for all classes
Percentage PRESENT	= Percentage present of those enrolled in that paper
Percentage VOLUNTEERED	= Percentage of those present in class
Questionnaire ONE	= Percentage returned at stage one of those who volunteered
Questionnaire TWO	= percentage returned at stage two of those who responded to stage

were selected in consultation with the Deans. The criteria for selection was the class with the largest number of students in their final year in each of the disciplines to be represented. The aim was to include at least more than one academic subject in each Faculty. The papers chosen were usually either the compulsory or the most popular one, whichever had the greatest numbers of students. Table 5.3 provides a broad categorisation and response rate of the respondents.

Table 5.3 Broad Categorisation of Academic Subjects: Frequency and Response Rate Between Stages of the Study

	Stage One f	Stage Two f	% response
Science	45	36	80
Computer science	26	24	92
Accountancy	62	41	66
Business studies	15	10	67
Horticulture	97	66	68
Agriculture	13	09	69
Technology	38	33	87
Humanities	21	14	67
Social science	25	20	80
Vet	22	22	100
Teachers College students	13	13	100
Means	34.27	26.18	79.64 ^a
S.D.	25.67	16.99	13.38
	377	288	76.39 ^b

Note.

^a mean response rate for groups for questionnaire two

^b overall response rate for questionnaire two

All lecturers approached gave their permission for the researcher to seek subjects from a lecture or laboratory session. The Deans of the faculties and the lecturer for each class from which respondents volunteered were promised a summary of findings.

The procedure followed was that in the first five minutes of the session, students were asked if they would take part in the study by being given a written request form (refer Appendix A.1) and a copy of the questionnaire for their immediate brief perusal. They were assured of individual confidentiality, told they would receive a brief summary of the research findings at its conclusion and would be given, upon their request at the time or later, a more detailed summary of the interpretation of their own data. The students were told they could consent to take part knowing they were free to leave the study at any stage should they wish to. It was emphasised, however, that the quality of the findings would be related to the size of the sample in the first instance and to the number who choose to remain in the study. The respondents signed a consent form, refer Appendix E, to agree to participate in the research and to allow their academic records to be seen for the purposes of the study.

The return rate for stage one of the two-stage longitudinal study was 80%, $N = 377$, and 77% for stage two, $N = 288$, 199 of these were employed and 31 returned to university. Therefore, 58 were either unemployed or overseas.

5.5 The Questionnaires: design, presentation and content

5.5.1 Design and presentation

Particular attention was given to the presentation of the questionnaires for both stages of the study. This was aimed at increasing the initial volunteer rate, increasing the rate of filling in the questionnaire completely and increasing the actual return rate. The colour chosen for the questionnaire covers was a bright gold to make them highly visible. Because respondents would be returning the questionnaires at a later date (in person for stage one and by mail for stage two) anything that might enhance visibility and make them less easily mislaid or confused with other printed material seemed important.

Care was taken to thank respondents for their participation when they volunteered, at the end of the first questionnaire, again at the beginning of the second for having completed the first

and at its conclusion. Respondents were encouraged to write further comments on the questionnaires at any point, especially if, for example, they felt any of the response alternatives did not cover their situation.

The second questionnaire included a comment about the importance of completing and returning the questionnaire and information about the unusually high response to the previous questionnaire. The information relating to completing the second one included a reminder about the confidential nature of replies. Again these comments were aimed at maximising the response rate. A checklist was placed at the end of the second questionnaire to summarise which parts of the questionnaire applied to which respondents on the basis of whether they had returned to university or were employed.

The order of items in the questionnaires was determined by principles of questionnaire design (Phillips, 1971). However, one of these principles was intentionally not adhered to. Usually where respondents are asked for personal information such as parental income and education and religious beliefs, these questions are placed at the end of a questionnaire. Questions of this nature, and those about religion, have been thought to exert an important influence on all the questions that follow, potentially antagonizing respondents.

In the present questionnaire such questions were placed at the beginning so that when students were asked if they wished to participate in the research they could decide with the most personal questions placed first and highly visible. They were assured there would be nothing more personal in the second questionnaire than in the first. It seemed more ethical to draw students' attention to the more sensitive questions, even at the risk of losing potential subjects. Any respondent leaving the study at its second stage would less likely to have to do so because of the sensitive nature of questions.

This approach was also aimed at helping establish rapport with respondents through an absence of techniques involving deception, in the hope of making them more willing to complete the second questionnaire. It was also considered preferable to potentially jeopardise the participation rate in the research at the start, rather than later, when the opportunity to approach more students would have been lost.

Both the first and the second questionnaire for the two stages of the study were designed to examine Dawis and Lofquist's propositions, the criticisms which arose from these as a result

of the literature review process and the hypotheses which emerged, as previously outlined. Some instruments and questionnaire items were designed specifically for the study while others were well established standardised instruments modified only, for example, where changes in language seemed appropriate to either adapt them to the New Zealand setting or to produce gender neuter items. Appendix B includes copies of the questionnaires (copyright material is excluded), and an accompanying description and justification for use of items. Appendix C includes modifications of instruments, the Vocational Preference Inventory (Holland, 1985) and the Minnesota Importance Questionnaire (1975 Revision, in Dawis and Lofquist, 1984).

Questionnaire One:

The first questionnaire was designed to obtain background biographic data, information about qualifications, future employment plans, confidence about adjusting to paid employment, and measures of satisfaction, subjective well-being and locus of control. The questionnaire began with a brief description of its purpose, a plea for its return even if uncompleted and a reminder that respondents would be sent a summary of the results of the study. Justification for how variables were operationalised appears in Appendix G. The questionnaire consisted of three sections containing the following:

1. An introduction: "This questionnaire has been designed for final year University students. We are interested in gathering information from different groups of students in order to look at the transition from university to work. The questions in Section A, for example, ask about things such as your parents' qualifications and income because previous studies in this area have shown these to be important factors.

No person other than the researcher will ever see your completed questionnaire (as you can see your name does not appear anywhere on it) to ensure that absolute confidentiality can be maintained at all times. No individual will be identifiable in any of the published results."

2. Section A : This section sought information about age, gender, marital status, offspring, ethnicity, citizenship, number of years schooling, some school grades, school qualifications, parents' occupations and incomes and qualifications. A work history was sought along with

identifying the most and least favoured job. Other information sought related to state of health, leisure activities, living circumstances and satisfaction with these.

3. Section B: This section was to do with future work plans, qualification and salary expectations of self and of friends and job fantasies. The instrument developed to assess self-efficacy for obtaining the various work needs, to the extent an individual is able to influence this, was included here.

4. Section C: This section consisted of measures of the relative importance of work needs (the Minnesota Importance Questionnaire), personal competence or locus of control, happiness, life satisfaction, subjective well-being and vocational preferences.

The Vocational Preference Inventory (Holland, 1965) assessed vocational preferences and the effect of the personality factors thought to be ascertainable from it. Vocational interests were also measured using the Strong-Campbell Interest Inventory, 3rd Edition (Campbell and Hansen, 1981; Hansen 1984). The measures of personal competence, happiness, well-being and life satisfaction were those of Campbell, Converse and Rodgers, (1976).

The operationalisation of the work personality in terms of the work needs and the adjustment style dimensions, were through Dawis and Lofquist's instrument designed to measure work needs and their experimental adjustment style rating form, modified. Because they represent common components, the measurements of underlying dimensions (or latent variables) called values were expected to be more stable than measurements of needs. The relationships that can occur between abilities (the latent variables of skills) and values are recognised as complex and at times expected to result in conflict, for example, where values compete in relation to an ability. Nevertheless it is thought that most individuals do not experience such conflict in a lasting form and instead are able to behave in an integrated manner on the whole.

Questionnaire Two:

1. Introduction: This questionnaire included an introduction and five sections (A to E). The introduction included a section about the importance of completing the questionnaire, thanked the respondents for their previous participation and gave them feedback about the high response rate which had been achieved, (see Appendix B, Transition to Employment Study,

Part Two, Introductory page). Confidentiality of answers was again assured, and a plea for patience with the repetition involved because parts of the second questionnaire were a readministration of the first. Instructions were given about which sections of the questionnaire were applicable to which respondents (as dependent upon whether they were in employment or studying et cetera) and about returning the questionnaire.

2. Section A: This section was concerned with the respondents' circumstances, whether they were employed, on holiday, or had returned to university for further study. The self-efficacy instrument of the first questionnaire was re-administered, this time as a measure of the confidence that each of the needs included were being met, that respondents work was satisfactory, and that the adjustment styles were in use. A measure of the importance of work needs at that time and the use and importance of adjustment styles was included. The measure of the satisfaction of work needs used was the Minnesota Satisfaction Questionnaire (MSQ) (Weiss, Dawis, England and Lofquist, 1967).

3. Section B: This section was included for those who had returned to study. Information was requested about the Degree or Diploma course which was being undertaken, about reasons for the return to study, and about what type of occupation the respondent might be interested in upon completion of their studies.

4. Section C: In this section the Vocational Preference Inventory of Holland (1965) was re-administered and the questions were concerned with leisure activities, living circumstances, friends' jobs and incomes and the number of people interacted with on a social basis.

5. Section D: This section was concerned with quality of life measures, the satisfaction and importance of various life domains. These domains were those of location and neighbourhood, living accommodation, life in New Zealand, amount of education received, usefulness of the education received, job, way free time is spent, health, standard of living, savings, friendships, intimate relationships, family life and home-making activities. Respondents were asked the degree to which they were satisfied with their job compared to their friends. The reliability and validity of the quality of life measures are discussed in Appendix A, section A.5.

6. Section E: The measures of personal competence or locus of control, happiness, life satisfaction and subjective well-being, the importance of all the work needs (the importance section of the MIQ) from the first questionnaire were re-administered in this section. The social support instrument was included and respondents were asked about the relative importance of work and leisure activities for them.

The instruments used in the two questionnaires can be grouped into those already in existence and well-established, that is, those of Dawis and Lofquist (as described in section 5.6), those of others (section 5.7), and those developed or modified for use in this study (section 5.8).

5.6 Dawis and Lofquist's instruments and those used in the present research

Dawis and Lofquist distinguished among *expressed*, *measured*, *exhibited*, *validated*, and *latent* interests. The ability value-relationships are represented by *expressed* or *stated interests*. In the case of sampling activity preferences experienced by most individuals, they can be scaled psychometrically to give *measured interests*. Such a structured approach is believed to provide a superior sampling of activities and a good measure of the entire set of preferences. The assessment of the reliability of the measures and comparisons of the activity preferences of different individuals and groups are also made easier using this procedure.

Observed, or *exhibited interests*, are compared with measured interests and in the case of agreement between the two, are called *validated interests*. Validated interests are said to result from experiencing certain combinations of values and abilities. The degree to which interests are stable is believed to depend upon how stable an individual's set of values and abilities is. It is argued that a restricted experience with some combinations of values and abilities may explain the later emergence of what are referred to as *latent interests*. The use of 'latent' here is different from its usual use in factor analysis and structural modelling where it refers to the factors, the unmeasured underlying variables, or the constructs as opposed to measured variables.

A second way that ability-value relationships are expressed is by noting the likelihood of certain behaviours occurring. This likelihood of behaving in certain ways is known as *expressed* or *stated personality* descriptions. Where these descriptions are made via a psychometric instrument aimed at sampling and scaling a wide range of behaviours in a

systematic way in accordance with theoretical models, these are referred to as *measured personality descriptions*. Where personality descriptions are based on observation they are called *descriptions of exhibited personality* and when these are in agreement with measured personality descriptions, they are termed *validated personality descriptions*. However, they are said to refer only to the important aspects of the personality rather than provide a complete personality description.

Although Dawis and Lofquist consider the description of interests and personality as useful in examining ability-value relationships, they adopted the more direct approach by starting with ability and values measurements rather than the constructs that are another level again away from their data. Abilities and values were therefore used as the principal personality variables and interests and personality descriptions were relegated to a supporting role.

Dawis and Lofquist's instruments used in the present research were those concerned with values, their importance (as measured by the Minnesota Importance Questionnaire) and their satisfaction (as measured by the Minnesota Satisfaction Questionnaire). Their experimental instruments used were those concerned with work adjustment styles.

5.6.1 The Minnesota Importance Questionnaire (MIQ)

Description and Administration

The concept of needs was operationalised by using the Minnesota Importance Questionnaire (MIQ) 1975 Revision, in Dawis and Lofquist (1984), which was based on the earlier version (Gay, Weiss, Hendel, Dawis and Lofquist, 1971). The purpose of the MIQ is to measure vocational needs in order to relate them to occupational reinforcers. The MIQ is a multiple-item paper-pencil inventory. The MIQ focuses upon the relative importance to an individual of having 20 particular needs reinforced. The need dimensions measured are: ability utilisation, achievement, activity, independence, variety, compensation, security, working conditions, advancement, recognition, authority, social status, coworkers, moral values, social service, company policies and practices, supervision-human relations, supervision-technical, creativity, responsibility. Of the two forms available, one uses a paired-comparison format, the subject being asked for each pair of 20 needs to mark which is the most important in their ideal job ("the kind of job you would most like to have"). The different combinations of each item with every other item gives 190 pairs in total. In response to subjects finding this format

repetitive a multiple ranked form was developed where statements are ranked in blocks of five, giving a total of 105 responses. For both forms the subjects are asked to rate on a five point scale if each work need is important to them.

The computer generated report includes an individual's profile of needs, and interpretive information. A validity check is incorporated which is based on illogical comparisons not exceeding a certain number. Illogical comparisons are referred to as totally circular triads (TCTs). The TCT scores are used to calculate error bands which in turn are used to indicate the extent of limits to which scores (the adjusted scale values) could change if responses were perfectly consistent. The TCT scores, error bands and adjusted scale values are described in detail in the scoring subsection of this section (5.6.1). Validity scores above a certain level are used to indicate that random responding, or carelessness, or fatigue has rendered the profile invalid. For the valid profiles a comparison can be made with patterns of reinforcers for 148 different occupations and a list of the 50 most similar and the 50 least similar occupations is provided.

The multiple ranked form was used in the present study. Twenty-one statements are presented in groups of five for respondents to rank according to their importance resulting in 105 responses. Respondents are asked to enter their rankings of statements for each group on the separate answer sheet. An example of such a group of statements is:

On my ideal job...

- a. I could be busy all the time.
- b. I could do things for other people.
- c. I could try out some of my own ideas.
- d. my pay would compare well with that of other workers.
- e. the job would provide an opportunity for advancement.

These statements represented the needs of activity, social service, creativity, compensation and advancement, respectively. Subjects were asked to rate on a Yes/No scale the importance of each work need to them. These absolute judgements are used to determine the subject's zero point which is used to anchor the comparative judgements from all need items

to yield adjusted scores. These scores have a meaningful zero point along with a '+' or '-' sign which indicates if the score is in the 'important' or 'not important', direction.

The minor modifications to the MIQ's instructions and wording involved using New Zealand spelling are presented in Appendix C. The changes made were to do only with the instructions and presentation of the instrument, for example to allow responses to appear on the same page as the items to be ranked (not on a separate answer sheet), and the use of the word "workers" in two of the items.

The instrument is self-administered with clinical supervision but is suitable for group use also.

Scoring

Because hand scoring is laborious and prone to error, forms are usually computer scored at the University of Minnesota producing a computer-generated profile and interpretation. The profiles include scores on each dimension. The ranked form includes an Autonomy scale because an extra or 21st statement was required in order to convert the ranked responses from the blocks of five statements to a complete set of paired comparison responses. This new dimension is not scored in order to make this form comparable with the paired-comparison form. The profile includes, scores on each dimension, correspondence of examinee's need patterns to Occupational Reinforcer Patterns (ORPs), lists (50 each) of occupations with the ORPs most similar and least similar to the respondent's MIQ profile, predictions of job satisfaction for each occupation listed, references for further information, a validity score and an error factor for each score. An optional report lists MIQ-ORP correspondence for 187 occupations.

The MIQs for the present study were scored locally using a modified programme⁷ which produced the Totally Circular Triad scores and the error bands, described below. The scoring produced the 20 adjusted scale scores (scores with a meaningful zero-point and a '=' or '-' sign indicative of 'important' or 'not important', respectively). The various types of scores produced in the scoring process described below are the raw scores, the scale scores, adjusted scale values, the Total Circular Triad (TCT) score, the Stimulus Circular Triad (SCT) score, and error bands, all of which were available in the local computer programme.

⁷ The author wishes to thank Dr. T. Hesketh, Massey University, for providing the modified programme.

1. Raw Scores.

There is a raw score generated for each of the need scales and a "zero-point" scale which is used to anchor the 20 vocational needs. The raw score for each need is the number of times the statement representing that scale is chosen as 'more important' to the individual in his or her 'ideal job'. A statement is given a score of 1 every time it is chosen over another statement and for the absolute judgement section the vocational need scales identified as 'important' by a yes response are scored '1' and those identified as 'not important' by a no response are scored '0'. The zero-point scale raw score is obtained by counting the number of 'no' responses to the absolute judgement items. Raw scores range from 0 to 20 for both the vocational need scales and the zero-point scale.

2. Scale Values.

An MIQ scale value is calculated by taking the raw score on a scale for an individual (the number of times a given statement is chosen over all other statements) and converting it to an intra-individual z score. Each raw score is expressed as a proportion of the total number of stimuli being scaled (21, including the zero point). This proportion is converted to the appropriate z-value from the cumulative normal distribution. In calculating the proportion .50 is added to the raw score to include the expected number of times the statement would be chosen over itself had such a comparison been made. The MIQ scale values range from -2.0 to +2.0. Scale values show how many standard deviations a given raw score is from the individual's own mean raw score, which is arbitrarily defined as 0.0. Individuals are their own basis for comparison, rather than a normative group. The procedure gives a set of scale scores which are equally distributed about zero, with half the scale values positive and half negative. Different individuals will have different scale values for the different scales. The scale values reflect the relative levels of the measured vocational needs for a particular person and allow only limited comparisons among individuals. To enable more meaningful comparison among individuals, scale values are adjusted.

3. Adjusted Scale Values.

The individual's zero-point raw scale score is derived. The scale value of the zero-point scale is determined in the same way as the scale values for the twenty vocational need scales. Scale values for the other twenty scales are adjusted with respect to the scale value for the zero-point by subtracting it from the other scale values, and from itself. This procedure results in 21 adjusted scale values, with the individual's zero-point scale adjusted to zero and the

vocational need scales adjusted with respect to the individual's zero-point. The potential range for adjusted scale values is -4.0 to +4.0. However, the maximum range of values for an individual is only half of that. Where this half is located depends on the zero-point scale value before adjustment. The sign of each adjusted scale value shows whether the reinforcer is thought to be important or not. Adjusted scale values with positive signs indicate characteristics of the individual's ideal job. They represent significant vocational needs. The magnitude of the adjusted scale value indicates *how* important a reinforcer is. Scale values with negative signs indicate characteristics which are *not* considered important and are not therefore relevant vocational needs for the individual.

4. Total Circular Triad Score (TCT). This is an index of the extent of random guessing and other forms of invalid responding to the MIQ. The Total Circular Triad score (TCT) indicates the logical consistency (transitivity of preference) of the responses. It is the number of circular triads. A circular triad occurs when an individual responds to a group of three items in the following manner:

Item 1. Statement A is chosen over Statement B.

Item 2. Statement B is chosen over Statement C.

Item 3. Statement C is chosen over Statement A.

The sequence of these choices is illogical or intransitive. For responses to be perfectly consistent one statement would be chosen over all the others, a second statement over all the others except the first, a third over all the others but the first and second and so on to the statement representing the twentieth vocational need, which would not be chosen over any of the other statements. At the other extreme for responses to be logically inconsistent, each statement would be chosen half the time and its alternative half the time, so that all triads would be intransitive. An individual responding in this manner would obtain the maximum number of circular triads, which is 385.

The number of circular triads for an individual on the MIQ is calculated by the formula (Kendall, 1955, p 125):

$$TCT = (2870 - \sum_{i=1}^{21} x_i^2) / 2$$

where $\sum_{i=1}^{21} x_i^2$

is the sum of the squared raw scores for each of the vocational need scales (including the zero-point scale).

The distribution of TCT scores for random responding has a mean of 333 and a standard deviation of 15.8. The maximum allowable TCT score for a valid profile has been set at 254. This number is 5.0 standard deviations below the mean TCT scores for random responding. Gay, Weiss, Hendel, Dawis and Lofquist (1971) report a study where in 4,682 administrations of the MIQ, the TCT scores ranged from 1 to 360, with a median of 73 and with 96% of the profiles being classified as valid on the basis of the TCT score.

5. Error Bands.

These are the extent to which the adjusted scale values could change if responses were perfectly consistent. Circular triads reflect some indecision on the part of the individual. To show the location of such indecision, error bands are computed for each scale from an analysis of the TCT score. These bands show the limits to which the adjusted scale value could change if the individual were to respond in a perfectly logically consistent manner.

The error bands were computed by determining for each item whether it appeared in a circular triad. On the assumption that the individual's scale scores are more reliable than each of the item choices, each item choice which is involved in a circular triad is compared with the ranking of the individual's scale scores for the two statements in the item. Logically, the statement chosen should have the scale score which is ranked higher. A count is kept of each time the item choice is inconsistent with the scaleranking, separating the instances when the choice increases the scale score from those which decrease the scale score. These counts are added or subtracted (whichever applies) from the raw score and converted to scale values. A range of scale values around the observed scale values is produced which represents the individual's indecision for the scale.

6. Random Response Patterns.

Invalid MIQ profiles (TCT greater than 254) can be random response patterns of two different types, true random and pseudo-random. The Stimulus Circular Triad Score (SCT) distinguishes between these two types. The SCT score for a particular scale is derived by counting the number of times the statement for that scale appears in a circular triad. (The total number of SCT scores for all of the MIQ scales is three times the number of TCTs because

each circular triad involves three scale statements.) If an individual were responding to the MIQ in a truly random manner the SCT scores should produce a rectangular distribution. However, if an individual is just having difficulty with respect to some of the statements, there would be more SCTs for those statements than for others. Evaluation of the distribution of the SCTs is made using the chi-square statistic. The MIQ manual (Gay, Weiss, Hendel, Dawis and Lofquist, 1971) describes how a distribution of chi-square values for a true random responding was developed from 1,000 randomly generated MIQ response records. The observed distribution of SCTs was compared with the expected distribution among the 21 stimuli. A chi-square was computed separately for each random response record. The cumulative frequency distribution of chi-square values for these 1,000 records is used to test the deviation of an observed chi-square from the random response expectation. According to this distribution there is a 5% probability that a chi-square greater than 25.9 would occur under conditions of true random responding. If this value is reached, the response pattern is labelled pseudo-random.

Once the MIQ is scored it can then be compared with Occupational Reinforcer Patterns which are scaled by the same methods used in scaling the MIQ. However, this procedure was unnecessary in the present study because the MIQ was not being used for vocational purposes in the sense of attempting to find the most or least suitable jobs. Instead the interest lay in examining the occupation the individual had taken up in terms of correspondence between needs and the reinforcers available for that occupation.

In addition, rather than using the American ORPs for an individual's particular occupation, which may or may not be the same as those in New Zealand, the work needs of individuals were matched with the reinforcers *perceived by the individual* to be available.

Reliability and Validity

The authors claim the MIQ gives a wide coverage of the work-relevant needs which can then aid in the description of value dimensions of the work personality structure. With respect to the reliability and validity of the Minnesota Importance Questionnaire (MIQ), Albright (1978) reviewed the MIQ noting that the 20 vocational needs, although probably not all-encompassing, should be adequate for most situations. It was thought that one item could benefit from re-wording and that is the statement used to represent the authority need. "I could tell people what to do". This was felt to be limited, reflecting a quaint view of authority

rather than how the concept functions in most organisations. This need is also said to have a low rate of endorsement. It was suggested that items be equated for social desirability.

Of the two forms of the MIQ, the comparatively more recently developed ranked format has been preferred by users over the earlier paired-comparison format because it is less repetitive and requires less time and effort to complete (requiring 105 rather than 190 responses). The authors have claimed that the psychometric properties and the results yielded are similar for both forms. The ranked form required a 21st work need dimension in order to convert ranked responses from the blocks of five to a set of paired comparison responses. In order to make the two forms comparable the newly created dimension, that of autonomy, was not scored. This discrepancy in item content prompted Albright to ask why the authors used a ranking method when they could have shortened their questionnaire by using partial pairing techniques.

The reliability and validity data as based on 1967 and earlier versions of the MIQ was considerable. The median internal consistency, Hoyt reliability coefficients for the 20 scales was .77 to .81 for nine different groups and .30 to .95 for individual scale scores. Scale intercorrelations ranged from .05 to .77, the median being .33. Test-retest reliability for the scale scores shown in Table 5.4 ranged from .19 (for a nine-month interval) to .93 (for an immediate retest) and the median coefficients ranged from .48 to .89. The median stability coefficients for the MIQ profiles (rather than just the scale scores) were higher, ranging from .70 (for a four-month interval) to .95 (for an immediate retest).

Zedeck (1978) in his review of the MIQ regarded these intercorrelations along with the factor composition as evidence of the soundness of the MIQ. Common factor structures have been found for vocational rehabilitation clients, employed workers and college students. The reliability findings led Albright to conclude the internal consistency and stability, particularly with respect to the stability of profiles, are satisfactory and that there is an acceptable degree of scale independence.

Although Albright did not find the validity evidence as satisfying, he believed that it seemed to indicate the MIQ functioned as intended. He noted that concurrent validity studies demonstrated that four occupational groups have MIQ profiles which correspond to their occupational reinforcer patterns to some degree, with rank-order correlation coefficients

ranging from .48 to .60. As was expected, the MIQ was found to correlate more highly with the Strong Vocational Interest Blank, SVIB (1933) than with the GATB (1970) in an investigation of convergent and discriminant validity. It was noted there have been no predictive validity studies to indicate whether individuals the MIQ would predict to be satisfied in certain occupations have achieved higher satisfaction than would be likely if they had entered another occupation.

Table 5.4 Reliability of MIQ scale scores, and profiles

Reliability	Time Interval		
	Immediate	Four-month	Nine-month
Scale scores	.93		.19
Median stability coefficient			
for dimension scores	.89		.48
Median stability MIQ profiles	.95	.70	

Zedeck (1978) found the approaches to validity less impressive than the way in which reliability was assessed. The discriminant validity was based on a lack of relationship between the MIQ and the multifactor abilities of the GATB, while the evidence for convergent validity was based on canonical correlations of .78 and .74, for two groups, between the MIQ and the SVIB. The other two strategies were based on pre-1967 forms and the 1967 edition and involved validation by confirming group differences according to hypotheses generated by the theory. The pre-1967 approach used a Likert-type response and a form with twice as many items, thus minimising the value of the validity evidence. However, Zedeck maintained the results were adequate. It was concluded that the validity research needed to focus on predictive validity, emphasising multivariate methods of data analysis and to investigate relationships between the MIQ and other measures and constructs of interest.

Conceptually the MIQ has been said to appropriately measure needs by providing a within-person type of analysis (Zedeck, 1978). This allows the interpretation of the importance to

workers of each need relative to their *own* rather than work needs of others. Zedeck noted this in contrast to the less appropriate but more frequently used strategy of normative assessment which involves the comparison of one worker's needs with those of *other* workers.

Albright concluded that the MIQ is a potentially useful measure of vocational needs. It was regarded as easy to use in terms of readability and administration but does require the administrator to have a considerable understanding of the underlying theory and other vocational and technical information in order to interpret test results. It was suggested that users could benefit from the development of a handbook updating and amassing the relevant material found in the numerous manuals, monographs and research reports accompanying the MIQ. Zedeck argued for more information about how items and scales were chosen for the MIQ, criticised the lack of information about definition and purpose, and the absence of examples of concepts, which are measures for other aspects of work adjustment, such as 'occupational reinforcement patterns' and 'clusters'. The MIQ's reliance and dependence on other instruments and strategies developed in the Work Adjustment Project at Minnesota University, was considered a limitation.

Zedeck would have liked descriptions in terms of demographic and background factor of the groups from which most of the data were obtained, and an account of sampling procedures and information about whether the MIQ correlates with other measures of needs or work values. The use of the 'ideal' job as a frame of reference was questioned. The manual in suggesting the psychometrist ask the subject to explain what the phrase means, tends to suggest alternative interpretations are possible. Zedeck wondered if the MIQ would be useful in studying motivation, in suggesting job redesign, and as a way of establishing incentive programs.

The MIQ was thought to be of the most use in university counselling centres or other vocational guidance facilities where highly experienced and well qualified personnel are likely to be employed. It was regarded as inappropriate for employee career planning programmes in organisations unless its administrators are trained in its use. Therefore, it was expected to be an appropriate instrument for use with the present sample of university students. More recent reviews of the MIQ are lacking, but some of the criticisms relating to the collating of information would be expected to be overcome as manuals are updated.

Table 5.5 The eight matched traits and instruments of MacNab and Fitzsimmons (1987)

Instruments	The Work Values inventory, Super (1970) The Values Scale (VS), The Work Importance study (1980) The Work Preference Scale (WAPS), Pryor (1979) The Minnesota Importance Questionnaire (MIQ), Gay, Weiss, Hendel, Dawis and Lofquist, (1971)
Traits	Authority Co-workers Creativity Responsibility Security Social service Work conditions Recognition

The MIQ was examined in a study, attempting to resolve some of the confusion in the definition and use of the concepts of needs, values and preferences (MacNab and Fitzsimmons, 1987), using a multitrait-multimethod design (Campbell and Fiske, 1959). The convergent and discriminant validity of eight matched traits across four instruments were investigated, see Table 5.5.

The eight scales common to the four instruments demonstrated high convergent and discriminant validities when judged against Campbell and Fiske's (1959) criteria. Confirmatory factor analysis of the general model specified, which hypothesised four correlated method factors and eight correlated trait factors, supported the results of the Campbell and Fiske analysis. The trait factors accounted for about 50% of the variance, the MIQ showed the least amount of trait variance, but its trait variance was greater than its method variance.

Confirmatory Factor Analysis (CFA) found models with correlated method factors, produced a better fit to the data. Although it was concluded that the trait factors are truly correlated, McNab and Fitzsimmons suggested not strongly enough correlated to be combined. As discussed earlier such a conclusion based on only eight of the 20 of the MIQ should be treated with great caution.

5.6.2 The Minnesota Satisfaction Questionnaire (MSQ)

Description and administration

The long-form Minnesota Satisfaction Questionnaire (MSQ) consists of 100 items. Each item refers to a reinforcer in the work environment. Respondents indicate how satisfied they are with the reinforcer on their present job. The statement preceding response alternatives was "on my present job, this is how I feel about... How steady my job is". Five response alternatives are presented for each item: Very Dissatisfied; Dissatisfied; neither (dissatisfied nor satisfied); Satisfied; Very Satisfied. The most recent form of the Minnesota Satisfaction Questionnaire was used. It was similar to that presented in Weiss, Dawis, England and Lofquist (1967). The 1967 form was identical to the original edition except for response options. No reliability and validity data or norms were available for this revision, however it was intended for research use only. The MSQ used with its revised response alternatives was that published in Dawis and Lofquist (1984), a copy of which was sent by them in 1985 for use in the present study. The rating instructions were as follows: "Ask yourself: How

satisfied am I with this aspect of my job?

Very Sat. means I am very satisfied with this aspect of my job.

Sat. means I am satisfied with this aspect of my job.

N. means I can't decide whether I am satisfied with this aspect of my job.

Dissat. means I am dissatisfied with this aspect of my job.

Very Dissat. means I am very dissatisfied with this aspect of my job.

An example of an item is:

Very					Very
Dissat.		Dissat.	N	Sat.	Sat

1. My job security.

Each long-form MSQ scale consists of five items. The items appear in blocks of 20, with items of a given scale appearing at 20-item intervals. For example the five items representing the Social Service scale are: "The chance to be of service to others" (item 1); "The chance to be of service to people" (item 21); "The chance to help people" (item 41); "The chance to do things for other people" (61); "The chance to be of small service to other people" (81).

The MSQ scales are the same as those of the MIQ. Alongside each of these listed below is the satisfaction item which correlated highest with the scale score for a group of 1,793 individuals (Weiss, Dawis, England and Lofquist, 1967). The items referred to are those of

the 1967 revision. The wording had been altered slightly to be more socially acceptable with respect to gender, for example, in the later version used in the present study. The changes are apparent when compared with the items of the General Satisfaction scale discussed and listed later in the scoring section. One example of a change relating to the gender issue was 'the way my boss handles his men' being altered to 'the way my boss handles his/her employees'.

1. *Ability utilization*. The chance to do something that makes use of my abilities.
2. *Achievement*. The feeling of accomplishment I get from the job.
3. *Activity*. Being able to keep busy all the time.
4. *Advancement*. The chances for advancement on this job.
5. *Authority*. The chance to tell other people what to do.
6. *Company policies and practices*. The way company policies are put into practice.
7. *Compensation*. My pay and the amount of work I do.
8. *Co-workers*. The way my co-workers get along with each other.
9. *Creativity*. The chance to try my own methods of doing the job.
10. *Independence*. The chance to work alone on the job.
11. *Moral values*. Being able to do things that don't go against my conscience.
12. *Recognition*. The praise I get for doing a good job.
13. *Responsibility*. The freedom to use my own judgement.
14. *Security*. The way my job provides for steady employment.
15. *Social service*. The chance to do things for other people.
16. *Social status*. The chance to be "somebody" in the community.
17. *Supervision (human relations)*. The way my boss handles his men.
18. *Supervision (technical)*. The competence of my supervisor in making decisions.
19. *Variety*. The chance to do different things from time to time.
20. *Working Conditions*. The working conditions.

The MSQ is self-administering. Directions for the respondent appear on the first page and item rating instructions are repeated at the top of each page.

Scoring

The response choices were weighted in the following manner:

1 = not satisfied, 2 = only slightly satisfied, 3 = satisfied, 4 = very satisfied, and 5 = extremely satisfied. Responses were scored 1 through 5 proceeding from left to right in the answer spaces. Scale scores were determined by summing the weights for the responses chosen for items in each sale. Scoring of the MSQ can also include a General Satisfaction Scale. This scale was scored in the present study. It uses 20 items (one from each of the twenty scales), yielding a score ranging from 20 to 100. The items scored on the General Scale are as follows:

24. The chance to work alone on the job.
25. The chance to do different things from time to time.

28. The chance to be "somebody" in the community.
30. The way my boss handles his/her employees.
35. The competence of my supervisor in making decisions.
43. Being able to do things that don't go against my conscience.
51. The way my job provides for steady employment.
61. The chance to do things for other people.
66. The chance to tell people what to do.
67. The chance to do something that makes use of my abilities.
69. The way company policies are put into practice.
72. My pay and the amount of work I do.
74. The chance for advancement on this job.
77. The freedom to use my own judgement.
82. The chance to try my own methods of doing the job.
93. The working conditions.
96. The way my co-workers get along with each other.
98. The praise I get for doing the job.
99. The feeling of accomplishment I get from the job.
100. Being able to keep busy all the time.

For the interpretation of MSQ scores, raw scores can be converted to percentile scores using normative data. Weiss, Dawis, England and Lofquist (1967) claimed that the most meaningful scores to use in interpreting the MSQ are the percentile scores for each scale obtained from the most appropriate norm group for the individual. The appropriate norm group is said to be the one that corresponds exactly to the individual's job. However, norms are not available for all jobs. Alternatively norms for an occupation which is similar can be chosen, or the Employed Disabled or Employed non-Disabled norms can be used. It is also possible to interpret the MSQ raw scores for all the scales by ranking them. These rankings indicate the areas of relatively greater, or lesser satisfaction. In the case of the present study the latter method would be the most suitable. The use of American norms for a New Zealand group would have been suspect. However, the primary use of the MSQ in the present study was to compare the importance of individuals' work needs (as measured by the MIQ) in relation to the satisfaction achieved in each of these. In this respect the interest lay in intraindividual measures rather than the degree of satisfaction relative to the appropriate norm group.

In describing the MSQ Weiss, Dawis, England and Lofquist (1967) noted its special value is that it enables a more individualised picture of worker satisfaction than is possible using gross or more general measures of satisfaction with the job as a whole. This individualised measurement is said to be useful because two individuals may express the same amount of general satisfaction with their work but for entirely different reasons. Weiss et al. (op. cit.) noted that research has shown there to be individual differences in vocational needs.

Reliability and validity

Dawis and Lofquist (1984) claimed the reliability and validity data supported the use of the MSQ in research and in practice. They noted that it takes little time to administer (15-20 minutes) and is easy to read (fifth grade reading level, that is, about the level of a ten year old). The instrument is advocated for use in research because it was designed to assess dimensions of job satisfaction which exactly parallel the dimensions of needs the Minnesota Importance Questionnaire (MIQ) measure.

While the authors had claimed the MSQ scales had demonstrated adequate psychometric characteristics, a 'ceiling effect' had been found on many of the scale scores. The scale means for most groups were within a few points of the maximum possible. Most scale score distributions were extremely negatively skewed. Most items alternated between Very satisfied and Satisfied. The rating categories were altered to control for this ceiling effect and the numbers 1 to 5 used to define the categories. The neutral point was eliminated and the two dissatisfied categories collapsed into one. Four degrees of satisfaction were provided. The desired objectives were met when the modified rating scale with the long-form MSQ was administered to a sample of 200. Means scale scores were in the middle of the available range, and the scale scores were distributed more symmetrically across the range. No change in scale reliabilities or intercorrelations were said to result.

In reviewing the MSQ, Guion (1978) was critical that neither the theoretical foundations nor the psychometric history of the MSQ was presented in its otherwise informative manual. It was observed that the internal consistency of the scales may have been generally high because the items were very close in meaning. What little evidence on stability there was tended to indicate that responses probably change no faster than the satisfactions they reflect. Although scale intercorrelations were high, they were low relative to the estimates of reliability. They were believed to be low enough to show unique variance in scales, yet high enough to justify combining scales to form a general satisfaction score. Normative tables for 27 occupational groups for the long form of the MSQ were provided, and sample characteristics and summary statistics detailed well, although some of the groups were considered small. The MSQ was said to give reasonably reliable, valid, well-normed indications of 20 aspects of job satisfaction, which could be divided into intrinsic and extrinsic components and a general job satisfaction composite measure.

Guion compared the MSQ to another well used measure of job satisfaction, the Job Descriptive Index (JDI). Both instruments came out of research in the 1960s, have underlying rationales, are based on empirical research, produce reliable scores, have evidence of construct validity and are extensively normed. However, the MSQ has four times the number of scales than the JDI. The scales of the MSQ are more interdependent, but the JDI was designed to create independence making a composite score inappropriate. The MSQ internal consistency scores were higher, but probably spuriously because of the close similarity of some items. Construct validity for the MSQ was assessed via confirmation of theoretical predictions whereas the JDI's construct validity was based on factor analyses confirming five scales. Factor analysis of the MSQ was based on scales rather than individual items, and it was normed using occupations rather than demographic groups.

When MSQ and JDI data have been factor analyzed together the five factors which emerge have been different from those of the JDI. These five factors also yielded a further two higher order factors, equivalent to the intrinsic and extrinsic factors of the MSQ. It was concluded that the MSQ is well developed and holds up when compared with a major alternative instrument. It was praised as being able to give either detailed results or parsimonious summary statements in accordance with an investigator's needs.

The MSQ is one of the measures of job satisfaction which continues to be widely used. Among the reasons given for being frequently used is that it assesses job satisfaction via a wide range of organisational features (Robertson, 1990). Another measure of overall job satisfaction in wide use is that of Brayfield and Roche (1951), which has 18 items with Thurstone scale values of equal intervals rated on a Likert agreement scoring system using weights of 1 to 5 to give a total possible score of 90 (Rahman, 1989). Both the JDI and MSQ have been listed among measures of job satisfaction which have become widely accepted (Staw, 1984). Cook, Hepworth, Wall and Warr (1981) have given a detailed psychometric analysis of the instruments (17 measures of general job satisfaction and 29 measures of satisfaction with specific work aspects). However, many of the scales were said to be poorly documented.

5.6.3 Dawis and Lofquist's Experimental Personality Rating and Adjustment Style Rating Forms

The Personality Style Rating and the Adjustment Style Rating forms were experimental instruments of Dawis and Lofquist (1984) for obtaining ratings relating to the process of work adjustment (rather than its prediction) of which the adjustment style dimensions were regarded as the major variables. Both these instruments were modified for use in the present study. They were converted to self-rating scales using a seven-point instead of a five-point scale (to be consistent with other scales used elsewhere in the questionnaire) and the wording was simplified (as in Appendix A) following findings of a preliminary study (as reported in Appendix J). The adjustment style dimension questions were in Section A of the second questionnaire. The questions related to each of the styles of flexibility, activeness, reactivity, perseverance, celerity, pace, rhythm, and endurance. Respondents were asked to "Please consider the following statements and decide how well they apply to you by circling one of the numbers from 1 to 7." Anchors were used for each item. Using the reactivity item as an example, this stated "I make changes in myself when I am dissatisfied with work." The scale to be rated ranged from 1 to 7 with 1 labelled low reactivity and 7 labelled high reactivity (refer Appendix A for the questions for all the styles).

Description and Administration

The Personality Style Rating Form dealt with the personality style dimensions of celerity, pace, rhythm and endurance. Respondents were asked to rate themselves with respect to each of these on a scale of 1 (Low) to 7 (High).

Scoring

The score for each adjustment style for each individual was simply the scale number which the individual had circled.

Reliability and validity

There was no reliability and validity data available. The format of the questions used in the present study were developed from findings and comments of the preliminary study which suggested that the wording in Dawis and Lofquist's experimental forms needed to be simplified, (Appendix J, p 579).

5.7 Standard instruments other than Dawis and Lofquist's

5.7.1 The Vocational Preference Inventory (VPI), Holland (1965)

The Vocational Preference Inventory is a personality inventory composed of 160 occupational titles to indicate which occupations an individual likes or dislikes. The clusters of personal traits assessed by the inventory provide a wide range of information about subject's interpersonal relations, interests, values, self-conception, coping behaviour, and identifications. The inventory has eleven scales: Realistic, Intellectual, Social, Conventional, Enterprising, Artistic, Self-Control, Masculinity, Status, Infrequency and Acquiescence (these are interpreted as defined in Appendix F).

The VPI is self-administering. The subject simply records the preferences for occupations on the answer sheets. The instructions and examples of the first few items are:

This is an inventory of your feelings and attitudes about many kinds of work. Fill out your answer sheet by following the directions given below:

1. Show on your answer sheet the occupations which interest or appeal to you by blackening Y for "yes".
2. Show the occupations which you dislike or find uninteresting by blackening N for "No".
3. Make no marks when you are undecided about an occupation.

The above instructions were modified in the present research to be consistent with placing answers on the same sheet as the occupational stimuli. Respondents were therefore asked to:

1. place a tick in the YES box beside those occupations which INTEREST or APPEAL to you.
2. Place a tick in the NO box beside those occupations which you DISLIKE or find UNINTERESTING.
3. Make NO MARKS when you are undecided about an occupation.

In the present research the minor modifications to the wording of Holland's instrument involving using New Zealand spelling and replacing unfamiliar American occupations are presented in Appendix C. The changes were considered insufficient and not of a type to cause concern in any comparisons made with results from previous research. The American spelling

was altered to make the language consistent with that of the respondents and to avoid making the origin of the instrument obvious if this might affect the responses in some indeterminate way. The use of occupational titles not found in New Zealand was avoided for the same reason and to prevent respondents having to assess occupations they either had little knowledge of or would be unable to pursue in New Zealand. When an occupation was generally known by a different title in this country or was not very well known as an occupation other appropriate titles were substituted. Where there was not an equivalent occupation another was chosen according to certain criteria. To maintain consistency for scoring these occupational titles were taken from the Self-Directed Search New Zealand Revision (Keeling and Tuck, 1982) from among those occupations exhibiting the same three-letter Holland code. The replacement occupation was one which would be expected to occur with a similar frequency, to avoid altering the instrument significantly and minimise any effect on scores on the infrequency scale. Gender specific titles were replaced by their gender neuter equivalent (see Table C.1, Appendix C).

The primary purpose of the VPI was to assess personality but it can also be used as an interest inventory, to assess personality types in a theory of occupational choice and as a way of stimulating occupational exploration among high school and college students. Holland viewed its most desirable use as a brief, screening inventory for high school and college students and employed adults.

Scoring

All scales except the Acquiescence Scale are scored by counting the 'correct' responses using a single scoring stencil for all scales. In the present study these 'correct' items for each of the scales were added using the SPSSx to give a score on each of the scales. The Acquiescence score is obtained by counting the number of 'like' responses among items 1 through 30. The Acquiescence score was computer scored in the present study with the number of YES responses among the items 1 to 30 inclusive being counted. Although hand scoring an individual VPI takes about 60 seconds using a statistical programme to score the instruments was preferable because of the large number of respondents involved.

Reliability and Validity

With the exception of the Infrequency, Masculinity and Status scales, the remaining eight scales showed moderate to high homogeneity of content, coefficients ranging from .70 to .95,

with a mode of .89 for adult males, .85 for college males, and .79 for college females. The retest reliability coefficients for both the third and sixth revisions were moderate to high. The reliabilities were lower for the four than the one year interval, from a mode of .78 to .52 for adult males and from .78 to .49 for females. Holland attributed this lower reliability for the four year interval to the use of mail surveys rather than supervised sessions or to the possibility that the VPI may be unreliable over long intervals. However, another explanation might be that occupational preferences alter considerably over longer intervals and that the expression of personality or personality itself, as based on them, alters also.

With respect to validity, the VPI differentiated among several groups, for example, normal and psychiatric patients. Some VPI scales correlated with supervisor ratings and job satisfaction. Scores intercorrelate moderately with several personality inventories and with self-ratings of personal traits and abilities, life goals and values, coping behaviour and competencies and self characterisation in an adjective checklist (Holland, 1965). For students the VPI was moderately predictive of major field and vocation over one and two year intervals for students (Holland, 1962). Selective VPI scales were predictive of academic and extracurricular achievements for one to three year intervals. Although significant statistically the predictive ability was considered generally inefficient (Holland, 1960; Holland and Astin, 1962; and Nichols and Holland, 1963).

The instrument's advantages listed by Holland are all applicable to the present research. These desirable properties were that occupational titles provide subtle stimuli which avoid the negative reactions that can be provoked by the ambiguity and threat of inventories which are obviously personality assessments and that the occupational content lessens the need to fake because the content is not usually perceived as being related to personal adjustment. Also requests by the respondents for test interpretation are less than for tests which are more obviously personality tests and the VPI is economical in use of time and money. Holland did not expect the VPI to have more validity than comparable inventories but saw its worth lying in its ability to obtain a broad range of reliable information economically, in having a short testing and scoring time, and not needing special equipment.

Walsh (1978) in reviewing of the VPI was critical of the lack of validity studies in the large non-college population, the fact that many occupational titles were not appropriate for women and the lack of specific occupational alternatives being suggested. It was noted also that

research has indicated the personality types are not mutually exclusive and independent classes. However, the coefficients of stability have indicated the inventory has acceptable reliability. The application of Holland's theory and the VPI were said to be easily translated into research terms. The VPI data was thought to be of use in a counselling situation. In general the validity studies are believed to have supported the meaning attributed to the scales and the rationale underlying the development of the inventory. The rationale for the VPI was that preferences for occupations are expressions of personality. Although stereotypic, these preferences have tended to be reliable and consistent with reality. Individuals' favoured coping behaviour for dealing with interpersonal and environmental problems is inferred from the degree to which a large number of occupations associated with a personality orientation are preferred. In Holland's view interest inventories and vocational preferences represent a major facet of an individual's personality.

5.7.2 The Strong-Campbell Interest Inventory (1981), 3rd Edition

Description and administration

The Strong-Campbell Interest Inventory (SCII), the merged form (Form T325) and current edition of the Strong Vocational Interest Blank (SVIB) (1985), is a vocational interest inventory consisting of a list of 325 items for respondents to indicate a degree of preference. The items represent a wide range of occupations, occupational activities, school subjects, activities, amusements and types of people. It asks the individual to respond either Like, Indifferent, or Dislike to the items covering familiar occupational tasks and day-to-day activities. Respondents are asked whether statements about characteristics, for example "have patience when teaching others" are descriptive of them, Yes or No.

Most individuals require 25 to 35 minutes to complete the inventory by marking their responses on a machine-scorable answer form.

The manual for the third edition of the Strong-Campbell Interest Inventory (Campbell and Hansen, 1981) notes that it can be used in vocational counselling, as a selection device for employment decisions, as a tool for understanding job dissatisfaction, for research on groups such as studying characteristics of particular occupations, in relation to change in groups or institutions, to investigate societal trends, examine change within an individual, and to look at cross-cultural influences. It is suggested the inventory is potentially useful in research in

the identification of homogeneous types, the understanding of influences on career development, for a census of interest patterns, for studying interpersonal relationships and the behavioural-type composition of groups and helping to design jobs around interests. The user's guide (Hansen, 1984) claims the SCII can be used with anyone in need of career or lifestyle guidance in schools and universities, by industry, by private institutions and government agencies and by the military. She claims it is one of the most widely used of all psychological inventories, for both vocational and avocational purposes. Hansen (op.cit.) also notes that because consistency within occupations across cultures has been demonstrated (that is, the likes and dislikes of, for example, engineers, lawyers, accountants and physicians are similar across cultures) the SCII is used in similar settings outside the United States of America.

Scoring

The answers are computer scored only, resulting in a profile of scores on a number of scales accompanied by three main types of interpretive information. The SCII gives the respondent scores on: six General Occupational Themes to reflect their overall occupational orientation; scores on 23 Basic Interest Scales, reporting consistency of interests or aversions in specific areas, such as art, science, or public speaking; and scores on 162 Occupational Scales which show degree of similarity between the respondent's interests and the characteristic interests of men and women in a wide range of occupations.

The answer forms were forwarded to the author of the 1985 Revision of the Strong Vocational Interest Blank (Hansen, 1984; 1985) who arranged computer scoring and the return of the profiles.

Reliability and validity

For the Occupational Scales the test-retest reliability statistics of three samples produced median correlations at two week, 30-day, and three year intervals to be .91, .89, and .87, respectively. Concurrent validity in contrasting the occupational criterion samples and the reference samples (Men-in-general or Women-in-general) looked at the percentage of scores in one sample matched by scores in the other. the median overlap for Occupational Scales is 34% or 2 standard deviations of separation which corresponds to a difference between the 16th and the 86th percentiles thus representing a large separation. The predictive validity for

the Occupational Scales was found to be reasonable, with a half to three quarters entering occupations predicted from earlier SVIB-SCII scores.

For the Basic Interest Scales content validity was evident, each scale focusing on a content area. The test-retest reliability statistics produced median correlations at two weeks, 30-days, and three years of .91, .88, and .82, respectively. Although lower, the median coefficients of .56 for high school and .68 for college students, in contrast to that of .82 for adults, still were considered sufficiently high to warrant their use with young adults. The test-retest correlations for the General Occupational Themes were .91, .86, and .81, for the two week, thirty day and three year periods, respectively.

The concurrent validity of the Basic Interest scales expected individuals to score highly on scales relevant to their own occupation. Occupational scores on each scale were generally spread over 2 to 2.5 standard deviations or a range of 20 to 25 points. This was taken as evidence of the scales discriminating among occupations. The scores on scales were said to be substantially related to the occupations individuals pursued. The Basic Interest Scales predictive validity, because of the nature of the scales, do not allow detailed predictions or the tallying of hits and misses, but students with a high score on one scale have tended to take up an occupation of that character. Some scale scores were less predictive than others. The more consistent the pattern across a profile the more predictive it has been shown to be. Consistency between scores on the Basic Interest Scales and their Occupational Scales has been associated with greater accuracy.

One reviewer has noted that millions of copies of the SCII have been sold and thousands of studies relating to it undertaken but that firstly, it is a sex restrictive instrument, the number of career options suggested to males and females being disproportionate, and secondly, that the predictive validity of the SVIB is less than reported by Strong. The concurrent validity was also found to be less than that reported by Strong with a hit rate of 50%. Low scores were found to be as predictive or more predictive of occupational membership than high scores (Crites, 1978). Dolliver (1978) viewed the secrecy regarding the scale content as an inconvenience which might be small for the practitioner but very large for the researcher. However, he believed the SCII met most of the criteria of an unbiased test by using gender-neutral terms, and by including some nontraditional female and male occupations. He concluded that The SCII was the best vocational interest inventory available although thought

some users may press for a greater degree of male/female integration. But Dolliver suggested that the 'best' inventory may not be good enough for a particular use.

The SCII has been said to show item sex bias, with over half showing a 15% or more sex difference and the continued dependence on separate sex groups for the occupational scales has been called a sex bias defect (Steinhauer, 1978). It was noted by Johnson (1977) that the sex of the occupational criterion group was not taken into account in assigning Holland codes, that letter codes assigned by Campbell differ from those of Holland for some occupations, but that apart from these difficulties the SCII has been well constructed, the reliability and validity figures are comparable to the SVIB scales and that the normative samples are adequate.

5.7.3 Index of Personal Competence (a locus of control measure) (1976)

Description and administration

The Index of Personal Competence employed by Campbell, Converse and Rodgers as a locus of control measure was a set of four items. These have been used at the Survey Research Centre of the Institute for Social Research, the University of Michigan, for many years. These items are concerned with the degree to which events are believed to be in the control of the individual at one extreme (an internal locus of control) and the degree to which events are due to luck or factors not under the control of the individual (an external locus of control) at the other extreme. In the present study the four questions were accompanied by seven instead of five response alternatives (see the stage one and two questionnaires in Appendix B) to bring the number of scale units nearer to an optimal point as suggested in the literature (Tukey, 1950; Guilford, 1954; Gulliksen, 1958; and Warr, 1968).

An example of an item in the personal competence scale is:

(Respondents were asked to "please rate the following, circling the number which best applies to you".)

I have usually been pretty sure my life would work out the way I wanted it to	1	2	3	4	5	6	7	There have been times when I haven't been sure my life would work out the way I wanted it to.

Scoring

The four items were added and their mean calculated to give a single Index of Personal Competence from the responses to each of four items on a scale of 1 to 7. This yielded scores ranging from 4 to 28, a low score representing high internal control and a high score representing high external control.

Reliability and validity

This four-item measure was that used by Campbell, Converse and Rodgers (1976) as a measure of an aspect of self-esteem (called personal competence) which involves the extent to which individuals feel they are in control of their lives, rather than subject to the control of external forces, or even sheer fate or luck. Campbell, Converse and Rodgers did not report reliability and validity estimates as such. Instead they noted that the set of four items summarised as a single index (of Personal Competence) has been used at the Survey Research Center of the Institute for Social Research at the University of Michigan for a number of years. They stated firstly that a measure of this type has been used in a variety of social science contexts and found to be a strong predictor of numerous social behaviours and secondly, that the index itself is related "strongly" to most of their measures of well-being (correlating .35 with the Index of Well-being).

5.7.4 Index of General Affect, Index of Well-being and a Single-item Life Satisfaction measure.

Description and administration

The semantic differential scales upon which the indices of well-being and general affect were based were those of Campbell, Converse and Rodgers (1976). They consisted of adjectives which were polar in nature, and placed at the end of a 7-point single-item rating scale.

BORING	1	2	3	4	5	6	7	INTERESTING
ENJOYABLE	1	2	3	4	5	6	7	MISERABLE
EASY	1	2	3	4	5	6	7	HARD

Respondents were asked to circle the point on each scale which provided the best representation of their description of the concept, as in the first three scales given above. The second, third, fifth, sixth, and final scale were reversed in order to "minimize the effect of any tendency to simply check boxes down a column, ignoring distinctions among the adjective pairs" (Campbell, Converse and Rodgers, 1976, p 38).

Like Campbell et al, in order to provide a measure relating more to the concept of happiness than satisfaction, a single item measure of happiness was used. This was derived from Gurin, Veroff, and Feld's mental health study (1960) and the work of Bradburn (1960). Campbell et al's 7-point scale global measure of life satisfaction was used, that is, "How satisfied are you with your life as a whole these days?"

The semantic differential scales were used by Campbell et al as a way of assessing perceived quality of life. Respondents were asked to respond to adjective pairs about a sense of achievement or disappointment in life, with the aim of providing more qualitative detail by giving a more differentiated image of the meaning of the global responses to the satisfaction and happiness items. The different ways in which Campbell et al combined these semantic differentials were also adopted here.

Scoring

Their Index of General Affect was calculated by taking the mean of individuals' scores on the eight items which have been found to be highly correlated. Their composite index of Well-Being combined the eight life descriptions. The "free vs tied down" and "easy vs hard" items were excluded because they were not highly correlated to other items. They excluded the happiness measure from the Index of well-being. The happiness measure was -

Taking all things together, how would you say things are these days? Would you say you are:

1. very happy
2. pretty happy
3. not too happy.

This measure was excluded from the Index of Well-Being because it fitted the major cluster of semantic differential items less well than the life satisfaction measure and was found to be a less reliable measure.

The life satisfaction measure asked - How satisfied are you with your life as a whole these days?

completely	1	2	3	4	5	6	7	completely
satisfied								dissatisfied

Reliability and validity

With respect to operationalising subjective well-being there have been some problems associated with single-item measures tending to skew towards the positive and not being sensitive enough to variations in well-being. Although influenced by satisfaction, positive affect and negative affect (Grainger, 1985), they have been regarded as an adequate, if brief, measure of global well-being (Deiner, 1984).

Bradburn's (1969) ten-item scale, half of it measuring positive affect and the other negative affect, reflected his view of there being differences between positive and negative affect as opposed to both being part of a single bipolar scale. Some research has shown positive and negative affect to be correlated with other variables (Bradburn, 1969; Harding, 1982; Andrews and Withey, 1976; and Warr, Barter and Brownbridge, 1983), to be correlated with each other (Kammann, Christie, Irwin and Dixon, 1979) and to be inversely correlated as high as $-.66$ (Kammann and Flett, 1983). Grainger (1985) reported that the discrepant findings have been looked at in terms of the response formats used, the time span the respondents were asked to consider and distinctions between frequency and intensity of positive and negative affect.

The format of Bradburn's (1969) multi-item measure, where respondents had to reply Yes or No to being asked whether they had experienced a particular feeling in the last few weeks, has been suggested as a reason why statistical independence was found (Kammann and Flett, 1983). Kammann and Flett's Affectometer 2 which had a graded format for responses, saw independence disappear.

The reliability and validity estimates of Campbell, Converse and Rodger's Index of General Affect, Index of Well-being, single-item life satisfaction and happiness measures and their quality of life satisfaction domain measures are presented and the relationships among them discussed in Appendix A, section A.5.

5.8 Measures developed or modified for the present research

5.8.1 Self-efficacy instrument

Description and administration

A set of self-efficacy items was developed for this study, a copy of which is in Appendix A. It seemed appropriate to use the need statements from the Minnesota Importance Questionnaire (MIQ) and satisfaction statements from the Minnesota Satisfaction Questionnaire (MSQ)⁸ as a starting point in the development of a self-efficacy measure related to the importance and satisfaction of vocational needs.

Similarly, the self-efficacy measure for satisfactoriness in the work setting was based upon items⁹ of the Minnesota Satisfactoriness Scale (MSS). Because the MIQ, the MSQ and the MSS are based on the same items (although the latter has additional dimensions and the same number of factors have not been extracted for each instrument), the two self-efficacy measures relating to satisfaction and satisfactoriness were developed using the same basic items and dimensions of the MIQ, and the MSQ. Each of the items in the instruments could have been converted to questions about self-efficacy in relation to all the need, the satisfaction and the satisfactoriness statements. However, the relevant instruments each had too many items to be included in their entirety as part of a larger questionnaire. Therefore, only some of the statements from each of the instruments were chosen. Certain criteria were applied in making this choice. In the case of the MIQ at least two, those with the highest varimax factor loadings, from each of its six factors were included.

The self-efficacy expectations about needs were operationally defined by specifying the domain of work adjustment related behaviours and asking the degree of confidence (on a scale of 0 to 7 of No confidence to Complete Confidence) respondents had about being satisfied in relation to each aspect of work investigated.

The items constructed to assess self-efficacy for obtaining job satisfaction were also chosen to be representative of the six factors found to underlie work needs and the two satisfaction factors (extrinsic and intrinsic) extracted for the MSQ. At least two MIQ items, based on high

⁸ See Appendix H for needs and satisfaction statements

⁹ See Appendix I

factor loadings, from each factor were included for later assessment of internal consistency. Also more than one item was needed to provide multiple indicators for the structural equation modelling of the LISREL approach. Where more than two statements loaded highly on a factor, a third need or satisfaction statement was used giving 15 need related self-efficacy statements in total. The dimension of lifestyle (Nicholson, 1984) as a vocational need was added.

In constructing items to assess self-efficacy for being a satisfactory worker the five subscales of the MSS were represented in the self-efficacy statements, that is, general satisfactoriness, performance, conformance, dependability and personal adjustment. The items included were, following standard work rules and procedures, performing repetitive tasks when necessary, producing work to a good standard, working as a member of a team, getting along with supervisors, adapting to changes in procedures and methods, maintaining a low rate of absenteeism, being promotable, adjusting to a new club or organisation and adapting to a new city or town. Bandura's notion of generality was included, as represented by the two latter items above.

The self-efficacy scale also included assessment of self-efficacy for using the different work adjustment styles. The scale was based on improved definitions of the styles which arose from the pilot study. The four dimensions of active, reactive, flexibility and perseverance were explored via the self-efficacy items, "actively change aspects of my job and the work environment when needed", "change my views and attitudes, if required", "tolerate dissatisfaction with my job for some time before acting, "try to improve my work situation rather than leaving". These statements reflected self-efficacy for the use of the active and reactive adjustment modes, self-efficacy for when the adjustment modes would be used, that is flexibility, and self-efficacy for the length of time a mode or modes would be in operation, that is perseverance. Of the 29-item self-efficacy instrument, 15 items were concerned with work need dimensions, eight with satisfactoriness, four with adjustment styles and two with generalised self-efficacy expectations.

In designing the form of the self-efficacy scale, the different methods of measuring self-efficacy which have been used were reviewed. The principal research in the area, that of Bandura (1977), used a 100-point probability scale which placed items in order of difficulty, varied their specificity, and required subjects to rate the degree of confidence associated with achieving a particular task. This was done to account for the three identified dimensions of magnitude or level, generality, and strength, respectively. Similarly Betz and Hackett's (1983)

10-point scale covered specific mathematical problems, everyday mathematical tasks, and mathematics related course work when subjects were asked to rate the degree of confidence they had in achieving the various tasks.

The measure of self-efficacy expectations involved the use of four items of a Likert-type format with a five point response range (1 = strongly disagree, to 5 = strongly agree). Examples of the items are: "I am confident of my interviewing abilities", "I know I present myself well in interviews", and "I tend not to perform well in interviews" (p 7). In the study most subjects had experienced being interviewed and could therefore respond to all items. However, Bandura (1977) has postulated that one of the ways in which self-efficacy expectations could be developed is through vicarious learning.

The three different scales usually employed in measures of self-efficacy expectations then vary in their type, number of items and number of units employed. The scales are Bandura's (1977) 100-point probability scale, Betz and Hackett's (1983) 10-point confidence scale and Brief, Stumpf and Hartman's (1983) 5-point Likert scale.

Criticisms have been made about the measurement of self-efficacy. Clement (1987) has stated that the main flaw in the work of Hackett and Betz (1981) resides in their measurement of self-efficacy. They measured self-efficacy level, whether or not the individual feels capable of the behaviour, and self-efficacy strength, the confidence in the capability. The former was measured by asking subjects if they could carry out the duties of various occupations successfully. Those who reported they could were asked to show on a scale of 1-10 their degree of confidence in being able to carry out the duties. This was the measure of self-efficacy strength. This way of measuring self-efficacy was thought to make little sense (Marziller & Eastman, 1984), because if the subject reports they can do the job of an accountant (self-efficacy level), and then rates their confidence in their ability to do the job (self-efficacy strength) as 1 (completely unsure) this is the same as saying "I can do the job, but I am completely unsure whether I could do that job". Clement regarded the obvious solution to this problem to be a single-judgement format which includes a zero to indicate "I could not do that" judgement. Bandura (1984) continued to claim the validity of separate level and strength measurements but admitted to using single-judgement format with a scale ranging from 1-100 in some situations. In Betz's later work on self-efficacy, a single-judgement measure was used (Betz & Hackett, 1983; and Taylor & Betz, 1983).

Clement (1987) was also critical of Betz and Hackett apparently misconstruing the effects of level and strength self-efficacy. They had reported that Bandura expected the *level* of self-efficacy expectations would influence the behaviours attempted and those avoided. Self-efficacy strength, on the other hand, would influence the persistence of behaviour. For these reasons, Betz and Hackett's research, concerned with career choice, focused on self-efficacy *level*. However, Clement (1987) maintained that Bandura (1977) had not made these strict causal interpretations of findings as Hackett and Betz had suggested (that is, that self-efficacy strength affects persistence and self-efficacy level affects choice of activities). Clement argued that Hackett and Betz's reliance on level measurement was more constrained than when a single-judgement format is used because the relationship between self-efficacy level and the outcome variable of the range of career options, is likely to be inflated. This is because of the desire for subjects to appear consistent (Festinger, 1957; and Schlenker, 1980). To be consistent one cannot say both "I could not do that job" (on a self-efficacy scale measuring *level*) and "I have seriously considered doing that job" (in rating their confidence in their ability to do the job) that is, on a self-efficacy scale measuring *strength*). Betz and Hackett's lack of reliability and validity data for their self-efficacy measures came under criticism also. Clement (1987) herself used a 0 (no confidence at all) to 10 (complete confidence) scale in response to the question "How confident are you that you could competently do the job of a ...". There does seem to be a move away from using two separate scales to measure strength and level of self-efficacy to using a single scale which incorporates both. Level is represented by having a zero = "I cannot do that job" response category and strength is represented by having scale values up to ten = "I am completely confident I can..." Thus the potential conflict of responding in a certain way on one scale to be consistent with the way responses were made on the other scale, is eliminated.

Although Brief, Stumpf and Hartman (1983) in their 5-point Likert scale accounted for Bandura's dimension of strength they did not employ a measure of magnitude nor generality in the self-efficacy items themselves. A measure of magnitude would have required an ordering of tasks according to their respective level of difficulty and if interviewing is thought of as a single task then obviously because only one task is being performed ordering of tasks would not be possible. If interviewing performance is regarded as being made up of numerous sub-tasks or components then these components would first need to be identified, ordered, and a multiple-item measure developed. A potential difficulty is that there may not be a generally agreed upon hierarchy of difficulty of tasks which is intrinsic to interviewing behaviour.

In the case of the present self-efficacy instrument the three dimensions of strength, generality and magnitude were considered. A single-judgement format which included zero was used. Requiring subjects to rate self-efficacy statements in terms of the degree of confidence (ranging from 0 = no confidence, to 8 = complete confidence) associated with achieving both specific statements and more general ones, was a measure of the strength dimension. The generality criterion was met to a certain extent by including items concerned with situations outside work, such as "adjust to joining a new club or organisation". Subjects were asked to rate statements in view of the employment position they expected to obtain upon completion of their studies. Since the items were specific to employment in the future generally rather than to a particular job, they could be seen as satisfying the generality criterion. The third dimension, that of magnitude, was not included because of the lack of an apparent order in the difficulty of items. In relation to self-efficacy expectations for obtaining work needs, and for adjusting to employment, an identifiable universal ordering of difficulty of achieving work needs may not exist. Some needs may be considered more important than others by most individuals, but a consistent ranking of needs by everybody would be highly unlikely.

A nine-point scale ranging from 0 to 8 was chosen for the present self-efficacy scale, based on the recommendations of Guilford (1954) to use scales greater than seven; of Gulliksen (1958) to increase the length of semantic differential scales; and of Warr (1968) for the need to increase reliability and to provide a mid-point in the scale. In keeping with Guilford's (1954) recommendations, questions involving the form scales should take are best determined empirically. The use of the self-efficacy scale in the present study was exploratory and alterations could be expected for future use following empirical examination.

Scoring

Each of the 29 items were scored according to weights (0 to 8) respondents had assigned. The first 27 individual scores can be combined to give a mean of overall self-efficacy, and a mean can be calculated for the two items relating to general self-efficacy for adjustment to new situations (the last two items).

Reliability and validity.

No previous reliability and validity data was available for this instrument because it was designed for the present study.

5.8.2 Social support measure

Description and administration

The instrument to measure social support was based upon Vogue's (1983) questionnaire which measured social support. His questions were given in a modified form and in a more economical manner of presentation. Rather than asking the same question repeatedly, seven times, each in relation to a different support person, the questions and response alternatives were presented in matrix form. Each question was written once with the support roles of wife, friends et cetera listed as rows of a matrix and the response alternatives as columns, refer Appendix B. For example the question relating to "I can ask for help from my wife, I can ask for help from my girlfriend/boyfriend etc..." was presented as follows:

	very true	somewhat true	a little true	not too true	not at all true	N.A. ^a
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

Note. ^aN.A. = Not applicable

Figure 5.3 The matrix format for the social support questions

Questions 1 to 9 were in a matrix format as shown in Figure 5.3. The questions were to do with how things were going for the respondent, who goes out of their way to be helpful to them when they are down, whom can be asked for help, with whom personal concerns and difficulties are talked about, whom can be talked to about pressures and strains, whom can be relied upon, and with whom relationships are superficial. Questions 8 and 9 were to do with reasons why an individual may not talk to others, the first because they are afraid that person will lose respect for them, and the second because they do not want to burden that person or persons.

The remaining social support questions were to do with having someone to talk about personal problems with, whether at least one other is talked to, whether someone other than a person in an intimate relationship is talked to, whether there are friends who can be visited when respondents are feeling deflated in mood, and whether respondents have a number of close friends in the community where they live, whether respondents prefer to keep their worries to themselves and whether they actually do keep their worries to themselves.

Scoring

The questions in matrix format were scored 1 to 5 for (very true to not at all true). The not applicable option was coded 6 in the scoring process. The questions 10 to 18 in this section of the questionnaire had response options of YES or NO and were coded 1 for YES and 2 for NO. These represented the presence or absence of social support.

5.9 Statistical analyses

Basic descriptive statistics, frequencies, percentages, measures of central tendency (modes, medians and/or means) and where appropriate standard deviations, were calculated first, to allow for a descriptive analysis of the responses. These are reported in Appendix M. The raw data itself is archived at The New Zealand Social Research Data Archive at Massey University, New Zealand. Correlation coefficients were used to examine the associations among the variables studied as specified in the propositions and hypotheses and r square calculated to assess the proportion of variance accounted for in these relationships. Multiple regression analysis and Multiple analysis of Variance techniques were used to investigate propositions and hypotheses, look at causal relationships, the effect of variables on each other and the amount of variance accounted for. Confirmatory factor analysis via LISREL was used to see if the factor structure of work needs as proposed by Dawis and Lofquist was replicated. A covariance structure model was applied to examine the latent structure and interrelationships of aspects of Dawis and Lofquist's theory and the structure of work need factors of the respondent group was analyzed using both LISREL and Factor analysis. LISREL is described in section 8.2 and Appendix K. The choice of factor analytic models is discussed next.

The purpose of using factor analysis is usually to aid conceptualisation by summarizing interrelationships among variables in a concise but still accurate way. This is attempted by

including the maximum amount of information from the original variables in as few derived variables (or factors) as possible. Any relationship is recognised as having a limited area of applicability. Areas which are qualitatively different and which therefore do not generalise to other areas are referred to as separate *factors*. The extent to which generalisability is found between each variable and factor is calculated and referred to as a *factor loading*. The further the loading is from zero, the more we are able to generalise from the factor to the variable.

The statistical linear model includes all of regression analysis and analysis of variance and becomes the multivariate linear model when it is used to predict more than one dependent variable. The only assumption of the linear model is that the variables are linear functions of the factors. The variables themselves do not have to be linearly related. The factor analytic model of the present research, the multivariate linear factor model, itself has variants, the two most common being the *full component model* and the *common factor model*. Within these two classes of models a division can be made according to whether the factors are assumed to be correlated or uncorrelated. The full component model occurs when one factors for all components. It is assumed that a set of factor scores exist which exactly reproduce the original variables. Any error observed is due to the inaccuracy of the model for that particular sample.

Full component analysis was not used herein because it is seldom of use for empirical research because observed data are not regarded as infallible. However, the model can be used to look at the question of sampling error. It is also used to obtain a set of intercorrelated variables from variables which are correlated only moderately. However, a *truncated* components model is more likely to be used where only some of the components are used to estimate the original variables. The smaller components are then interpreted as due to the inaccuracy in the model's fit for the sample in question. The common factor model is divided into the *common factors* which are those factors which contribute to two or more of the variables, that is, several variables have these factors in common. However variables will usually not be able to be calculated from the common factors alone but will be influenced by other independent sources. Gorsuch (1983) notes these sources may be "legitimate causal influences that are not affecting the other variables, systematic distortions in the scores (usually called *bias*) or random error from inaccuracies of measurement" (p 26). The noncommon factor variance for each variable is often of less interest being usually thought of as detracting from accurately computing variable scores from common factors. However,

the noncommon factor variance is summarized in a *unique factor* that includes the scores needed to predict that variable. The proportion of the variance of a variable which can be accounted for by the common factors is known as the variable's *communality*.

Component and common factor models can be correlated (which is considered the more general form) or uncorrelated. Correlated models are referred to as *oblique* or *nonorthogonal* as opposed to orthogonal for uncorrelated models (from the rotation of factors represented geometrically in the general Cartesian coordinate system). This system allows the axes (or factors) to form an oblique angle and thus be correlated. Gorsuch (op. cit.) gives an example of the correlated form noting that if abilities are analyzed, verbal and numerical ability factors could occur that would not be independent of each other. However, if factors overlap extensively, as shown by factors with high intercorrelations (above .7) they may be of little theoretical interest. In the uncorrelated model terms such as *factor coefficient* and *factor loading* are clearer because the factor structure¹⁰ is equal to the factor pattern¹¹ for standard scores.

The principal factor model which is used by Dawis and Lofquist in relation to work needs, is a general one that can be used with either the component or common factor model. For the component model the principal factor method is applied to the correlation matrix with unities in the diagonal. Each factor accounts for the maximum amount of variance of the variables being factored. Gorsuch describes the process clearly by saying the first factor extracted from the correlation matrix is comprised of "that weighted combination of all variables that will produce the highest squared correlations between the variables and the factor because the squared correlation is a measure of the variance accounted for" (p 95). There is no correlated version of the procedure but the principal factors can be rotated to correlated or noncorrelated criteria.

As well as using the principal factor solution the Maximum Likelihood Factor Analytic model was applied in the present research. Principal factors as normally extracted are based on equations for which it is assumed that the population correlation matrix is being factored. In Maximum Likelihood procedures it is explicit that a sample is being analyzed and the

¹⁰ A variable's correlations with a set of factors.

¹¹ The factor pattern consists of the weights which summarize the relative contribution of each factor to the variable.

procedures are defined as those that best reproduce the population values. It was for this reason it was used in the present research. It is regarded as a variant of the principal factor solution. When exploratory and confirmatory Maximum Likelihood criteria are used to provide a unique solution of factors, further mathematical limits are set. These limits are in the principal factor tradition of accounting for as much variance as possible in each of the successive, orthogonal factors with the Maximum Likelihood specifications. As with Principal Factor methods the Maximum Likelihood solution can be rotated to correlated (nonorthogonal) or noncorrelated (orthogonal) criteria.

In the present research for purposes of comparison both Principal Factors and Maximum Likelihood solutions were applied to analyses where factor analysis was used and each solution rotated to orthogonal and then nonorthogonal criteria. The questions Gorsuch (1983) posed in relation to choosing among factor-analytic models were considered, that is whether using different models produced noticeably different results (and if so which mathematical model is the most appropriate given the relevant substantive theory) and whether there were major differences in the cost (for example, in computer time) of using an expanded model. Maximum Likelihood procedures are no longer as costly to conduct with modern computer programmes and hardware and were comparable to Principal Factoring in computing time. The Maximum Likelihood procedure is also one of the procedures used in LISREL herein, this being another reason for using it as well as Principal Factors when factor analysis was performed, thus allowing for possible comparison with LISREL results.

More generally, Hage (1982) noted that in order to develop more complex models and to move beyond a linear and additive conception of work adjustment theory organisational research designs have tended to add more and more variables until there is no further increase in the explanation of variance. It is the combination of regression analysis and linear hypotheses which is said to have lead to the acceptance of theory which consists of adding more and more concepts. One of the common mistakes made, according to Hage, is to assume that adding more variables produces greater understanding. This is said to be an error in the linear, additive model of regression analysis in that adding more variables does not automatically increase understanding and the amount of variance explained tends not to increase after a certain point. Most researchers are said to find that once 50% of the variance has been explained, it is difficult to move past that barrier, irrespective of the number of variables added. Hage instead, advocates being concerned with a few key concepts which are

combined in non-linear ways, involving curvilinear relationships or polynomic functions. Hage noted that the introduction of even a single variable from a separate paradigm or theoretical orientation has been fruitful in breaking the 50% barrier. He stated that the addition of the previous history of change as a variable along with another variable from a different paradigm was shown to raise the amount of variance explained to 70% in helping to account for the rate of innovation in organisations.

The small cell frequencies apparent in many of the tables in chapter six were not a major cause of concern because the use of the Chi-Square statistic here involved analyses at a descriptive level. Although these pertained to the central aims of the research they were not crucial to nor involved the formal testing of hypotheses and models. However, a precaution was automatically taken. In calculating chi-square to allow for small cell frequencies the computer programme used (SPSSx) computes Fisher's Exact Test¹². Also by using Cramer's V the influence of the degrees of freedom (often large in this case) is minimised. With respect to the Chi-square statistics themselves the use of the Likelihood Ratio Chi Square allows us to feel more confident about conclusions concerning interdependence among variables because it does not just consider the null hypothesis. The Likelihood Chi Square Ratio compares the estimated joint probability of occurrence of data under the conditions specified by the null hypothesis with the corresponding probability for the alternative hypothesis. The measure represents a ratio between the two likelihoods and has a chi-square distribution with the same number of degrees of freedom. This ratio is compared with Pearson Chi Square on p 244.

All Chi-squares had been recalculated collapsing academic groups from eleven to five thus giving larger cell frequencies (one example of which is given on page 297). However, no differences, in which chi-squares were significant, resulted. It was preferable to preserve the greater detail provided by the eleven academic categories in the cross-tabulations, particularly in view of the nature of the variables under consideration.

¹² SPSSx Users' Guide (1983); Upton, G.J.G. (1978). The analysis of cross-tabulated data. Chichester: Wiley and Sons.

CHAPTER SIX

RESULTS: DESCRIPTIVE FINDINGS

This chapter is divided into two main parts. The first part has two main sections (6.1 and 6.2). The first (section 6.1) is comprised of a descriptive analysis of the data relating to background information about the sample which includes the composition of the sample, parental data and the health, leisure and living circumstances of respondents. The description employs frequency distributions, minimum and maximum values, the range, standard deviations, the *N* involved for each variable, measures of central tendency and intercorrelations. The second section (6.2) describes an analysis by academic groups of their similarities and differences with respect to the background variables, ability measures, work history and work situation variables.

The second part of the chapter (from 6.3 on) is also sectionalized. Section 6.3 presents the key statistics for the work adjustment variables (6.3.1), the correlates of the Dawis and Lofquist variables studied here (section 6.3.2) and the key relationships of Dawis and Lofquist's model examined in the present research (6.3.3). Section 6.4 describes the similarities and differences among the academic groups for the Dawis and Lofquist variables of this study. Section 6.5 presents the findings for the expanded model, the correlations among the key variables. The academic group similarities and differences for the additional variables of the expanded model are presented in sections 6.6 and 6.7. Within section 6.6 the divisions are the work related variable of self-efficacy (6.6.1), the non-work related variables of quality of life satisfaction measures, (6.6.2) and leisure activities (6.6.3) and the interaction of the two areas, that is the relationship between leisure and work (6.6.4) and the subjective well-being variable (6.6.5). Section 6.7 presents findings for the social support variables. Descriptive statistics (means, medians, modes, standard deviations and *N*) for sections 6.3 to 6.7 are given in Appendix M while the distributions for the variables appear in the discussions of the similarities and differences among the groups.

Chapter Seven gives the findings of the propositions and research hypotheses. These were concerned with the propositions of Dawis and Lofquist, with the suggested changes and additions to their model of the present research which were investigated and the constructs introduced into their model in the present research. Chapter Eight gives results of the work

need factor structure analyses. It is concerned with the investigation of the factor or latent structure of work needs using the LISREL and factor analytic approaches.

In this chapter (section 6.1) the respondent group is described using the demographic data and background information obtained. The findings with respect to all of the variables are described (section 6.2) through the measures of central tendency, the minimum and maximum values (to give the range), standard deviations, correlations coefficients and the *N* involved in each calculation. Frequencies tables are given for some of the variables where, for example, the distribution is unusual or better described in this form. The similarities and differences among the respondent groups (the academic disciplines) for the variables are detailed in section 6.3.

6.1 Information about the sample

This section gives a descriptive analysis of the background information of the sample, that is, the variables which are not part of Dawis and Lofquist's model or the expanded model of this study. The information presented is the composition of the sample (section 6.1.1) which includes age, gender, marital status, education and health information, the respondents' own living circumstances and leisure activities, the educational background of respondents (section 6.1.2) which includes school qualifications, number of years schooling and parental data (section 6.1.3) which includes information about parents' occupations, their income and qualifications and lastly, health, leisure and living circumstances (section 6.1.4) which includes information about such non-work activities.

6.1.1 Composition of the sample

The return rate for the first part of the longitudinal study was initially 66% but was raised to nearly 80% following the reminder notes being sent. The details of the response rate for each of the respondent categories are provided in Tables 5.2 (frequency distributions for both stages of the study) and 5.3 (broad categorisation of respondents by academic subjects). The structure of the respondent group with respect to a number of variables, such as age and gender, can be described as in the following account. The number of cases for each variable is given because this varied according to how many answered the questionnaire item or items pertaining to it.

The mean age of the 364 cases ranging in age from 18 to 46 was 22 (with a standard deviation of 3.653) and the median and mode were both 21. Age was distributed as in Table 6.1.

Table 6.1 Distribution of Age in the Respondent Group

Age	Frequency	Percent	Valid Percent	Cum Percent
18	4	1.1	1.1	1.1
19	14	3.7	3.8	4.9
20	73	19.3	20.1	25.0
21	105	27.7	28.8	53.8
22	69	18.2	19.0	72.8
23	31	8.2	8.5	81.3
24	17	4.5	4.7	86.0
25	15	4.0	4.1	90.1
26	11	2.9	3.0	93.1
27	4	1.1	1.1	94.2
28	3	.8	.8	95.1
29	2	.5	.5	95.6
30	2	.5	.5	96.2
31	2	.5	.5	96.7
32	1	.3	.3	97.0
34	2	.5	.5	97.5
35	2	.5	.5	98.1
36	1	.3	.3	98.4
38	1	.3	.3	98.6
39	1	.3	.3	98.9
40	1	.3	.3	99.2
43	1	.3	.3	99.5
44	1	.3	.3	99.7
46	1	.3	.3	100.0
	15	4.0	Missing	
Total	379	100.0	100.0	

Valid cases 364 Missing cases 15

The total of 379 included 2 system missing variables, therefore N = 377

The group consisted of 53.1% males and 46.9% females, of the 367 valid cases recorded for gender (195 males and 172 females). The marital status of the group was as shown in table 6.2. The modal marital status category was single. In the group 3.5% had children and 96.5% had no offspring (total N=367, with 12 missing cases). The modal category was no children. With respect to health, 85% reported to have excellent health and 14.8% had some disability they believed would have an affect on their work (N= 365 with 14 missing cases). The largest percentage identified themselves as belonging to a European or Caucasian ethnic group (92.9%) and 5.9% identified themselves as Eurasian. Only 85 of the group responded to this question, that is 294 or 76% of cases were missing. Of those who provided an answer for this

question European was the modal category. Asking the nationality of respondents brought a better response rate, with 367 valid cases and 12 missing. The distribution of nationalities is shown in Table 6.3. The modal nationality category was New Zealand.

Table 6.2 The Marital Status of the Group

Value Label	Frequency	Percent	Valid Percent	Cum Percent
de facto	7	1.8	1.9	1.9
Engaged	6	1.6	1.6	3.6
Married	30	7.9	8.2	11.8
Single	322	85.0	88.2	100.0
	14	3.7	Missing	
Total	379	100.0	100.0	

The total included 2 system missing variables, therefore total N = 377

Table 6.3 Distribution of Nationality in the Respondent Group

Value Label	Frequency	Percent	Valid Percent	Cum Percent
New Zealander	331	87.3	90.2	90.2
British	9	2.4	2.5	92.6
Dutch	3	.8	.8	93.5
Vietnamese	2	.5	.5	94.0
Australian	1	.3	.3	94.3
Singaporean	4	1.1	1.1	95.4
Papua New Guinean	1	.3	.3	95.6
Sri Lankan	2	.5	.5	96.2
Malaysian	2	.5	.5	96.7
Fijian	1	.3	.3	97.0
	23	6.2	Missing	100.0
Total	379	100.0	100.0	

The total included 2 system missing variables, therefore total N = 377

6.1.2 Educational background of respondents

The respondents varied to a limited extent in the number of years schooling they had received. Of the 367 valid responses to this question the largest percentage (69.8) had attended a secondary school for five years. The next most frequent number of years at secondary school was four (19.3%). The minimum number attended was three years and the maximum nine, giving a range of six years for the group. The mean number of years was 4.9

(with a standard deviation of .770) and the median and mode values were both 5. The distribution of number of years attended a secondary school was as in table 6.4.

Table 6.4 Number of Years Secondary School for the Respondent Group

Years	Frequency	Percent	Valid Percent	Cum Percent
3	8	2.1	2.2	2.2
4	71	18.7	19.3	21.5
5	256	67.5	69.8	91.3
6	19	5.0	5.2	96.5
7	8	2.1	2.2	98.6
8	2	.5	.5	99.2
9	3	.8	.8	100.0
	12	3.2	Missing	
Total	379	100.0	100.0	
Valid cases	367		Missing cases	12

The total included 2 system missing variables, therefore total N = 377
 From Table 6.5 showing the distribution of having received education supplementary to secondary school, the largest percentage (72.3%) had not undertaken any such study.

Table 6.5 Education Supplementary to Secondary School

Value Label	Frequency	Percent	Valid Percent	Cum Percent
None	266	70.2	72.3	72.3
University Entrance	5	1.3	1.4	73.6
School Certificate	7	1.8	1.9	75.5
Trade/Polytechnic	50	13.2	13.6	89.1
Music	3	.8	.8	89.9
Arts	10	2.6	2.7	92.7
Night Classes	16	4.2	4.3	97.0
Cadet	1	.3	.3	97.3
Correspondence	10	2.6	2.7	100.0
	11	2.9	Missing	
Total	379	100.0	100.0	
Valid cases	368		Missing cases	11

The total included 2 system missing variables, therefore total N = 377
 Most of the group had either University Entrance, or an A or B Bursary as their highest secondary school qualification, as shown in Table 6.6. The modal category was A Bursary. The range of grades for School Certificate English was 30 to 97 with a mean of 65.82 and a standard deviation of 13.59, a median of 67 and a mode of 72 for N = 337. The range of

grades for School Certificate Mathematics was 12 to 99, with a mean of 69.65, a standard deviation of 18.02, a median of 73 and a mode of 80 for an N of 325.

Table 6.6 Highest Pre-university Qualification

Qualification	Frequency	Percent	Valid Percent	Cum Percent
School Certificate	11	2.9	3.0	3.0
6th Form Certificate	14	3.7	3.9	6.9
University Entrance	87	23.0	24.0	30.9
Higher School Cert.	71	18.7	19.6	50.4
A Bursary	99	26.1	27.3	77.7
B Bursary	74	19.5	20.4	98.1
Scholarship	7	1.8	1.9	100.0
	16	4.3	Missing	
	-----	-----	-----	
Total	379	100.0	100.0	

Modal category = A Bursary Valid Cases = 363

The total of 379 included 2 system missing variables, therefore N = 377

6.1.3 Parental data

The parental data included parents' income and qualifications (occupational data appears in section 6.2.2 where group similarities are presented). With respect to father's income among the 322 cases included, the median category was the 25 to 29 thousand dollars a year income group, 17.4 percent were reported to be in this group. Income reported ranged from the lowest group of \$1,000 to \$5,999 to the over \$50,000 group. The mode was the \$15,000 to \$24,999 category with 27.3% in this category. Of the entire group, 6.1% did not know their father's income and 0.5% preferred to keep the information confidential. Data was missing for a further 57 cases, (15.1%) were missing but these did not respond with "don't know" or "confidential information".

For the father's highest qualification (N = 307) the greatest percentages fell into several categories. A similar percentage had no qualification (18.2%), School Certificate (14.7%) or tertiary education other than at University (18.2%). With respect to university education, 4.6% had an undergraduate qualification other than a degree and 11.1% had an undergraduate degree, 4.9% had postgraduate qualifications, 1.6% with Doctorates. Therefore, the total percentage with a university qualification was 21.2%. For the 307 valid cases (72 were missing), the modal category was "no qualification". For 58.6% education ended at the secondary level and 21% had not attended a secondary school.

For the mothers' incomes ($N = 302$), 81% had annual incomes below \$29,999. The modal category was 1,000 to 5,999 and the median was \$6,000 to \$14,999. For the mother's highest qualification ($N = 309$), 61.2% had completed their education at the secondary level, 22.3% had undertaken tertiary education other than at university and 14.5% had a university qualification. With respect to the university qualifications, 3.2% gained undergraduate qualifications, 8.7% undergraduate degrees, 2.3% postgraduate degrees and 0.3% (which represented one individual) had a Doctorate. The modal qualification category was tertiary education other than university. The other most frequent levels of qualification were School Certificate (18.8%) and University Entrance (13.6%). Those reported to have received no education at the secondary level totalled 42 or 13.9%.

6.1.4 Health, leisure and living circumstances

The questions relating to health found 85.2% of respondents ($N = 365$) describing themselves as in excellent health and 14.8% reported to have disabilities which would affect their work. In response to a question regarding reasons for leaving their first job, the answers ($N = 349$) were distributed as in Table 6.7. The modal category was "going to university".

In stage one of the study when respondents ($N = 356$) were asked what their leisure company consisted of, the largest percentage (63.8%) reported to spend their leisure time mostly with one or two other individuals. The next highest group (21.1%) spent their time mostly in groups of three or more. Only 11.2% reported to spend their leisure time mostly alone. The remainder shared their time alone and with one or two others (2.2%), or alone and in groups of more than three (0.3%), or alone, with a few others and in larger groups (0.8%), or shared their time among all the situations (0.6%).

By stage two of the study 17.8% ($N = 197$) spent their leisure time mainly alone, 68.5% with one or two others, 12.2% in groups greater than three and the other 1.5% shared their time with one or two others and groups of individuals. The number of leisure activities the respondents ($N = 225$) reported engaging in at the beginning of the study ranged from one to nine, the median was two and the mode one. The percentage having one leisure activity was 42.2, the percentage engaging in two activities was 30.2 and the percentage engaging in three leisure activities was 15.6. Only 8.9% of the respondents reported having four leisure activities. Only 3.0% engaged regularly in more than four activities.

Table 6.7 Reasons Respondents Gave for Leaving their First Job

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Back to school	75	19.8	21.5	21.5
Going to university	134	35.4	38.4	59.9
Pay reasons	5	1.3	1.4	61.3
Dissatisfied general	26	6.9	7.4	68.8
For better job	19	5.0	5.4	74.2
Finished school	5	1.3	1.4	75.6
Redundant/ seasonal/	26	6.9	7.4	83.1
For exams	5	1.3	1.4	84.5
Personal	2	.5	.6	85.1
Still in job	7	1.8	2.0	87.1
To gain experience	3	.8	.9	88.0
Training course	2	.5	.6	88.5
For full time work	6	1.6	1.7	90.3
Family reasons	1	.3	.3	90.5
Going overseas	6	1.6	1.7	92.3
Study pressure	1	.3	.3	92.6
To holiday	1	.3	.3	92.8
Moved town	8	2.1	2.3	95.1
Business sold	5	1.3	1.4	96.6
Practicum ended	3	.8	.9	97.4
Dismissed	2	.5	.6	98.0
Dispute with management	1	.3	.3	98.3
Go to Teachers' College	4	1.1	1.1	99.4
Pregnancy	1	.3	.3	99.7
Saved enough	1	.3	.3	100.0
No Reason	11	2.9	Missing	
	19	5.0	Missing	
	-----	-----	-----	
Total	379	100.0	100.0	

The total included 2 system missing variables, therefore total N = 377

The accommodation living circumstances at the beginning of the study (N = 367) were as shown in Table 6.8.

Table 6.8 Accommodation of Respondents Pre-graduation

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Hostel	27	7.1	7.4	7.4
With family	34	9.0	9.3	16.6
House/flat with others	297	78.4	80.9	97.5
Alone	7	1.8	1.9	99.5
Own home	1	.3	.3	99.7
Private boarding	1	.3	.3	100.0
	12	3.2	Missing	
	-----	-----	-----	
Total	379	100.0	100.0	

The total included 2 system missing variables, therefore total N = 377

The Modal category was "living in a house or flat with others". The satisfaction with living circumstances at stage one of the study (N = 367) was as shown in Table 6.9. The response alternatives for this questionnaire item ranged from 1 = satisfied to 7 = completely dissatisfied. The mean satisfaction with living circumstances was 2.738, the median was 2 and the mode was also 2. The standard deviation was 1.463. The minimum value was one and the maximum seven, giving a range of 6. For stage two of the study (N = 197) the distribution was as shown in Table 6.10.

Table 6.9 Satisfaction with Living Circumstances of Respondents pre-Graduation

Satisfaction	Value	Frequency	Percent	Valid Percent	Cum Percent
Completely Dissatisfied	1	76	20.1	20.7	20.7
	2	121	31.9	33.0	53.7
	3	72	19.0	19.6	73.3
	4	42	11.1	11.4	84.7
	5	34	9.0	9.3	94.0
	6	21	5.5	5.7	99.7
Completely Satisfied	7	1	.3	.3	100.0
		12	3.2	Missing	
Total		379	100.0	100.0	

The total included 2 system missing variables, therefore total N = 377

Table 6.10 Satisfaction with Living Circumstances of Respondents post-Graduation

Satisfaction	Value	Frequency	Percent	Valid Percent	Cum Percent
Completely Dissatisfied	1	4	1.1	2.0	2.0
	2	19	5.0	9.6	11.7
	3	31	8.2	15.7	27.4
	4	24	6.3	12.2	39.6
	5	27	7.1	13.7	53.3
	6	52	13.7	26.4	79.7
Completely Satisfied	7	40	10.6	20.3	100.0
		182	48.0	Missing	
Total		379	100.0	100.0	

The total included 2 system missing variables, therefore total N = 377. The mean satisfaction was 4.863 with a standard deviation of 1.737, the median was 5 and the mode was 6. The satisfaction reported ranged from 1 to 7. As might be expected between time one and two of the study the respondents are more satisfied with their physical living circumstances. Once no longer students, respondents may be better able to be in living circumstances which suit them.

6.2 Similarities and differences among academic groups for the biographical and background data

The variables were analysed by academic groups to examine similarities and differences among groups with respect to the biographic data collected in this section (6.2) and in the remaining sections with respect to the variables of Dawis and Lofquist's investigated (section 6.4) and expanded upon in the present study (section 6.6). In analysing the characteristics of the academic groups, crosstabulations were produced and chi-square applied with Fisher's exact test using the rounded values of cell entries when there were fewer than 20 cases in a cell (that does not result from missing rows or columns). The chi-square measures of independence applied to the data were those available in SPSSx, that is, Pearson's chi-square and the Likelihood Ratio. Pearson chi-square is calculated by summing the squared residuals divided by the expected frequencies for all cells. An alternative to the commonly used Pearson chi-square is the Likelihood Ratio chi-square. This is based upon maximum likelihood theory and is often used in the analysis of categorical data. The two chi-squares produce very similar results when the samples are large (SPSS/PC+ 4.0 Base Manual, 1990). The significance level criterion applied in the present research was the .01 level. Sometimes the Pearson chi-square was significant at the .05 level while the Likelihood Ratio was significant at the .01 level. Cramers' V was used because the chi-square statistic on its own is not considered to be a good measure of the degree of association between variables (SPSS Inc., 1988). Cramer's V modifies chi-square to minimise the influence of sample size and the degrees of freedom and to restrict the range of values to between 0 and 1. Such adjustments are necessary to make comparisons of chi-square values meaningful. Cramer's V can attain the maximum of 1 for tables where any dimension is involved. The measure can be used to compare strength of association in different tables. However, the strength of association being compared is difficult to relate to an intuitive concept of association. Cramer's V allows comparison among tables and the significance level associated with it assists in interpreting the size of the value. The significance level for Cramer's V is a Pearson chi-square probability.

The other statistics used here are lambda, Goodman and Kruskal's tau and eta. Lambda is a common alternative to chi-square-based measurements and is based on the idea of proportional reduction in error (PRE). The meaning of association is thought to be clearer in PRE measures. These are ratios of a measure of error in predicting one variable's values

based on the knowledge of that variable alone to the same measure of error applied to predictions based on the knowledge of a second or additional variable. Lambda multiplied by 100 gives a percentage reduction in error when one variable is used to predict another. This is the percentage that error is reduced from the error of the best prediction otherwise. The best prediction otherwise is the category with the largest proportion of observations, that is, the modal category. Lambda ranges between 0 and 1. A value of 0 means that the independent variable is not of any help in predicting the dependent variable. A value of 1 means that the independent variable perfectly predicts the categories of the dependent variable. However, a lambda of 0 does not necessarily imply statistical independence. Other measures of association may find association even when lambda is 0. Lambda can be zero as an artifact of having different marginals (Upton 1978).

In the case of lambda the same prediction is made for all cases in a particular row or column. Goodman and Kruskal's tau takes a different approach. The prediction is randomly made in the same proportion as the marginal totals. Kruskal and Goodman's tau is computed by comparing the probability of error when predicting from the column marginal totals and from row information. A test of the null hypothesis that tau is 0 is based on the value $(N-1)(c-1)\tau$ (col/row), which has a chi-square distribution with $(c-1) \times (r - 1)$ degrees of freedom. The probability for Goodman Kruskal's tau's is based on a chi-square approximation.

The asymptotic standard error term was available for both lambda and tau and can be used to construct confidence intervals. While the properties of a small sample might be unknown, it is possible to describe the sampling distribution of estimators as the sample becomes very large (its asymptotic distributional properties) (Hanushek and Jackson, 1977).

The eta coefficient squared provides information about the magnitude of a relationship. The coefficient is used for data in which the dependent variable is measured on an interval scale and the independent variable on a nominal or ordinal scale. When squared, eta can be interpreted as the proportion of the total variability in the dependent variable that can be associated with, is accounted for, or is determined by (the latter term is used if a causal relationship is defensible), knowing the independent variable values. The measure is asymmetric. It does not assume a linear relationship between the variables.

The distributions of the variables which resulted in no significant group differences are presented in tables. The findings were described in more detail where there were significant differences among the academic groups and crosstabulations accompanied by the chi-square and other significant statistics were given in order to assess where the differences appeared to lie.

The respondents demonstrated similarities in most of the biographic and background information data such as age, gender, number of children, ethnicity, New Zealand citizenship, permanent residency, work permits, School Certificate English and Mathematics marks, father's occupation and income and qualifications of parents. The differences which emerged are shown in the Tables in section 6.2.

6.2.1 Differences in educational background of groups

Number of years secondary education

There were significant differences among the groups (the academic and the teacher group were included) and the teachers with respect to number of years secondary school education. Most respondents had between four and six years secondary school education ($N = 367$). Computer science and Accountancy had a small percentage with 7 and 8 years at secondary school. Only two individuals (studying Horticulture) reported having had nine years secondary schooling. The chi-square Likelihood ratio of 89.56, d.f. 60, was significant $p < .01$. Some Horticulture and Social Science respondents reported having had less than four years secondary schooling. The Pearson chi-square was also significant at 91.49 d.f. 60, $p < .01$. Cramer's V was .20384, $p < .01$. Although lambda with number of secondary school years dependent was zero, Goodman and Kruskal's tau with Secondary school years dependent was .07736 (with an ASE of .01947), $p < .001$. Therefore, about an 8% reduction in error occurred in the classification of number of years secondary education when knowledge of academic grouping was taken into account. The eta value with number of secondary school years dependent was .18851. Therefore, eta squared was .03, thus only 3% of the variance was accounted for by the various groups.

The distribution of the number of years secondary school in terms of percentages is as follows in Table 6.11.

Table 6.11 Percentage Distribution of Number of Years Secondary School Education of Respondent Groups (N=367)

GROUP	Count Row Pct Col Pct	YEARS SECONDARY SCHOOL							Row Total
		3	4	5	6	7	8	9	
Sciences	1		3 6.8 4.2	39 88.6 15.2	2 4.5 10.5				44 12.0
Computer Science	2		6 23.1 8.5	15 57.7 5.9	2 7.7 10.5	2 7.7 25.0	1 3.8 50.0		26 7.1
Accountancy	3		7 11.7 9.9	49 81.7 19.1	1 1.7 5.3	2 3.3 25.0	1 1.7 50.0		60 16.3
Business Studies	4		3 23.1 4.2	8 61.5 3.1		2 15.4 25.0			13 3.5
Horticulture	5		7 7.5 87.5	27 29.0 38.0	51 54.8 19.9	5 5.4 26.3	1 1.1 12.5	2 2.2 66.7	93 25.3
Agriculture	6			13 100.0 5.1					13 3.5
Technology	7		4 10.8 5.6	31 83.8 12.1	2 5.4 10.5				37 10.1
Humanities	8		5 23.8 7.0	13 61.9 5.1	2 9.5 10.5			1 4.8 33.3	21 5.7
Social Sciences	9		1 4.0 12.5	8 32.0 11.3	12 48.0 4.7	3 12.0 15.8	1 4.0 12.5		25 6.8
Veterinary Science	10			3 13.6 4.2	17 77.3 6.6	2 9.1 10.5			22 6.0
Teachers	11			5 38.5 7.0	8 61.5 3.1				13 3.5
Column Total		8 2.2	71 19.3	256 69.8	19 5.2	8 2.2	2 .5	3 .8	367 100.0

Highest secondary school qualification

For the highest secondary school qualification both Pearson and Likelihood ratio chi-squares were significant. The Pearson chi-square value was 212.90 d.f. 60, $p < .001$, and the Likelihood Ratio value was 193.53 d.f. 60 $p < .001$. The numbers in some groups were insufficient to make proper comparisons, but some trends appear to be evident.

There was a significant difference among the groups with respect to the highest school qualifications of each (the teacher group was not represented in the higher qualification categories). The percentage with each of the secondary school qualifications are depicted in Table 6.12.

Table 6.12 Percentage distribution (N=363) of the Highest School Qualifications of Respondents

Secondary School Qualification							
	School Certificate	Sixth Form	University Entrance	Higher School Certificate	B Bursary	A Bursary	Scholarship
%	3.0	3.8	24.0	19.6	20.4	27.3	1.9

With reference to Table 6.13, Horticulture was the only group to have individuals whose highest qualification was School Certificate (12.5%). However this group of respondents was different from the others in that they were enrolled in a Diploma rather than a Degree programme for which the pre-entry qualifications are different. Of the other groups, only Social Science (8%) and Horticulture (13.6%) had individuals whose highest qualification was a Sixth Form Certificate. At the other end of the scale, those groups which included individuals with a University Scholarship were Accountancy (1.6%) Agriculture (7.6%) Veterinary Science (18.2%) and Technology (2.7%), with the Veterinary students having the largest percentage in this category. Those with highest school qualification as an A Bursary were Sciences (59.1%), Computer Science (15.4%) Accountancy (39.3%), Agriculture (38.5%), Business Studies (30.8%), Horticulture (12.5%), Humanities (19%) and Social Sciences (16%).

The statistical significance of differences among groups may have also resulted from Horticulture having a greater range of different qualifications as the highest school qualification and the Social Sciences tending to have University Entrance as their most frequent highest qualification (48%) being the group with the largest percentage in this category. Cramer's V was .31265, $p < .001$. Lambda with secondary qualifications dependent at .20833 (and an ASE of .04030) shows a 21% reduction in error in predicting which academic group a respondent belongs to by using the knowledge about their secondary school qualifications. Goodman and Kruskal's tau with secondary qualification dependent was .09903 (with an ASE of .01687), $P < .001$, thus demonstrating a 10% reduction in error. The amount of variance in secondary qualifications shared with categorisation according to academic group, as determined by eta squared, was about 30% (eta with qualifications dependent was .54787).

Table 6.13 The Highest Secondary School Qualifications of Respondents of the Academic Groups

GROUP	Count Row Pct Col Pct	HIGHEST SECONDARY SCHOOL QUALIFICATION					Row Total
		S.C.	6TH FORM U.E. CERT	H.S.C.	A BURSARY		
		1	2	3	4	5	
		-----	-----	-----	-----	-----	
Sciences	1			4 9.1 4.6	6 13.6 8.5	26 59.1 26.3	44 12.1
Computer Science	2			6 23.1 6.9	10 38.5 14.1	4 15.4 4.0	26 7.2
Accountancy	3			11 18.0 12.6	13 21.3 18.3	24 39.3 24.2	61 16.8
Business Studies	4			4 30.8 4.6	3 23.1 4.2	4 30.8 4.0	13 3.6
Horticulture	5	11 12.5 100.0	12 13.6 85.7	29 33.0 33.3	18 20.5 25.4	11 12.5 11.1	88 24.2
Agriculture	6				3 23.1 4.2	5 38.5 5.1	13 3.6

(Table 6.13 continued)

		HIGHEST SECONDARY SCHOOL QUALIFICATION					Row Total
GROUP	Count Row Pct Col Pct	S.C.	6TH FORM CERT	U.E.	H.S.C.	A BURSARY	
		1	2	3	4	5	
Technology	7			7 18.9 8.0	2 5.4 2.8	10 27.0 10.1	37 10.2
Humanities	8			6 28.6 6.9	8 38.1 11.3	4 19.0 4.0	21 5.8
Social Sciences	9		2 8.0 14.3	12 48.0 13.8	4 16.0 5.6	4 16.0 4.0	25 6.9
Veterinary Science	10			1 4.5 1.1	2 9.1 2.8	3 13.6 3.0	22 6.1
Teachers	11			7 53.8 8.0	2 15.4 2.8	4 30.8 4.0	13 3.6
Column Total		11 3.0	14 3.9	87 24.0	71 19.6	99 27.3	363 100.0

(Table 6.13 continued)

		HIGHEST SECONDARY QUALIFICATION		
GROUP	Count Row Pct Col Pct	B BURSARY	SCHOLARSHIP	Row Total
		6	7	
Sciences	1	8 18.2 10.8		44 12.1
Computer Science	2	6 23.1 8.1		26 7.2
Accountancy	3	12 19.7 16.2	1 1.6 14.3	61 16.8
Business Studies	4	2 15.4 2.7		13 3.6
Horticulture	5	7 8.0 9.5		88 24.2
Agriculture	6	4 30.8 5.4	1 7.7 14.3	13 3.6

(Table 6.13 continued)

GROUP	Count	SCHOLARSHIP		
	Row Pct	B		Row
	Col Pct	BURSARY		Total
		6	7	
Technology	7	17	1	37
		45.9	2.7	10.2
		23.0	14.3	
Humanities	8	3		21
		14.3		5.8
		4.1		
Social Sciences	9	3		25
		12.0		6.9
		4.1		
Veterinary Science	10	12	4	22
		54.5	18.2	6.1
		16.2	57.1	
	Column Total	74	7	363
		20.4	1.9	100.0

Note. S.C. = School Certificate
 6th Form Cert= Certificate for completing a 6th form year (usually four years at least at secondary school)
 H.S.C = Higher School Certificate (obtained after six years of secondary schooling)
 B Bursary = B-level pass in the University Bursary examination
 A Bursary = A-level pass in the University Bursary examination
 University Scholarship = Passing the University Scholarship examination

Supplementary education

Of the total respondents, 72.3% (N=368) had not undertaken any education supplementary to their secondary schooling. The remaining percentage had undertaken supplementary education such as night classes at a school or Polytechnic Institute, University Entrance subjects by correspondence school, or qualifications pertaining to music. The groups were not significantly different in having undertaken supplementary education.

6.2.2 The parental data of the academic groups

The occupational group to which individual parents belong, their qualifications, occupations and income with respect to the different academic groups are presented in this section.

Parental qualifications

There were no significant differences in the qualifications of fathers across academic groups (N=305). The percentage distribution of qualifications were as in Table 6.14.

Table 6.14 Percentage of Respondents' Parents with Qualifications

Qualifications	Father %	Mother %
No qualifications	18.2	12.3
No secondary schooling	3.3	1.6
Limited secondary schooling	12.7	12.6
School Certificate	14.7	18.8
6th Form Certificate	0.3	0.3
University Entrance Subjects	7.8	13.6
Higher School Certificate	0.7	1.3
B Bursary	0.7	0.0
A Bursary	0.3	0.6
Tertiary not University	18.2	22.6
Accountancy exams	0.0	0.3
Primary Teaching	0.0	0.3
Undergraduate but not degree	4.6	3.2
Undergraduate Degree	11.1	8.7
Music Qualification	0.3	0.6
Postgraduate Qualification	4.9	2.3
PhD	1.6	0.3
Deceased	0.7	0.6
	100.0 (N=307)	100.00 (N=309)

Parents' Occupation

There were no significant differences among the academic groups with respect to the occupations of their parents. The occupational categories were the major occupational groups of the New Zealand Standard Classification of Occupations (1976). The categories and the distribution of the percentage of individuals within them was as in Table 6.15.

Father's income

The income of the respondents' fathers were not significantly different across the different academic groups as shown in Table 6.16.

Table 6.15 Percentage of Parents in Each Occupational Group of the New Zealand Classification of Occupations (1976)

Occupation	Father (N=352)	Mother (N=360)
1. Professional, technical and related workers	33.8%	35.3%
2. Administrative and managerial workers	13.6%	1.9%
3. Clerical and related workers	8.0%	15.3%
4. Sales workers	8.0%	7.8%
5. Service workers	1.4%	5.6%
6. Agriculture, animal husbandry, forestry workers, fishermen and hunters.	17.0%	5.3%
7. Production and related workers, transport equipment operators and labourers	15.6%	1.7%
8. Occupations not elsewhere classified	2.6%	27.1%
	100.0%	100.0%

Table 6.16 Percentage Distribution of Respondents' Fathers' Income (N=297)

Income group							
\$	\$1,000 - \$5,999	\$6,000 - \$14,999	\$15,000 -\$24,999	\$25,000 - \$29,999	\$30,000 \$37,999	\$38,000 - \$49,999	\$50,000 plus
%	4.7	13.5	29.6	18.9	13.5	7.4	12.5

Mother's Income

There were significant differences among the academic groups with respect to mothers' income (see Table 6.17). The Likelihood Ratio was 37.25780 with 20 d.f., $p < .01$. However, Cramer's V was .26649, $p < .05$. Lambda with mother's income dependent was .14935 (with an ASE of .06137). The Goodman and Kruskal tau with mothers' income

dependent was .07152 (ASE = .02071), $p < .05$. Eta with mother's income dependent was .31638, that is, 10% of the variance in mother's income is associated with academic grouping. The error reduction in prediction was 15% (from lambda) and 7% (from tau).

Some groups were characterised by having their largest percentage located in the smallest income category, others were evenly represented in each of the income categories (which were only three in number for the women), and some others were more represented in the highest income category, but the highest category was low (\$15,000-\$24,999) in comparison to the range of men's incomes. The groups characterised by having larger percentages in the lowest income category were Computer Science (52.9%), Business Studies (70%), Technology (50%), Humanities (53.8%) and Veterinary Science (42.9%). Those groups characterised by larger percentages in the higher income category were Agriculture (75%), Veterinary Science (42.9%). The other groups had the income levels reasonably equally distributed (Science, Accountancy, Horticulture and Social Sciences).

Table 6.17 Mother's Income of Academic Groups

GROUP	Count Row Pct Col Pct	MOTHER'S INCOME			Row Total
		1	2	3	
		1	2	3	
Sciences	1	7	13	12	32
		21.9	40.6	37.5	13.3
		8.0	16.9	15.6	
Computer Science	2	9	6	2	17
		52.9	35.3	11.8	7.1
		10.3	7.8	2.6	
Accountancy	3	15	17	9	41
		36.6	41.5	22.0	17.0
		17.2	22.1	11.7	
Business Studies	4	7		3	10
		70.0		30.0	4.1
		8.0		3.9	
Horticulture	5	17	18	22	57
		29.8	31.6	38.6	23.7
		19.5	23.4	28.6	

(Table 6.17 continued)

GROUP	Count Row Pct Col Pct	MOTHER'S INCOME			Row Total
		1	2	3	
Agriculture	6	1 8.3 1.1	2 16.7 2.6	9 75.0 11.7	12 5.0
Technology	7	14 50.0 16.1	8 28.6 10.4	6 21.4 7.8	28 11.6
Humanities	8	7 53.8 8.0	4 30.8 5.2	2 15.4 2.6	13 5.4
Social Sciences	9	6 33.3 6.9	6 33.3 7.8	6 33.3 7.8	18 7.5
Veterinary Science	10	3 42.9 3.4	1 14.3 1.3	3 42.9 3.9	7 2.9
Teachers	11	1 16.7 1.1	2 33.3 2.6	3 50.0 3.9	6 2.5
Column Total		87 36.1	77 32.0	77 32.0	241 100.0

Note. Income Category 1 = \$1,000- \$5,999
Income Category 2 = \$6,000 - \$14,999
Income Category 3 = \$15,000 - \$24,999

6.2.3 Accommodation

The chi-squares were significant for the association between academic group and accommodation while studying. The Pearson chi-square was 95.57, d.f. = 40, $p < .001$. The Likelihood Ratio was 86.60, d.f. = 40, $p < .001$. Cramer's V of .25550 was significant, $p < .001$. The lambda with accommodation dependent was zero, however, Goodman and Kruskal's tau with accommodation dependent was .08341 with an ASE of .02162, $p < .001$, thus giving a percentage reduction in error of prediction of 8%. Eta accommodation dependent was .31 indicating that about 10% of the variance of the two variables was shared.

From Table 6.18 it can be seen that the largest percentage of all respondents (81.1%) and the largest percentage in each group during stage one of the study lived in a house or flat with others. Only Business Studies and Veterinarian Science respondents did not have a percentage

of their group living with a family. Only one student (part of the Humanities group) owned their own home. A small percentage (7.4%) of the respondents lived in a hostel and these were members of the Computer Science, Horticulture, Humanities, Social Sciences, and Veterinary Science groups. A large percentage of Sciences and Social Science groups lived alone, both 14.3%, as compared to 1.9% overall. A larger percentage of the Computer Science group lived with family (26.9% compared to 9.3% overall). A large percentage of Horticulture students lived in hostel accommodation (22.8% compared to 7.4% overall). Only one student private boarded (see Table 6.8 as this was not reported in Table 6.18).

Table 6.18 Accommodation of Academic Groups

GROUP	Count Row Pct Col Pct	ACCOMMODATION					Row Total
		HOSTEL	WITH FAMILY	HOUSE/ FLAT	ALONE	OWN HOME	
		1	2	3	4	6	
Sciences	1		2	41	1		44
			4.5	93.2	2.3		12.0
			5.9	13.8	14.3		
Computer Science	2	2	7	16	1		26
		7.7	26.9	61.5	3.8		7.1
		7.4	20.6	5.4	14.3		
Accountancy	3		8	53			61
			13.1	86.9			16.7
			23.5	17.8			
Business Studies	4			13			13
				100.0			3.6
				4.4			
Horticulture	5	21	6	63	2		92
		22.8	6.5	68.5	2.2		25.1
		77.8	17.6	21.2	28.6		
Agriculture	6		1	12			13
			7.7	92.3			3.6
			2.9	4.0			
Technology	7		3	34			37
			8.1	91.9			10.1
			8.8	11.4			
Humanities	8	2	1	16		1	20
		10.0	5.0	80.0		5.0	5.5
		7.4	2.9	5.4		100.0	

(Table 6.18 continued)

GROUP	Count Row Pct Col Pct	ACCOMMODATION					Row Total
		HOSTEL	WITH FAMILY	HOUSE/ FLAT	ALONE	OWN HOME	
		1	2	3	4	6	
Social Sciences	9	1	5	18	1		25
		4.0	20.0	72.0	4.0		6.8
		3.7	14.7	6.1	14.3		
Veterinary Science	10	1		19	2		22
		4.5		86.4	9.1		6.0
		3.7		6.4	28.6		
Teachers	11		1	12			13
			7.7	92.3			3.6
			2.9	4.0			
Column Total		27	34	297	7	1	366
		7.4	9.3	81.1	1.9	.3	100.0

6.2.4 Work history variables

Work history variables of interest were those such as reason for leaving first job and whether the first job was vacation employment and involved full or part-time work. When respondents were asked their reasons for leaving their first job the results showed no significant differences among the academic groups. The response "leaving job to go back to school" identified those respondents in vacation employment while at school. Of those who had been employed prior to graduation, the percentage leaving their first job to return to school was 35.9% or 75 (N=209) and the percentage leaving their first job to attend university was 64.1% or 134 (N=209). The remainder of the respondents (N= 170) could be assumed to not have been employed while at school or University. Whether the first job was vacation employment differed for the different academic groups as shown in Table 6.19. For the sample overall, the first job was vacation employment for 52.0% and not vacation employment for 47.5% (N = 358).

The Pearson chi-square was 25.86 and the Likelihood Ratio 26.53 both with 10 d.f. $p < .01$. Cramer's V was .26877, $p < .01$. Lambda with first vacation job dependent .19412 (ASE = .07025) and Goodman and Kruskal's tau was .07224 (ASE = .02641), $p < .01$. Thus about 7% reduction in error prediction was apparent. Eta with first vacation job dependent was .26877. Therefore, 7% of the variance in vacation employment was associated with academic group.

Table 6.19 The First Vacation Employment of Academic groups

GROUP	Count Row Pct Col Pct	VACATION JOB 1			Row Total
		NOT	VACATION		
		VACATION			
		1	2		
Sciences	1	15 36.6 8.8	26 63.4 13.8	41 11.5	
Computer Science	2	17 68.0 10.0	8 32.0 4.3	25 7.0	
Accountancy	3	27 45.8 15.9	32 54.2 17.0	59 16.5	
Business Studies	4	4 30.8 2.4	9 69.2 4.8	13 3.6	
Horticulture	5	54 60.0 31.8	36 40.0 19.1	90 25.1	
Agriculture	6	3 25.0 1.8	9 75.0 4.8	12 3.4	
Technology	7	19 51.4 11.2	18 48.6 9.6	37 10.3	
Humanities	8	6 28.6 3.5	15 71.4 8.0	21 5.9	
Social Sciences	9	15 60.0 8.8	10 40.0 5.3	25 7.0	
Veterinary Science	10	7 31.8 4.1	15 68.2 8.0	22 6.1	
Teachers	11	3 23.1 1.8	10 76.9 5.3	13 3.6	
Column Total		170 47.5	188 52.5	358 100.0	

With respect to the first job at any stage, 42.6% began with part-time jobs and 57.4% began with full-time jobs (N=359).

6.2.5 Academic performance measures

A difference among the academic groups was evident in the ability related measures of academic performance at university. The two measures were the average grade in the final year and the average overall grade while at university.

Average final year grade

The average final year grade for $N = 284$ ranged from E to A+ with a mean and median of B- and a mode of C+. The standard deviation was the equivalent of two grade steps (a step being between A- and A+, or C+ and B, for example). The average final year grade ($N=282$) produced significant chi-squares, 125.30, d.f. = 100, only at the .05 level for Pearson's but at the .01 level for the Likelihood Ratio with a value of 140.23, d.f. = 100. Cramer's V of .21 showed a degree of association between the variables, $p < .05$. Lambda with final year average grade dependent was .08 with an ASE of .0422, meaning an 8 % error reduction in prediction of final average using academic groups. Goodman and Kruskal's value of .06179 with an ASE of .01093 locates the error reduction at around 6 %. The eta with final year grade in major dependent of .32 showed the variables to have about 10% of their variance in common.

The differences in the groups seemed to lie at both extremes of the scale of grades. Examination of the frequency Table (Table 6.20) shows that only some respondents obtained a D grade. The groups which did not obtain a D or lower were Business Studies, Agriculture and Veterinary Science. Such differences may be accounted for in part by differences in marking practices among Departments as well as differences in the ability of different groups. At the other end of the grade scale those obtaining B+ and above were 20% of Sciences, 33.3% of Computer Science, 2.4% of Accountancy, 32.3% of Horticulture, 33.3% of Agriculture, 9% of Technology, 7.7% of Humanities, 25% of Social Sciences and 18.1% of Veterinary Science. A similar percentage of all groups obtained grades of between C- to B inclusive. The distribution of the final year grades for the majoring subject for the respondents overall ($N=284$) is presented in Table 6.20. The median is located between C+ and B- for the final year average and at C+ for the overall grade.

Table 6.20 A Comparison of Distributions of Percentages of Grade for Respondents' Average Final Year Grade and Their Overall Average Grade

Grade	Final Year (N=284) Average Grade	Overall University (N=282) Average Grade
	%	%
E	0.7	0.4
D	2.8	2.5
C-	6.7	8.2
C	13.4	22.3
C+	23.6	24.1
B-	18.0	17.0
B	15.8	14.2
B+	12.7	8.5
A-	5.3	2.1
A	0.7	0.7
A+	0.4	0.0

Average overall grade

The average grade throughout the university career of the respondents (as calculated from academic records) ranged from E to A with a mean of C+, a median of B- and a mode of C+. The standard deviation, like that of the average final year grade was the equivalent of two grade steps. The overall grade was understandably lower on average than the final year grade. Respondents are probably more likely to achieve some of their better grades in their final year having benefited from an increase in experience and skill in studying and hopefully are majoring in the subjects where their interest most lies. However, with respect to the average grade throughout their university study and the final year average, the distributions are very similar as can be seen from Table 6.20.

There were significant differences among the academic groups with respect to the overall average grade. The chi-squares were significant, Pearson's at $p < .05$ (114.68, d.f. 90) but the Likelihood Ratio at the .01 level (with a value of 131.16, d.f. = 90). Cramer's V was .21 $p < .05$, lambda was .08 with an ASE of .04324, giving an 8% reduction in prediction error. The Goodman Kruskal value with average grade dependent of .0542 (with an ASE of .01037) was significant $p < .001$. These indicated the proportion of reduction in error of

prediction to be only about 5%. The eta of .32236 showed the proportion of shared variance to be .10, (or 10%).

The groups obtaining D's or less were Computer Science, Business Studies, Horticulture and Veterinary Science. The groups not obtaining D grades, therefore, were Sciences, Accountancy, Agriculture, Technology, Humanities and Social Sciences. Those obtaining B⁺ and above were all of the groups except Sciences, Accountancy and Business Studies. The group with the largest percentage obtaining these higher grades was Computer Science (34.7%), the remaining groups had about 7% to 19% obtaining such grades.

6.2.6 Working situation

The work related variables providing background data but not part of the expanded model itself are discussed in this section. These variables to do with the working situation were respondents' salaries, the salaries of their friends and their own rate of absenteeism.

Salaries (expected)

With respect to individuals own salaries (N=339) there were differences among groups. Pearson's chi-square was significant, 601.69 with 290 d.f., $p < .001$ and the Likelihood Ratio was 453.53, d.f. 290, $p < .001$. Cramer's V was .42, $p < .001$. The lambda with own salary dependent at .13 and an ASE of .025 indicated that a 13% reduction in error of prediction was likely when predicting salary from academic grouping. Goodman and Kruskal's tau with salary dependent was significant ($p < .001$) with a value of .08506 and an ASE of .00982, indicating that a 9% reduction of error in prediction of salary was possible with the knowledge of academic grouping. The eta with own salary dependent at .37 showed 14% of the variance in salaries could be associated with academic grouping.

The groups with a percentage reporting to have high salaries (above \$40,000) were Horticulture and between \$22,000 to \$38,000 were Computer Science, Accountancy, Business Studies, Technology, Humanities and Veterinary Science. All groups were represented in the \$15000 to \$20000 group. Almost all groups were represented in the lower salary range. The exceptions were Veterinary Science and Business Studies.

Friends' salary (expected)

With respect to friends' salaries ($N=337$), the Pearson chi-square was 438.96, d.f. = 290, $p < .001$. Cramer's V measure of association was .36091, $p < .001$. The lambda with friend's salaries dependent was only .08 and the ASE .02572. The Goodman and Kruskal tau was .05256 with an ASE of .00791. Thus only a 5% reduction in error would be likely in classifying friend's salaries on the basis of respondent's academic group. The eta was .25 which indicated 6% of the variance in the two variables was shared.

Sciences, Horticulture and Humanities groups reported to have friends with incomes in the lowest group. Only the Humanities group reported their friends' salaries to be above \$40,000, a small percentage of all groups reported to have friends earning between \$22,000 and \$33,000 (the percentages were 2.8% for sciences, 4.2% for Computer Sciences, 5.4% for Accountancy, 10% for humanities, 4.3% for Social Sciences and 9.1% for Veterinary Science). All groups were represented in the \$18,000 to \$24,000 salary range with 59% of Veterinary Scientist's, 34.7% of the Social Sciences, 10% of the Humanities group, 58.3% of the Technology group, 38.5% of the Agriculture group, 23.4% of the Horticulture group, 61.6% of the Business Studies group, 21.4% of the Accountancy group, 37.6% of the Computer Science group and 19.5% of the Sciences group represented in this range. Almost all groups (the exceptions being Veterinary Science and Technology) had a large percentage of their group with friends' salaries at \$15,000, \$16,000 and \$17,000.

The Humanities group had friends earning high and lower incomes. The Veterinary Science and Technology groups did not have friends earning very low or very high incomes. The Science group had friends earning medium and lower incomes.

Absenteeism

No significant differences among groups was evident for absenteeism. The number of days respondents reported being absent was distributed as shown in Table 6.21. The median number of days absent was around 28.

Table 6.21 Distribution of Self-Reported Absenteeism of Respondents

Number of Days Absent	f	%
0	77	39.7
1	28	14.4
2	18	9.3
3	17	8.8
4	13	6.7
5	11	5.7
6	06	3.1
7	01	0.5
8	04	2.1
9	01	0.5
10	07	3.6
12	01	0.5
15	01	0.5
20	02	1.0
25	02	1.0
30	01	0.5
50	01	0.5
100	01	0.5
	N=160	100.0

6.2.7 Summary of section 6.2

To summarise this section (the analysis of the background data by academic group) before examining the findings relating directly to the work adjustment model, some differences emerged in groups with respect to years schooling and school qualifications. There were no differences with respect to age, gender, number of children, ethnicity, citizenship, School Certificate marks, parents' qualifications and father's occupation and income. The larger proportion of fathers were in professional and technical occupations and the remainder were mainly in the administrative, agriculture and production occupations and very few were in the clerical, sales or service occupations. A similar percentage of the mothers were in the professional occupational group and the remainder were mainly in the clerical occupations

with fewer in the sales and services occupations and in an agriculture type of occupation. In contrast to their male counterparts there were a very small percentage in administrative and managerial positions or in production and labour type of occupations. A larger percentage were working in the home but otherwise unemployed.

Differences between the occupations of the fathers and of the mothers were as might be expected and similar to that present in the general population with the mothers being under represented in the administrative and managerial occupations etc. and over-represented in the 'housewife' group, although it was perhaps less typical that both were equally represented in the professional occupations. Consistent with fewer being employed outside the home, the income of the mothers was less than that of the fathers. However, for some academic groups (Agriculture, Veterinary Science and Teacher groups) mothers' incomes were higher.

Most respondents described themselves to be in excellent health. Most spent their leisure time with one or two others and engaged in one or two leisure activities. There were some differences in accommodation patterns with the largest group living on Campus accommodation being the Horticulture group. These were Diploma students at University for that one year only and as such they were probably less likely to seek accommodation of a longer term nature such as a flat. With respect to their own employment history and at stage one of the study, most of the sample had been in employment of some kind. Just under a half of the students had their first experience of work in a part-time capacity. By stage two of the study an improvement in satisfaction with living circumstances was reported.

In relation to salaries, only the Horticulture group reported high salaries and Veterinary Science and Business Studies were the only groups not represented at the lower end of the salary range (below \$14,999). Only one group (Humanities) had friends in the high salary range but they also had friends who could be categorised in other income groups as well. Only Veterinary Scientists and Technologists did not have friends at either extreme of the salary range (below \$15,000 and above \$40,000).

Absenteeism was similar for all of the groups. The median number of days was 28. Differences among the academic groups were apparent in their academic performance with larger percentages of Computer Science, Agriculture, Horticulture groups attaining higher grades.

6.3 Key statistics for work adjustment variables

The key descriptive statistics for the work adjustment variables of Dawis and Lofquist's paradigm and the expanded model are given in the list of statistics in Appendix M and summarised in section 6.3.1. Significant correlations were found among variables of Dawis and Lofquist's model, among the variables of the expanded model (of the present research) and between the models. Where the correlates of the variables are numerous the statistics are presented in a summary form, by using the mean of all correlations with the target variable (see Tables 6.22, 6.24 to 6.27). The number of correlates and the range of the correlation coefficients are also included. The individual correlates are given in Appendix N. The relationships among the variables central to Dawis and Lofquist's paradigm which were included in the present research are presented and discussed in section 6.3.3. The propositions and hypotheses representing these relationships and the expansion of the model are examined formally later (in chapter seven) using multiple regression and multiple analyses of variance techniques.

6.3.1 Key statistics of the work adjustment and related variables of the models

The statistics discussed in this section are given in Appendix M. The work needs produced adjusted scale scores (see the scoring part of section 5.8.1) on the MIQ of between -2.4 to 3.5 with means ranging from -.48 to 1.68 (negative values indicate lower levels of work need importance). The standard deviations were similar for most needs with the exception of moral values being compatible, social service (altruistic need) and the need for social status. These three needs produced higher standard deviations suggesting respondents produced more discrepant results for those needs or that these needs are more diverse in the population studied. The needs rating as more important were ability utilisation (mean of 1.51), achievement (mean of 1.68), advancement (mean of 1.0), friendly co-workers (mean of 0.94), creativity (mean of 0.9), moral values (mean of 0.91), recognition (mean of 0.92) and responsibility (mean of 0.96). The needs which emerged as the least important were authority (mean of -0.48) and social status (mean of -0.38).

All of the needs were involved in need-reinforcer correspondence over all of the respondents. The needs where less correspondence occurred were activity, authority, compensation, independence, social status and variety. The needs where the standard deviation was greater

thus suggesting greater difference among respondents, were company policies and practices and social status. For at least about 60% of respondents, workers in their occupation were perceived to have most of the work need reinforcers available. The reinforcers not present for workers in their occupation for about half of the respondents were authority, creativity, independence, technical supervision and variety.

The twenty satisfaction scores (of the MSQ general scale) for the various work needs ranged from 0 to 30. The mean satisfaction level was similar for all needs, lying between 14 and 16. Satisfaction was slightly higher for independence, moral values and supervision (human relations and technical). The composite general satisfaction score ranged from 0 to 94 with a mean of 62.46 and a standard deviation of 15.02. The percentage responding to each category of the 1 to 7 scale of the single-item job satisfaction measure is shown in Figure 6.1. Overall 64.6 rated themselves as satisfied to some degree (categories 5 to 7) and 44. % chose either category 6 or 7 on the rating scale (where 7 = satisfied). Only 20% chose categories 1 to 3 which represented the dissatisfied end of the scale. Job satisfaction of the respondents compared with that of their friends ranged from 1 to 7 but produced a mean of 5 and a mode of 6 thus indicating a high level of satisfaction.

The average expected tenure was 3.5 years but the median and mode were two years. The standard deviation was 8 (years) because of a few extreme scores. This large standard deviation can be seen to result from a small number of extreme scores (see Table M.2 in Appendix M). Only 20 of the respondents expected to stay longer than three years and of these, results from the job attachment measure produced a mean of 3.5 (on a scale of 1 to 7 with 1 = completely attached). Personal competence (locus of control) measures ranged from 4 to 28, with a low score representing high locus of control. The median was 14 for both stages of the study, the mean was 14 for stage one and 14.5 for stage two. The standard deviations were both similar (around 4). The index of well-being and life satisfaction scores were similar at both research stages.

Satisfaction with living circumstances was higher at stage two. The mean at stage one was 2.7 compared with 4.9 at stage two (on the 1 to 7 scale). On average respondents reported their health to be good and to be satisfied with it. Leisure satisfaction was reasonable on average. The job tended to be rated as of less or equal importance when compared with leisure activities.

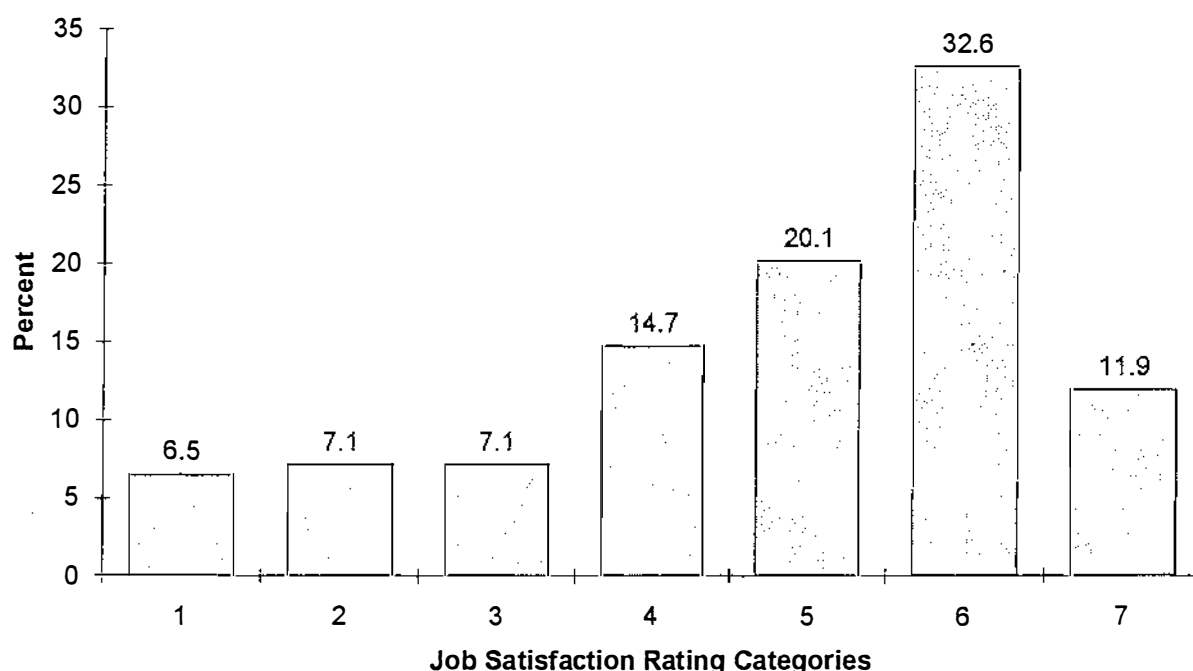


Figure 6.1 Percentage Using Each of the Rating Categories on the Single-item Measure of Job Satisfaction

The various adjustment style measures all produced similar means with the exception of the adjustment variables of pace, rhythm and endurance, which all rated lower. All of the adjustment styles were reported to be in use (with medians of 4 to 5) and high self-efficacy for their use was claimed (medians of between 5 and 7). Self-efficacy for having work needs met was high with medians ranging from 6 to 8. The lowest self-efficacy score was 5 for being able to engage in a good level of activity in a job. Self-efficacy for being satisfactory was high with medians of 7 and 8 and modes of 8 for most of the satisfactoriness variables. Respondents expected high job-lifestyle compatibility and to be able to adjust to new settings such as adjusting to a new organisation or club and adjusting to a new location.

The findings for the satisfaction with the quality of life measures demonstrated a degree of satisfaction in relation to most of the satisfaction domains. Individuals were on average dissatisfied only with their savings (mode of 2 on the 1 to 7 scale with 7 = satisfied). That they were not satisfied with their savings is not surprising in a sample in the early stages of employment. Most of the quality of life measures were regarded as important, although housework rated lower in importance on average. The social support measures showed usually between 72% to 92% believed they received support. However, for the statement of preferring to keep worries to oneself, about half preferred to do this.

6.3.2 Correlates of variables of Dawis and Lofquist's paradigm

The variables of the basic work adjustment paradigm for which the correlates are presented are need-reinforcer correspondence, job satisfaction (individual satisfaction terms and the MSQ General Satisfaction scale) and perceived job satisfactoriness.

Some of the highest correlations of the need-correspondence terms (listed in Appendix N and summarised in Table 6.22), those correlations of around .60 and greater, occurred in the correlation of work needs with their respective correspondence term with the exception of ability utilisation and the ability utilisation need-reinforcer term and the achievement work need and its correspondence term. Other high correlations involved the authority of workers in the job and authority correspondence, the autonomy in the job need and authority correspondence, responsibility correspondence and creativity correspondence, and lastly, social status typical of the occupation and social status correspondence.

With reference to Table 6.26 and Appendix N some of the higher correlates of job attachment were job satisfaction compared with friends (.64) and the specific satisfaction scores to do with ability utilisation (.62), achievement (.62), creativity (-.53) and variety (.55), self-efficacy for ability utilisation (.58) achievement (.66) and recognition (.55). The general satisfaction score gave a coefficient of reasonable magnitude. Of the self-efficacy measures, those exhibiting higher correlations with job attachment were self-efficacy for achievement, variety and perseverance. Some of the same work needs were involved significantly with job attachment, both in the satisfaction and self-efficacy dimensions. Not all of the associations were positive relationships. Personal competence, satisfaction with company policies and creativity satisfaction all were negatively related to job attachment.

Table 6.22 Means of Significant Correlates of Need Reinforcer Correspondence for Each of the 20 Correspondence Terms

	Mean r	Number of correlates ^a	Range
Need-reinforcer Correspondence term			
Ability utilisation correspondence	.455	2	.302 - .607
Achievement correspondence	.309	2	.311 - .306
Activity correspondence	.419	6	.315 - .738
Advancement correspondence	.423	6	.339 - .511
Authority correspondence	.391	16	.314 - .756
Company policies and practices correspondence	.462	6	.361 - .727
Compensation correspondence	.371	18	.304 - .750
Co-workers correspondence	.375	13	.310 - .507
Creativity correspondence	.465	6	.326 - .670
Independence correspondence	.411	10	.304 - .755
Moral values correspondence	.525	1	0
Recognition correspondence	.375	13	.303 - .592
Responsibility correspondence	.406	10	.302 - .670
Security correspondence	.384	13	.310 - .632
Social Service correspondence	.391	8	.301 - .629
Social Status correspondence	.419	23	.308 - .641
Get along with supervisors correspondence	.388	24	.301 - .691
Technical supervision correspondence	.398	13	.315 - .691
Variety correspondence	.443	5	.326 - .732
Working conditions correspondence	.391	14	.305 - .564

Note.^aIndividual correlates (each variable which correlates with each correspondence term) can be found in Appendix N.

Table 6.23 Significant ($p < .01$) Correlates of Job Satisfaction (MSQ General Scale)

Job satisfaction (operationalised as the MSQ General Satisfaction scale)	
	<i>r</i>
Job attachment	.5073
Perseverance	-.3933
Speed	-.3460
Satisfaction compared with friends	-.3486
Promotability	.4001

Table 6.24 Mean Correlates of Individual Job Satisfaction Terms (MSQ)

Individual job satisfaction terms	Mean <i>r</i> of correlates	Number of correlates ^a	Range	Correlated with MSQ general Satisfaction
Ability utilisation	.4513	28	.3089 - .7020	(.8245)
Achievement	.4450	22	.3247 - .6769	(.8760)
Activity	.4309	13	.3051 - .6281	(.7590)
Advancement	.4189	17	.3206 - .5805	(.7651)
Authority	.4206	26	.3212 - .5604	(.7094)
Company policies and practices	.4056	10	.3130 - .4640	(.7313)
Compensation	.4714	05	.3201 - .6810	(.5974)
Co-workers	.4074	07	.3052 - .4455	(.7350)
Creativity	.4654	28	.3052 - .6104	(.7791)
Independence	.4369	03	.3114 - .3225	(.6768)
Moral values	.3937	04	.3009 - .3095	(.6584)
Recognition	.4313	14	.3134 - .5321	(.8077)
Responsibility	.4438	06	.3078 - .6148	(.8423)
Security	.4316	08	.3163 - .5683	(.7370)
Social service	.4053	12	.3035 - .4393	(.6768)
Social status	.3905	24	.3077 - .5455	(.7505)
Supervision (human)	.3950	09	.3071 - .4250	(.7319)
Supervision (technical)	.4173	10	.3100 - .4413	(.7911)
Variety	.4310	27	.3022 - .6100	(.7941)
Working conditions	.4066	04	.3502 - .3788	(.7075)

Note.^aIndividual correlates (each variable which correlates with each correspondence term) can be found in Appendix N.

With reference to Table 6.24, the value in parentheses following the range is the maximum correlation but this is not used as the upper limit of the range because it is the score for general satisfaction. As such it is a composite score made up of some of the individual satisfaction items. Consequently, it is not independent of the individual satisfaction measures and would inflate the range if included in it. The range can be seen to vary considerably. Variety and moral values satisfaction demonstrated a very small range. Those with the greater range of degree of correlation were ability utilisation, compensation, creativity and responsibility satisfactions.

Table 6.25 Mean Significant Correlates of Self-Perceived Satisfactoriness

	Mean r	Number of correlates ^a	Range
Perceived Satisfactoriness term			
Performance satisfactoriness	.356	08	.313 - .401
Achievement satisfactoriness	.490	32	.301 - .80
Abiding by rules satisfactoriness	.351	02	.313 - .389
Promotability satisfactoriness	.329	09	.302 - .382
Adapting to procedure changes	.375	08	.249 - .489
Team member satisfactoriness	.401	05	.302 - .478
Getting along with supervisors satisfactoriness	.400	07	.308 - .489

Note. ^aIndividual correlates (each variable which correlates with each correspondence term) can be found in Appendix N.

Job attachment correlated with 13 of the job satisfaction measures and 11 of the self-efficacy measures (refer Table 6.26). Of all the variables those with a reasonable number of correlates above could all be considered 'central' to work adjustment or at the very least interconnected more than others because of their high number of correlates.

Table 6.26 Mean Significant Correlates of Job Attachment

	Mean r	Number of correlates ^a	Range
Adjustment style measures	.409	03	.388 - .425
Satisfaction	.497	13	.408 - .645
Typical of jobs being rated	.385	03	.353 - .444
Self-efficacy measures	.461	11	.354 - .660
Job importance	.326**	01	0
Expected tenure	.323**	01	0
Personal competence post-employment	-.303**	01	0

Note.^aIndividual correlates (each variable which correlates with each correspondence term) can be found in Appendix N.

Confidence about adjusting to a new organisation had a greater number of correlates (see Table 6.27) than adjusting to a new location.

Table 6.27 Mean Significant Correlates of General Adjustment Terms

	Mean r	Number of correlates ^a	Range
General Adjustment terms			
Adjustment to joining a new organisation	.355	10	.311 - .451
Adjustment to a new town or location	.360	03	.304 - .451

Note.^aIndividual correlates (each variable which correlates with each correspondence term) can be found in Appendix N.

Some of the variables have a considerably higher number of significant correlates than others. Within the range of 1 to 32, the variables with more than 20 significant correlates were, from Table 6.22, getting along with supervisors correspondence and social status correspondence, from Table 6.24, ability utilisation, achievement, authority, creativity and social status, and from Table 6.25, achievement satisfactoriness. Other variables with a high number of significant correlates (between 10 and 20) in Table 6.24 were, in decreasing order of number of correlates, the correspondence terms for compensation, authority, working conditions, co-workers, recognition, security, technical supervision, independence and responsibility. Among the satisfaction terms (see Table 6.24) the number of correlates in decreasing order were, advancement, recognition, social service, satisfaction terms with company policies and practices and technical supervision satisfaction terms having the same number of correlates.

Table 6.28 Frequency Table of Number of Times Variables were Correlates of
Need-Reinforcer Correspondence Terms

Need-Reinforcer Terms	f
Working conditions	18
Social status	15
Social service (altruism)	15
Job security	15
Recognition	14
Supervision (human)	12
Compensation	11
Supervision (technical)	10
Creativity	10
Autonomy	09
Friendly co-workers	09
Advancement	08
Achievement	07
Ability utilisation	07
Responsibility	06
Company policies and practices	06
Activity	06
Promotability	05
Variety	05
Boss backs up staff	05
Adapt to policy changes	05
Authority	04
Moral values	04
Active mode	01

Some of the variables were correlates of need-reinforcer correspondence terms more frequently than others. Table 6.28 lists the frequency in descending order. The individual satisfaction terms which had the most significant correlates were ability, achievement, activity, authority and creativity. The significant correlates of the general job satisfaction term were job attachment, perseverance, speed of adjustment, satisfaction compared with friends and promotability. Job satisfactoriness as measured by performance, correlated with adjustment style variables (pace and endurance), self-efficacy (for authority, abiding by rules and working independently), being promotable, working independently and experiencing well-being (see Table M.1 in Appendix M). Perceived satisfactoriness measured by achievement correlated with many of the satisfaction terms, with the general satisfaction measure, with many of the self-efficacy measures, with low absenteeism and with job-lifestyle compatibility.

Satisfactoriness measured by abiding by the rules was associated with being able to undertake repetitive work. Perceived satisfactoriness as measured by promotability was correlated with advancement satisfaction, with some self-efficacy measures (using skills and authority) and with some work needs. Satisfactoriness measured by adapting to change was associated with the adjustment style of endurance, with some work needs (variety and friendly co-workers) with good performance, low absenteeism and getting along with supervisors. Satisfactoriness measured by ability to work as a member of a team was related to self-efficacy for using an active adjustment style, some work needs and co-workers being friendly. Satisfactoriness as measured by ability to get along with supervisors was associated with job security, obtaining recognition, good supervision, adaptability to changes in procedures and methods and the ability to work as part of a team.

Job attachment was correlated with a high number of the measures, 33 in all, particularly with expected tenure, adjustment styles, locus of control, being satisfied in many of the work needs and exhibiting self-efficacy. General adjustment, as measured by expectation of adjusting to a new organisation, was associated with adjustment styles (perseverance, predictability of pace, activeness, reactivity and speed of response) with well-being at both stages of the study and life satisfaction at stage two, with co-worker satisfaction and with adjusting to a new location. Adjustment to a new location was associated with speed of response, stage two life satisfaction and adjusting to a new organisation. These two general adjustment measures appear to be related.

6.3.3 Key relationships of Dawis and Lofquist's paradigm

The relationships depicted in Dawis and Lofquist's paradigm are represented by correlations (Pearson's r) below. The notation used to indicate the significance levels is that used throughout, that is, $* = p < .05$, $** = p < .01$ and $*** = p < .001$. In the case of correlations which represent relationships predicted by Dawis and Lofquist's model and the modifications to it proposed in the present research, all are reported regardless of their magnitude. However, other correlates of these variables will be reported only if the coefficients are .30 or greater. Smaller coefficients, although statistically significant at the .01 level in many instances, would produce coefficients of determination (r^2) showing variables to have $100r^2$ values of less than 10%, that is they have less than 10% of their variance in common.

Table 6.29 presents the correlations of estimates of tenure (expected tenure and job attachment) with job satisfaction, operationalised using the MSQ composite measure of general satisfaction. The measure of satisfactoriness is that operationalised as self-perceived performance in Table 6.29 and as several individual measures of self-perceived satisfactoriness, as well as performance, in Table 6.30. The correlations in Table 6.29 indicate that job attachment is associated to a reasonable degree with satisfaction. With a correlation coefficient of .51 the coefficient of determination for job attachment and satisfaction is .26. However, expected tenure produced a considerably lower coefficient of determination of .04. With respect to satisfactoriness and expected tenure the correlation is also small (.12) and nonsignificant.

Table 6.29 Job Satisfaction and Satisfactoriness Correlated with Measures of Tenure (Job Attachment and Expected tenure)

	Job attachment	Expected tenure
Satisfaction (MSQ measure)	.51 **	.19 *
Satisfactoriness	.19 *	.12

Note. $* = p < .05$, $** = P < .01$.

Similarly, the other individual satisfactoriness measures reported in Table 6.30 are associated more strongly with job attachment than with expected tenure. Three of the correlations (promotability, performance and satisfactorily working in a team) were not statistically significant in the case of satisfactoriness and expected tenure. On the other hand the relationships among job attachment and satisfactoriness measures are all statistically significant. In the case of skill and achievement the $100r^2$ values of 34% and 44% indicate these variables have a reasonable amount of their variance in common.

Table 6.30 Perceived Satisfactoriness Correlated with Satisfaction, with Job Attachment and Expected Tenure

	Satisfaction	Job attachment	Expected Tenure
Perceived Satisfactoriness			
Skill	.56 **	.58 **	.27 **
Achievement	.60 **	.66 **	.20 **
Promotability	.22 **	.23 **	.03
Work in a team	.24 **	.23 **	.07
Performance	.10	.19 **	.12

The correlations between satisfaction and satisfactoriness reported in Table 6.30 produce $100r^2$ values in the case of skill and achievement of 31% and 36%, in the case of promotability and working in a team $100r^2$ values of 5%, 6% and in the case of performance, a nonsignificant correlation. For all but one of the satisfactoriness variables (performance) a relationship with satisfaction can be found which is contrary to what Dawis and Lofquist would have expected. However, such a finding is consistent with the argument in the present research that satisfaction and satisfactoriness should not be relatively independent if they are to act as moderators for each other in the correspondence relationships which affect satisfaction and satisfactoriness.

The need-reinforcer correspondence and satisfaction relationship is represented by the correlations in Table 6.31. Correlations from previous studies have tended to be higher than those found here. In the present research no single multiple coefficient of determination shows more than 6% of the variance among variables to be shared and in most cases the shared

variance is only around 4%. Dawis and Lofquist (1984) report correlations between predicted and observed satisfaction ranging from .46 to .92. However, there are multiple correlations between job satisfaction predicted from twenty need scores and observed satisfaction (a measure of the correspondence between the same twenty needs and the reinforcer pattern of the environment). These multiple correlations may be inflated and not have been corrected for bias. In samples with *N*s below 100 (which many of the samples were in Dawis and Lofquist's examples), multiple *R* needs to be corrected for bias (Guildford, 1965). The multiple *R* represents the maximum correlation between a dependent variable and a weighted combination of independent variables. The least-squares solution in computing the combined weights and ensuring the maximum correlation, tends to produce an inflated value because it capitalises on any chance deviation which favours a high multiple correlation. Guildford discusses a usual way of reducing *R* to be a better estimate of the multiple correlation in the population. The method takes into account the number of cases and the number of variables correlated. In his example, an *r* of .677 was 'shrunk' to .45.

Table 6.31 Need-reinforcer Correspondence Correlated with Job Satisfaction (MSQ Composite Measure)

Need-reinforcer correspondence	Satisfaction (%)	100 <i>r</i> ²
Activity	.20 *	4.0
Authority	.20 *	4.0
Recognition	.17 *	2.9
Security	.15 *	2.3
Social service	.18 *	3.2
Supervision (human relations)	.25 **	6.3
Supervision (technical)	.19 *	3.6

Note. * = $p < .05$, ** = $p < .01$.

To summarise, the correlation findings for the basic relationships of Dawis and Lofquist's model under consideration suggest that tenure is not as strongly associated with job satisfaction and satisfactoriness as they would predict. The two constructs appear to be dependent rather than relatively independent. Although, the need-reinforcer correspondence is associated with job satisfaction the degree of association is less than that found in previous research.

6.4 Academic group similarities and differences in work adjustment variables

Once employed, respondents from the groups differed in terms of using the active and reactive adjustment modes, being promotable, work fitting into their lifestyle, their salary and that of friends. There were differences among groups for a number of the social support variables. Of the different satisfaction domains, satisfaction with health, savings, friendships, love, family and leisure were not the same for each of the ten groups. The group of teachers was excluded from these analyses because they were attending Teachers' college and were too small in number to make valid comparisons with the university groups. In the area of leisure, significant differences were found in terms of the number of leisure activities engaged in and the number of other people involved with them in leisure activities. Some differences were also evident in vacation employment and in reasons for leaving jobs.

6.4.1 Need-reinforcer correspondence

Social Status was the need-reinforcer correspondence term which was significantly different among the academic groups. The distribution of degree of correspondence for each of the correspondence terms (the correspondence between the remaining 19 work needs and reinforcers) are given in Table 6.32. From Table 6.32, it is apparent that most of the sample is located in the first two columns with typically over 60% achieving need-reinforcer correspondence. The work needs where a smaller percentage achieved perfect or near perfect correspondence are not surprisingly terms such as authority particularly but also to some extent independence, compensation and variety, all of which would be expected to be less likely to be reinforced in the initial stage of employment. The needs demonstrating the highest degree of correspondence were in decreasing order ability utilisation, achievement, friendly co-workers and responsibility.

Social status work need-reinforcer correspondence

The Pearson chi-square for social status correspondence was 181.72, d.f. 135, $p < .01$ Cramer's V .32, $p < .01$. Lambda with social status correspondence dependent was .10692, thus the percentage reduction in error of prediction of the dependent variable from the independent variable was 10.69%. Goodman and Kruskal's tau was .06254 (ASE = .01212) $p < .01$ which gives a 6% reduction in prediction error with the knowledge of academic classification. Eta with social status correspondence dependent was .42560. Therefore 18% of the variance in social status correspondence was accounted for by academic grouping.

Table 6.32 Distribution of Percentage for Correspondence Scores (0=perfect correspondence) for Those with No Significant Differences
Among Academic Groups (N=193).

	Correspondence																	
Need/reinforcer	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Ability utilisation	76.2	16.6	2.6	1.0	3.1	0.0	0.5											
Achievement	69.9	20.2	6.2	1.0	1.6	0.0	1.0											
Activity	41.5	20.2	7.8	7.3	11.4	1.6	4.7	1.0	0.5	1.0	1.0	0.0	0.5	0.5				
Advancement	55.5	24.9	8.3	3.6	2.6	1.0	2.1	0.5	0.0	1.0	0.5							
Authority	11.4	10.9	14.0	6.7	13.5	5.2	9.3	8.3	0.0	6.7	4.7	0.5	4.7	3.1	0.5	0.5		
Company policies	44.6	23.8	11.4	4.7	7.8	3.1	2.1	1.6	0.0	0.5	0.0	0.0	0.0	0.5				
Compensation	37.3	26.4	7.8	6.7	8.3	4.1	2.6	3.6	0.0	1.0	1.0	0.0	0.5	0.0	0.0	0.5		
Coworkers	68.4	19.7	7.8	1.6	1.6	0.0	0.0	1.0										
Creativity	58.8	23.8	6.7	4.7	3.1	1.0	1.6	0.0	0.0	0.5	0.0	0.0	0.0	0.5				
Independence	31.6	20.7	9.3	4.7	14.0	5.7	4.7	2.6	0.5	3.1	1.0	0.0	0.0	1.6	0.0	0.0	0.0	0.5
Moral values	56.6	22.8	7.3	4.7	3.1	1.6	1.0	2.1	0.5	0.0	0.0	0.5	0.5	0.0				
Recognition	54.9	22.3	7.3	4.7	3.1	4.1	1.6	0.5	1.0	0.5								
Responsibility	67.4	19.2	3.6	3.6	3.1	1.0	0.5	0.5	0.5	0.5								
Security	57.0	19.7	7.8	4.1	6.2	1.0	2.1	1.6	0.5									
Social services	46.1	21.8	12.4	3.6	7.3	4.1	1.6	1.6	0.0	0.0	0.0	0.5	0.5	0.5				
Supervision (human)	47.7	22.8	9.3	8.3	5.7	2.2	2.1	1.0	0.0	0.5	0.5							
Supervision (technical)	43.0	20.7	11.9	6.7	10.4	3.6	1.6	0.5	1.0	0.0	0.5							
Variety	38.3	23.3	10.4	7.3	8.8	3.6	4.1	2.1	0.0	0.5	0.5	0.0	1.0					
Working Conditions	61.7	19.7	8.3	4.1	3.1	1.6	0.5	0.5	0.0	0.5								

All groups were represented in the high correspondence end of the score range, with perfect correspondence being achieved in terms of social status for 9.7% of the Sciences group, 10% of the Computer Science group, 38.7% of the Accountancy group, 44.4% of Business Studies, 12.5% of Horticulture, 23.1% of Humanities, 8.3% of Social Sciences and 16.7% of Veterinary Science. Of all the respondents (N=193) 17.6% obtained perfect correspondence between their social status needs and the social status reinforcers in their work environment. At the low correspondence end of the score range groups appearing here were Sciences, Computer sciences, Horticulture and Agriculture. Overall the correspondence scores ranged from 0 (that is no difference between the need and the reinforcer) and 17.

Some differences among groups were noticeable from the crosstabulation (Table 6.33). Differences are apparent particularly for correspondence scores from 0 to 1. For some groups the largest percentages were in this range. A comparison of all the groups for correspondence scores of 0 to 1 shows that Sciences had 19.4%, Computer Science 20%, Accountancy 64.5%, Business Studies 55.5%, Horticulture 25%, Agriculture 14.3%, Technology 25%, Humanities 38.5%, Social Sciences 33.3% and Veterinarian Science 55.6%.

Table 6.33 Social Status Correspondence of Academic Groups

Social Status Correspondence										
GROUP	Count Row Pct Col Pct		0	1	2	3	4	5	6	Row Total
Sciences	1		3	3	3	1	6	1	3	31
			9.7	9.7	9.7	3.2	19.4	3.2	9.7	16.1
			8.8	8.8	16.7	12.5	22.2	7.1	27.3	
Computer Science	2		2	2	3	1	2			20
			10.0	10.0	15.0	5.0	10.0			10.4
			5.9	5.9	16.7	12.5	7.4			
Accountancy	3		12	8	3	1	3		2	31
			38.7	25.8	9.7	3.2	9.7		6.5	16.1
			35.3	23.5	16.7	12.5	11.1		18.2	
Business Studies	4		4	1	1		1	1	1	9
			44.4	11.1	11.1		11.1	11.1	11.1	4.7
			11.8	2.9	5.6		3.7	7.1	9.1	

(Table 6.33 continued)

Social Status Correspondence

GROUP		Count								Row Total
		Row Pct	Col Pct							
		0	1	2	3	4	5	6		
Horticulture	5	6	6	2	1	9	6	4	48	
		12.5 17.6	12.5 17.6	4.2 11.1	2.1 12.5	18.8 33.3	12.5 42.9	8.3 36.4	24.9	
Agriculture	6		1	1	1		1		7	
			14.3 2.9	14.3 5.6	14.3 12.5		14.3 7.1		3.6	
Technology	7		1				1		4	
			25.0 2.9				25.0 7.1		2.1	
Humanities	8	3	2	1	1	4			13	
		23.1 8.8	15.4 5.9	7.7 5.6	7.7 12.5	30.8 14.8			6.7	
Social Sciences	9	1	3	1	1	2		1	12	
		8.3 2.9	25.0 8.8	8.3 5.6	8.3 12.5	16.7 7.4		8.3 9.1	6.2	
Veterinary Sciences	10	3	7	3	1		4		18	
		16.7 8.8	38.9 20.6	16.7 16.7	5.6 12.5		22.2 28.6		9.3	

(Table 6.33 continued)

Social Status Correspondence

GROUP		Count								Row Total
		Row Pct	Col Pct							
		7	8	9	10	12	13	14		
Sciences	1	2		2	4	1		1	31	
		6.5 20.0		6.5 16.7	12.9 36.4	3.2 25.0		3.2 50.0	16.1	
Computer Science	2	2	1	1	1	3		1	20	
		10.0 20.0	5.0 50.0	5.0 8.3	5.0 9.1	15.0 75.0		5.0 50.0	10.4	
Accountancy	3	1			1				31	
		3.2 10.0			3.2 9.1				16.1	
Business Studies	4								9	
									4.7	
Horticulture	5	3		4	5		1		48	
		6.3 30.0		8.3 33.3	10.4 45.5		2.1 33.3		24.9	

(Table 6.33 continued)

Social Status Correspondence

GROUP	Count Row Pct Col Pct								Row Total
		7	8	9	10	12	13	14	
Agriculture	6		1 14.3 50.0				2 28.6 66.7		7 3.6
Technology	7	1 25.0 10.0		1 25.0 8.3					4 2.1
Humanities	8	1 7.7 10.0		1 7.7 8.3					13 6.7
Social Sciences	9			3 25.0 25.0					12 6.2
Veterinary Sciences	10								18 9.3
(Continued)	Column Total	10 5.2	2 1.0	12 6.2	11 5.7	4 2.1	3 1.6	2 1.0	193 100.0

(Table 6.33 continued)

GROUP	Count Row Pct Col Pct			Row Total
		15	17	
Sciences	1		1 3.2 50.0	31 16.1
Computer Science	2	1 5.0 100.0		20 10.4
Accountancy	3			31 16.1
Business Studies	4			9 4.7
Horticulture	5		1 2.1 50.0	48 24.9

(Table 6.33 continued)

		Social Status correspondence		
GROUP	Count			Row Total
	Row Pct Col Pct	15	17	
Agriculture	6			7 3.6
Technology	7			4 2.1
Humanities	8			13 6.7
Social Sciences	9			12 6.2
Veterinary Science	10			18 9.3
Column Total		1 .5	2 1.0	193 100.0

6.4.2 Job satisfaction aspects

The job satisfaction scores from the Minnesota Satisfaction Scale were re-coded to provide a smaller number of categories to make comparisons easier. The scale originally going up to a score of 25 was re-coded such that a score of 1 to 9 (inclusive) became the low satisfaction group, a score of 10 to 17 became the medium satisfaction score group and 18 to 25 became the high satisfaction score group. The distribution of job satisfaction measures is given in Table 6.34.

The main features of the distribution of Table 6.34 appear to be the small percentage achieving high social status satisfaction (14.8%), authority satisfaction (17.9%) and recognition satisfaction (22.4%). These results are not unexpected in a sample which is in the initial stage of employment. The satisfaction terms involved in a larger percentage of high satisfaction ratings were 'friendly co-workers' (54.3%) and satisfaction that the job does not conflict with the incumbent's 'moral values' (50%).

Table 6.34 Percentage Distribution of Satisfaction (Low, Medium, or High) in Each of the Work Needs

Satisfaction	Low	Medium	High	N
Ability utilisation	13.6	55.6	30.9	162
Achievement	8.0	56.2	35.8	162
Activity	6.2	54.9	38.9	162
Advancement	13.6	59.9	26.5	162
Authority	11.1	71.0	17.9	162
Policies & practices	14.3	62.7	23.0	161
Compensation	14.8	59.9	25.3	162
Co-workers	5.6	40.1	54.3	162
Creativity	14.2	57.4	28.4	162
Independence	3.7	53.7	42.6	162
Moral values	3.7	46.3	50.0	162
Recognition	12.4	65.2	22.4	161
Responsibility	8.6	55.6	35.8	162
Security	8.0	48.8	43.2	162
Social service	9.3	63.0	27.8	162
Social status	11.1	74.1	14.8	162
Supervision (human)	9.3	45.3	45.3	161
Supervision (technical)	5.0	52.2	42.9	161
Variety	12.3	57.4	30.2	162
Working conditions	11.7	50.6	37.7	162

6.4.3 Tenure related measures

The tenure related measures were expected tenure (years expect to remain in the job) and job attachment. The latter variable was part of the expanded model of the present research but will be included for discussion here also because it was a measure related to the construct of tenure. There were no significant differences among the groups in the tenure related measures. Their respective distributions are reported in Table 6.35 for job attachment and Table 6.36 for expected tenure.

Job attachment

There were no significant differences among the academic groups in the distribution of scores on the seven point scale of degree of job attachment (as in Table 6.35).

Table 6.35 Percentage Distribution (N=159) of Scores on the Seven Point Scale of Self-rated Job Attachment (1 = completely attached)

Scale score	1	2	3	4	5	6	7	
Percentage	13.2	20.8	24.5	10.7	12.6	11.3	6.9	100.0

Expected tenure

There were no significant differences among academic groups in their expected tenure (as shown in Table 6.36).

Table 6.36 Percentage Distribution (N=150) of Number of Years Individuals Expected to Remain in Their Job (Expected Tenure)

Years	1	2	4	5	10	15	20	60
Percentage	59.8	19.6	12.6	2.0	2.5	0.5	1.0	2.0

Table 6.35 shows 58.5% located themselves at the attachment end of the job attachment scale (rating categories 1 to 3 inclusive) and Table 6.36 that 79.4% expected to remain in their job for no longer than two years.

6.5 Correlation of variables of the expanded model

This section describes correlations involving the variables expanded in the present research (for example in the case of adjustment styles and investigating self-efficacy for their use) and the variables introduced to extend Dawis and Lofquist's theory. Table 6.37 presents the correlations of these additional variables with two of the key variables of Dawis and Lofquist's paradigm, job satisfaction and tenure (as operationalised by expected tenure) and with the tenure related construct of job attachment introduced here.

Table 6.37 includes measures taken at two points in time, one in the final year prior to graduation and the other in the first six months of employment. From this table job attachment demonstrates a greater degree of association on the whole with the variables of interest than does expected tenure. Some of the variables are more strongly related to job

satisfaction and to tenure estimates than are others. Locus of control, as operationalised by The Personal Competence measure prior to employment correlated significantly only with job attachment. By the second stage of the study (about six months after respondents had completed their university studies) the Personal Competence measure correlated more highly with job attachment (from .23 to .31). Similarly with the index of well-being, prior to graduation correlations with job satisfaction (time one correlations acting as predictors of job satisfaction) were nonsignificant. Only the correlation between well-being at time two and job attachment produced a coefficient of any size.

Table 6.37 Dawis and Lofquist's Model Self-Efficacy Variables and the Variables Introduced to Their Model

	Satisf- action	job attachment	expected tenure
Self-efficacy measures			
Use active mode	.02	.14	.02
Use reactive mode	.19 *	.10	-.08
Be flexible	-.10	-.20 *	-.21 *
Persevere	.02	.03	.08
Additional Variables			
Personal competence 1	.15	.23 **	.05
Personal competence 2	.26 **	.31 **	.10
Living circumstances 1	.07	-.04	.08
Living circumstances 2	.01	-.09	.02
Well-being 1	.11	.01	.12
Well-being 2	.15	.30 **	.17 *
Job importance	.16 *	.33 **	.04
Leisure importance	.04	.02	-.06
Leisure satisfaction	.01	.02	.25 **
Social reference group	.35 **	.64 **	.26 **
Support	.11	.12	.07
Job fits lifestyle	.17 **	.21 **	.13
Adjust to new clubs	.14	.06	.07
Adjust to new places	.16 *	-.04	.18 *

For job satisfaction, the importance of the job, the level of satisfaction compared to that of the social reference group, and the confidence that the job fits in with an individual's lifestyle were the only other correlations of any size and significance. Living circumstances bore no relationship to job satisfaction and tenure. In terms of the importance of leisure and the satisfaction with it, only the correlation between expected tenure and leisure satisfaction ($r = .25^{**}$) was significant. The variable of a job fitting into an individual's lifestyle was associated with both job satisfaction and job attachment. Adjusting to new places or locations correlated with both satisfaction and expected tenure.

Of the self-efficacy measures associated with job satisfaction, only three were significantly correlated and these were, the use of the reactive mode correlating with job satisfaction and flexibility correlating with expected tenure and with job attachment. However, none of these variables had more than about 4% of their variance in common with another variable.

6.6 Group similarities and differences for the additional variables of the expanded model

The findings for the academic groups can be divided into those relating to the variable of self-efficacy for achieving needs and for being satisfactory (section 6.6.1) and the less work related variables of the quality of life satisfaction measures (section 6.6.2), leisure activities (section 6.6.3), the relationship between leisure and work (section 6.4.4), subjective well-being (section 6.6.5) and social support (section 6.6.6). The relationships among these variables of the expanded model are presented in the research hypotheses discussed in chapter seven. However, the analysis of these variables by academic grouping is discussed first in section 6.6.

6.6.1 Self-efficacy

The distribution of ratings among the 0 to 8 self-efficacy categories at time two were as in Table 6.38

Table 6.38 Distribution of Ratings of Self-efficacy (0 = no confidence and 8 = complete confidence) Post Graduation (Time Two of the Study) in Percentages

		Ratings									N
	Median	0	1	2	3	4	5	6	7	8	
Ability use	6	3.7	2.5	8.1	8.7	9.9	7.5	26.1	23.0	10.6	161
Achievement	6	3.8	1.3	3.8	5.0	10.6	12.5	20.0	25.6	17.5	160
Authority	6	3.1	1.9	2.5	6.2	6.2	11.8	28.0	23.0	17.4	161
Autonomy	7	0.6	1.2	0.6	1.9	5.0	11.8	19.9	32.3	26.7	161
Active mode	5	2.5	5.6	4.3	8.1	16.1	17.4	19.9	14.9	11.2	161
Activity	5	2.5	1.2	1.2	1.9	5.0	8.1	16.1	25.5	38.5	161
Follow rules	7	0.6	0.0	1.9	0.6	5.6	3.8	20.0	31.3	36.3	160
Pay	7	3.7	4.3	4.3	3.7	11.8	14.9	19.3	19.9	18.0	161
Reactive mode	5	4.4	5.6	4.4	6.9	13.8	16.3	26.3	14.1	08.1	160
Repetition	7	0.6	0.0	4.4	5.0	8.1	10.6	18.1	25.0	28.1	160
Promotability	8	3.8	1.3	1.9	3.1	6.9	8.2	16.4	23.3	35.2	159
Security	6	3.1	1.9	2.5	2.5	8.7	6.2	11.8	26.1	37.3	161
Flexibility	4	1.9	4.3	5.0	11.8	15.5	14.3	23.6	13.0	10.6	161
Independence	8	0.0	0.6	1.2	1.2	1.2	1.9	10.6	25.5	57.8	161
Absenteeism	7	0.6	0.6	0.6	0.6	1.9	0.0	13.0	19.3	63.4	161
Procedures	8	1.3	0.0	0.0	0.6	2.5	8.1	20.0	36.9	30.6	160
Teamwork	7	0.6	0.6	0.6	1.2	3.7	5.6	18.0	28.6	41.0	161
Supervision (technical)	6	1.2	0.6	0.6	0.6	3.1	5.6	16.8	31.1	40.4	161
Creativity	7	1.2	0.6	1.2	4.3	5.6	10.6	23.6	29.2	23.6	161
Lifestyle fits job	6	1.2	2.5	2.5	4.3	9.3	11.2	19.9	21.7	27.3	161
Adjust to organisation	7	0.6	0.6	2.5	7.5	7.5	13.0	27.3	25.5	15.5	161
Adjust to new location	7	0.6	1.9	8.1	9.4	11.9	13.1	24.4	13.8	16.9	160
Perseverance	5	2.5	1.2	3.1	3.1	11.2	13.7	26.1	28.6	10.6	161
Recognition	6	3.1	0.6	2.5	3.8	13.1	15.6	27.5	21.9	11.9	
Make work friends	7	0.6	0.6	1.9	3.1	3.8	5.6	13.1	36.3	35.0	160
Supervision (human)	7	5.0	2.5	5.0	8.7	11.2	8.7	19.9	14.9	24.2	161
Variety	5	1.3	1.3	2.5	5.0	3.1	8.1	20.6	26.3	31.9	160
Performance	7	0.0	0.0	0.6	0.0	3.1	5.0	23.6	32.3	35.4	161

The median self-efficacy ranged from 4 to 8 with the modal categories tending to be 6,7, or 8 (see Appendix M also). Overall the needs where self-efficacy was lower were ability utilisation, use of active and reactive adjustment styles and flexibility and perseverance.

From Table 6.39 Accountancy and Horticulture appear to account for the differences among the academic groups. Both groups had some replies indicating little or no confidence that the job will be compatible with their lifestyle. The remaining groups all tended to respond toward the confident end of the scale.

Table 6.39 The Job-Fitting-Lifestyle Self-efficacy of Respondents at Time Two of the Study

[illegible]

LIFESTYLE		SELF-EFFICACY							
	Count								
	Row Pct								
	Col Pct								
GROUP		0	1	2	3	4	5	6	Row Total
Agriculture	6					2 33.3 13.3	1 16.7 5.6		6 3.7
Technology	7							1 25.0 3.1	4 2.5
Humanities	8			1 9.1 25.0		1 9.1 6.7	2 18.2 11.1	2 18.2 6.3	11 6.8
Social Sciences	9			2 20.0 50.0	1 10.0 14.3	1 10.0 6.7		5 50.0 15.6	10 6.2
Veterinary Science	10	1 5.9 50.0			2 11.8 28.6	1 5.9 6.7	4 23.5 22.2	3 17.6 9.4	17 10.6
Column Total		2 1.2	4 2.5	4 2.5	7 4.3	15 9.3	18 11.2	32 19.9	161 100.0

(Table 6.39 continued)

		LIFESTYLE SELF-EFFICACY			
		Count Row Pct Col Pct			Row Total
GROUPS			7	8	
	1	3	2		19
Sciences		15.8	10.5		11.8
		8.6	4.5		
	2		8		14
Computer Science			57.1		8.7
			18.2		
	3	9	2		29
Accountancy		31.0	6.9		18.0
		25.7	4.5		
	4	4	2		8
Business Studies		50.0	25.0		5.0
		11.4	4.5		
	5	12	19		43
Horticulture		27.9	44.2		26.7
		34.3	43.2		
	6	1	2		6
Agriculture		16.7	33.3		3.7
		2.9	4.5		
	7		3		4
Technology			75.0		2.5
			6.8		
(continued)					

(continued)

		LIFESTYLE SELF-EFFICACY			
GROUPS	Count			Row Total	
	Row Pct Col Pct	7	8		
Humanities	8	2 18.2 5.7	3 27.3 6.8	11 6.8	
Social Sciences	9	1 10.0 2.9		10 6.2	
Veterinary Science	10	3 17.6 8.6	3 17.6 6.8	17 10.6	
Column Total		35 21.7	44 27.3	161 100.0	

Confidence about getting good compensation/pay

The differences among groups for the confidence in being able to attain good pay was evident in Table 6.40. A larger percentage of certain groups reported themselves to be confident in this area by choosing ratings of 7 or 8. The percentages for each of the groups (the sum of the percentages of both categories 7 and 8 which represented the highly confident categories), for N=161 in total, were Veterinary Science (76.5%), Social Science (50%), Humanities (64.4%) Technology (100%), Agriculture (33.4%), Horticulture (27.9%), Business Studies (50%), Accountancy (17.2%), Computer Science (15%) and Sciences (26.3%). At the other end of the scale (a confidence level of 3 and below) were Sciences (10.5%), Computer Sciences (7.1%), Accountancy (24%), Business Studies (12.5%), Horticulture (13.9%), Agriculture (16.7%), Technology (0%), Humanities (1.9%), Social Sciences (30%) and Veterinary Science (11.8%).

The Pearson chi-square was 109.96073 with 72 d.f., $p < .01$ and the Likelihood Ratio was 111.96592 with 72 d.f., $p < .01$. Cramer's V was .29219, $p < .01$. Lambda with pay dependent was .17829 (ASE = .05398) and the Goodman and Kruskal's tau value was .10176 (ASE = .05398), $p < .001$. Eta was .35203, that is, 12% of the variance between pay self-efficacy and academic grouping was shared.

Table 6.40 The Pay Self-Efficacy of Academic Groups

GROUPS	Count Row Pct Col Pct	PAY SELF-EFFICACY							Row Total
		0	1	2	3	4	5	6	
Sciences	1			2			2	10	19
				10.5			10.5	52.6	11.8
				28.6			8.3	32.3	
Computer Science	2			1		1	3	2	14
				7.1		7.1	21.4	14.3	8.7
				14.3		5.3	12.5	6.5	
Accountancy	3	4	1	1	1	7	7	3	29
		13.8	3.4	3.4	3.4	24.1	24.1	10.3	18.0
		66.7	14.3	14.3	16.7	36.8	29.2	9.7	
Business Studies	4			1	2			1	8
				12.5	25.0			12.5	5.0
				14.3	33.3			3.2	
Horticulture	5	1	3	1	1	8	9	8	43
		2.3	7.0	2.3	2.3	18.6	20.9	18.6	26.7
		16.7	42.9	14.3	16.7	42.1	37.5	25.8	
Agriculture	6			1			1	2	6
				16.7			16.7	33.3	3.7
				14.3			4.2	6.5	
Technology	7								4
									2.5
Humanities	8		1			3		3	11
			9.1			27.3		27.3	6.8
			14.3			15.8		9.7	
Social Sciences	9	1	1		1		1	1	10
		10.0	10.0		10.0		10.0	10.0	6.2
		16.7	14.3		16.7		4.2	3.2	
Veterinary Science	10		1		1		1	1	17
			5.9		5.9		5.9	5.9	10.6
			14.3		16.7		4.2	3.2	
(Continued)	Column Total	6	7	7	6	19	24	31	161
		3.7	4.3	4.3	3.7	11.8	14.9	19.3	100.0

(Table 6.40 continued)

		PAY SELF-EFFICACY			
GROUPS	Count			Row Total	
	Row Pct Col Pct	7	8		
Sciences	1	3 15.8 9.4	2 10.5 6.9	19 11.8	
Computer Science	2	1 7.1 3.1	6 42.9 20.7	14 8.7	
Accountancy	3	3 10.3 9.4	2 6.9 6.9	29 18.0	
Business Studies	4	3 37.5 9.4	1 12.5 3.4	8 5.0	
Horticulture	5	4 9.3 12.5	8 18.6 27.6	43 26.7	
Agriculture	6	1 16.7 3.1	1 16.7 3.4	6 3.7	
Technology	7	3 75.0 9.4	1 25.0 3.4	4 2.5	
Humanities	8	4 36.4 12.5		11 6.8	
Social Sciences	9	4 40.0 12.5	1 10.0 3.4	10 6.2	
Veterinary Science	10	6 35.3 18.8	7 41.2 24.1	17 10.6	
Column Total		32 19.9	29 18.0	161 100.0	

For the Computer Science group a larger percentage (42.9%) rated themselves as extremely confident in getting good compensation compared to 18.0% overall rating themselves as such. The Social Science and Business Studies groups were also atypical in their responses with 40% in the case of the former and 37.5% of the latter using rating category 7 compared with 19.9% overall using this category.

PROMOTABILITY SELF-EFFICACY (TIME TWO)									
GROUP	Count Row Pct Col Pct							Row Total	
		0	1	2	3	4	5		
Humanities	8					2 18.2 18.2	2 18.2 15.4	1 9.1 3.8	11 6.9
Social Science	9	2 20.0 33.3					1 10.0 7.7	2 20.0 7.7	10 6.3
Veterinary Science	10	1 5.9 16.7		1 5.9 33.3	2 11.8 40.0	1 5.9 9.1		6 35.3 23.1	17 10.7
(Continued)	Column Total	6 3.8	2 1.3	3 1.9	5 3.1	11 6.9	13 8.2	26 16.4	159 100.0

(Table 6.41 continued)

PROMOTABILITY SELF-EFFICACY				
GROUP	Count Row Pct Col Pct			Row Total
		7	8	
Sciences	1	7 36.8 18.9	6 31.6 10.7	19 11.9
Computer Science	2	3 21.4 8.1	6 42.9 10.7	14 8.8
Accountancy	3	5 17.2 13.5	11 37.9 19.6	29 18.2
Business Studies	4	3 37.5 8.1	4 50.0 7.1	8 5.0
Horticulture	5	9 22.0 24.3	17 41.5 30.4	41 25.8

(Table 6.41 continued)

		PROMOTABILITY SELF-EFFICACY		
	Count			
	Row Pct			
	Col Pct			
		7	8	Row Total
Agriculture	6		4	6
			66.7	3.8
			7.1	
Technology	7		1	4
			25.0	2.5
			1.8	
Humanities	8	2	4	11
		18.2	36.4	6.9
		5.4	7.1	
Social Sciences	9	4	1	10
		40.0	10.0	6.3
		10.8	1.8	
Veterinary Science	10	4	2	17
		23.5	11.8	10.7
		10.8	3.6	
Column Total		37	56	159
		23.3	35.2	100.0

Confidence about variety

Differences among the academic groups appeared with respect to variety self-efficacy. The Pearson chi-square value was 105.34 (72 d.f.), $p < .01$. However, the Likelihood Ratio at 91.39 (72 d.f.), was non-significant. Cramer's V was .28687, $p < .01$. Lambda with variety dependent was .11009 (the ASE was .05193). The Goodman and Kruskal tau value with variety dependent was .09167 (the ASE was .01884), $p < .001$. The two error reduction figures were 9% and 11%. Eta with variety dependent was .30109. Therefore 9.0% of the variance in variety self-efficacy was associated with academic grouping. The distribution of ratings for variety self-efficacy was as in Table 6.43.

The significant differences among groups seemed to arise from the differences in the high self-efficacy ratings. For some groups a larger percentage rated themselves as being confident that they would have their needs for variety met by the job. The percentages for each group rating themselves either 7 or 8 on the self-efficacy scale for time two are given in Table 6.42 as well as the percentage of all the respondents this percentage represented. Overall, of the total respondents, 58.2% used either category 7 or 8. The use of these two categories by the different groups as shown in Table 6.43 can be seen to vary considerably. The second column of the table records what percentage of the total N the percentage of those using category 7

and 8 in each group, represents. Veterinary Science, Sciences, Agriculture and Technology recorded a higher level of confidence they will find variety in their work.

Table 6.42 A Comparison of Percentages Rating Themselves Highly or Completely Confident on the Self-Efficacy for Variety Scale with the Percentage Using These Rating Categories in the Whole Sample

Academic group	Percentage using categories 7 and 8 within groups	Percentage of all respondents (N=160) using 7 and 8 ratings here
Sciences	73.7	29.0
Computer Science	38.5	11.0
Accountancy	44.8	28.5
Business Studies	50.0	08.1
Horticulture	55.8	51.7
Agriculture	100.0	12.6
Technology	100.0	08.0
Humanities	45.5	11.0
Social Sciences	60.0	13.9
Veterinary Science	70.5	24.7

Excluding the Technology group because of its smaller N and collapsing to give five academic groups (Sciences/Computer Science, Accountancy/Business Studies, Horticulture/Agriculture, Humanities/Social Sciences, and Veterinary Science) because of the low N in Agriculture also, the Pearson chi Square (69.69, d.f. = 25) and the Likelihood Ratio (61.28, d.f. = 5) were significant with $p < .01$ and $.05$, respectively. As shown in Table 6.42, Sciences (at 73.7%) and Veterinary Science (at 70.5%) were extremely confident they are finding variety in their jobs and the Horticulture/Agriculture group (now combined) had 61.2% using the 7 or 8 category.

Table 6.43 Variety Self-Efficacy of Academic Groups

GROUP	Count Row Pct Col Pct	VARIETY SELF-EFFICACY							Row Total
		0	1	2	3	4	5	6	
Sciences	1		1 5.3 50.0		1 5.3 12.5		2 10.5 15.4	1 5.3 3.0	19 11.9
Computer Science	2				2 15.4 25.0	1 7.7 20.0	3 23.1 23.1	2 15.4 6.1	13 8.1
Accountancy	3		1 3.4 50.0		1 3.4 12.5		4 13.8 30.8	10 34.5 30.3	29 18.1
Business Studies	4				1 12.5 12.5			3 37.5 9.1	8 5.0
Horticulture	5	1 2.3 50.0			1 2.3 12.5	4 9.3 80.0	2 4.7 15.4	11 25.6 33.3	43 26.9
Agriculture	6								6 3.8
Technology	7								4 2.5
Humanities	8			1 9.1 25.0	2 18.2 25.0			3 27.3 9.1	11 6.9
Social Sciences	9			3 30.0 75.0			1 10.0 7.7		10 6.3
Veterinary Science	10	1 5.9 50.0					1 5.9 7.7	3 17.6 9.1	17 10.6
(Continued)	Column Total	2 1.3	2 1.3	4 2.5	8 5.0	5 3.1	13 8.1	33 20.6	160 100.0

(Table 6.43 continued)

		VARIETY SELF-EFFICACY		
		Count		
		Row Pct		
		Col Pct		
			7	8
GROUP				Row Total
Sciences	1	5	9	19
		26.3	47.4	11.9
		11.9	17.6	
Computer Science	2	3	2	13
		23.1	15.4	8.1
		7.1	3.9	
Accountancy	3	7	6	29
		24.1	20.7	18.1
		16.7	11.8	
Business Studies	4	3	1	8
		37.5	12.5	5.0
		7.1	2.0	
Horticulture	5	11	13	43
		25.6	30.2	26.9
		26.2	25.5	
Agriculture	6	2	4	6
		33.3	66.7	3.8
		4.8	7.8	
Technology	7		4	4
			100.0	2.5
			7.8	
Humanities	8	3	2	11
		27.3	18.2	6.9
		7.1	3.9	
Social Sciences	9	5	1	10
		50.0	10.0	6.3
		11.9	2.0	
Veterinary Science	10	3	9	17
		17.6	52.9	10.6
		7.1	17.6	
Column Total		42	51	160
		26.3	31.9	100.0

Confidence about performance

Pearson chi-square was 67.79951 with 45 d.f., $p < .05$ but the Likelihood Ratio was 69.55635 with 45 d.f., $p < .01$. Cramer's V was significant at .29021, $p < .05$. Lambda with performance self-efficacy dependent was .20192 (ASE = .06709). Goodman and Kruskal's tau with performance self-efficacy dependent was .11272 (ASE = .02649), $p < .001$. Thus a 20% error reduction was likely (if using the lambda figure) and a 11% reduction likely using the tau value. Eta with performance self-efficacy dependent was .36561.

Therefore, about 13% of the variance in self-efficacy performance was associated with academic grouping.

The percentage of use of the categories is given in Table 6.44. Differences were noticeable in self-efficacy ratings at the extremely confident end of the scale in particular. Table 6.44 shows the percentage of each group using either category 7 or 8 on the self-efficacy rating scale.

Table 6.44 Percentage Using Rating Category 7 or 8 of the Self-Efficacy Scale

Groups	Percentage using category 7 or 8	Percentage of total respondents using 7 and 8 ratings
Sciences	94.8%	33.1%
Computer Sciences	78.6%	78.6%
Accountancy	62.0%	34.1%
Business Studies	50.0%	7.3%
Horticulture	76.7%	60.1%
Agriculture	50.0%	5.6%
Technology	100.0%	7.0%
Humanities	45.5%	9.1%
Social Science	40.0%	7.3%
Veterinary Science	52.9%	16.3%

Sciences showed the greatest degree of confidence in their ability to perform (if we exclude Technology from the comparisons because the N for that group by stage two of the study was small).

Confidence about receiving good human relations supervision

Of the chi-square tests only the Likelihood Ratio 101.86 (72 d.f.) was significant, $p < .01$. Cramer's V was non-significant at .26. Lambda with supervision dependent was .09836 with an ASE of .05719. Goodman and Kruskal's tau with human relations supervision dependent was .07549 (ASE = .01464), $p < .05$. Therefore, 7% to 9% of error reduction could be expected. Eta with human relations supervision dependent was .38648, giving an 100 Eta² of

about 15%. The responses using categories 0 to 8 were crosstabulated as shown in Table 6.46.

Table 6.45 Performance Self-efficacy of Academic Groups

GROUP	Count Row Pct Col Pct	Performance Self-efficacy						Row Total
		2	4	5	6	7	8	
Sciences	1				1 5.3 2.6	9 47.4 17.3	9 47.4 15.8	19 11.8
	2			2 14.3 25.0	1 7.1 2.6	4 28.6 7.7	7 50.0 12.3	14 8.7
Accountancy	3	1 3.4 100.0	3 10.3 60.0		7 24.1 18.4	15 51.7 28.8	3 10.3 5.3	29 18.0
	4				4 50.0 10.5	2 25.0 3.8	2 25.0 3.5	8 5.0
Horticulture	5			3 7.0 37.5	7 16.3 18.4	13 30.2 25.0	20 46.5 35.1	43 26.7
	6				3 50.0 7.9	2 33.3 3.8	1 16.7 1.8	6 3.7
Technology	7						4 100.0 7.0	4 2.5
	8			2 18.2 25.0	4 36.4 10.5	2 18.2 3.8	3 27.3 5.3	11 6.8
Social Sciences	9				6 60.0 15.8	2 20.0 3.8	2 20.0 3.5	10 6.2
	10		2 11.8 40.0	1 5.9 12.5	5 29.4 13.2	3 17.6 5.8	6 35.3 10.5	17 10.6
Column Total		1 .6	5 3.1	8 5.0	38 23.6	52 32.3	57 35.4	161 100.0

Where the differences lie is not very clear from Table 6.46, but some differences appear notable. The Science group's use of the 7th category was atypical in that 31.6% used this as

against 14.9% of all respondents. At the other extreme of the scale, 14.3% of Computer Science, 25% of Technology and 20% of Social Sciences rated themselves as having no confidence at all about receiving good human relations supervision as compared to 5% of all respondents using this category. However, the technology percentage is inflated and should be excluded from comparison because of its very small N, 25% in this case represents only one individual.

Table 6.46 Group Differences in Human Relations Supervision Self-Efficacy

		HUMAN RELATIONS SUPERVISION SELF-EFFICACY							Row Total
GROUP	Count Row Pct Col Pct	0	1	2	3	4	5	6	
Sciences	1				1 5.3 7.1		3 15.8 21.4	5 26.3 15.6	19 11.8
Computer Science	2	2 14.3 25.0		1 7.1 12.5	2 14.3 14.3	2 14.3 11.1	2 14.3 14.3	1 7.1 3.1	14 8.7
Accountancy	3		1 3.4 25.0		1 3.4 7.1	5 17.2 27.8	3 10.3 21.4	7 24.1 21.9	29 18.0
Business Studies	4		1 12.5 25.0	2 25.0 25.0	1 12.5 7.1			1 12.5 3.1	8 5.0
Horticulture	5	3 7.0 37.5	1 2.3 25.0	3 7.0 37.5	4 9.3 28.6	4 9.3 22.2	1 2.3 7.1	12 27.9 37.5	43 26.7
Agriculture	6			1 16.7 12.5	1 16.7 7.1	2 33.3 11.1			6 3.7
Technology	7	1 25.0 12.5			1 25.0 7.1	1 25.0 5.6	1 25.0 7.1		4 2.5
Humanities	8		1 9.1 25.0				2 18.2 14.3	1 9.1 3.1	11 6.8
Social Sciences	9	2 20.0 25.0		1 10.0 12.5	1 10.0 7.1	2 20.0 11.1	1 10.0 7.1	2 20.0 6.3	10 6.2
Veterinary Science	10				2 11.8 14.3	2 11.8 11.1	1 5.9 7.1	3 17.6 9.4	17 10.6
(Continued)	Column Total	8 5.0	4 2.5	8 5.0	14 8.7	18 11.2	14 8.7	32 19.9	161 100.0

(Table 6.46 continued)

		SUPERVISION SELF-EFFICACY		
	Count Row Pct Col Pct			Row Total
GROUP		7	8	
Sciences	1	6	4	19
		31.6	21.1	11.8
		25.0	10.3	
Computer Science	2		4	14
			28.6	8.7
			10.3	
Accountancy	3	7	5	29
		24.1	17.2	18.0
		29.2	12.8	
Business Studies	4	3		8
		37.5		5.0
		12.5		
Horticulture	5	5	10	43
		11.6	23.3	26.7
		20.8	25.6	
Agriculture	6		2	6
			33.3	3.7
			5.1	
Technology	7			4
				2.5
Humanities	8	1	6	11
		9.1	54.5	6.8
		4.2	15.4	
Social Sciences	9	1		10
		10.0		6.2
		4.2		
Veterinary Science	10	1	8	17
		5.9	47.1	10.6
		4.2	20.5	
Column Total		24 14.9	39 24.2	161 100.0

6.6.2 Quality of life measures

The effect of different domains of satisfaction are examined in chapter seven in relation to hypothesis eight as variables which are associated with subjective well-being. The quality of life measures of Campbell, Converse and Rodgers (1976) are reported in Table 6.47. There were significant differences among the academic groups for only some of these measures, that is, for satisfaction with health and disabilities, with life and with location, as reported in

Table 6.47 Distribution of Respondents' Satisfaction Rating Scores (1 = dissatisfied, 7 = satisfied) on the Quality of Life Measures of Campbell, Converse and Rodgers (1976). For Domain Importance (1 = extremely important, 7 = Not at all important)

Satisfaction Domain	Rating Scores							N
	1	2	3	4	5	6	7	
Location	1.5	11.9	13.4	13.9	16.0	25.3	18.0	194
Neighbourhood	2.6	9.3	8.2	18.0	13.9	29.9	18.0	194
Living accommodation	1.0	6.7	10.3	10.8	21.0	29.7	20.5	195
Life in New Zealand	1.6	4.1	9.3	20.7	21.2	29.0	14.0	193
Amount of education	0.5	2.1	9.7	9.7	12.3	35.4	30.3	195
Usefulness of education	0.5	3.6	4.1	10.8	23.6	39.0	18.5	195
Job	6.5	7.1	7.1	14.7	20.1	32.6	12.0	184
Leisure	1.0	11.3	13.3	12.8	25.1	26.7	9.7	195
Health	0.0	2.6	4.6	6.7	15.4	36.4	34.4	195
Standard of living	1.0	4.1	11.8	13.3	26.2	27.7	15.0	195
Savings	9.7	17.4	17.4	14.4	15.4	14.4	11.3	195
Friendships	4.1	6.7	15.5	10.8	16.0	27.8	19.1	194
Love satisfaction	5.9	12.4	11.3	9.1	13.4	23.7	24.2	186
Family life	0.5	7.7	10.3	14.4	23.1	29.2	14.9	195
Homemaking activities	0.5	3.2	4.2	23.2	30.5	29.5	8.9	190
Job compared with friends	4.2	8.9	10.0	20.5	21.1	26.8	8.4	190
Domain Importance								
Location importance	19.5	36.9	22.6	10.3	6.2	2.6	2.1	195
Accommodation importance	22.1	40.5	21.0	6.2	5.1	4.1	1.0	195
Importance of N.Z. life	29.0	37.8	20.7	8.3	2.1	1.0	1.0	193
Education amount	25.8	41.8	18.0	8.8	3.6	1.5	0.5	194
Health importance	61.0	29.2	5.6	3.1	0.5	0.5	0.0	195
Savings importance	19.0	27.2	22.6	19.0	5.6	3.1	3.6	195
Friends importance	57.9	25.1	9.7	4.1	2.1	1.0	0.0	195
Intimate relationships	43.6	31.8	14.4	5.6	1.0	2.6	1.0	195
Family importance	39.0	34.9	13.3	9.2	1.0	2.6	0.0	195
Home importance	1.7	16.1	22.8	29.4	21.1	8.9	0.0	180
Living standard	16.9	34.9	26.7	13.8	3.1	2.6	2.1	195
Neighbourhood	14.4	33.3	26.7	12.8	8.7	2.6	1.5	195
Education use	32.3	41.0	14.4	8.2	2.1	1.5	0.5	195
Job importance	30.9	41.2	19.1	6.2	2.1	0.5	0.0	194
Leisure importance	47.2	32.3	12.8	5.1	2.1	0.5	0.0	195

this section. Further statistics such as the measures of central tendency, the standard deviation and the range are reported in Appendix M.

Health and disabilities

The question asking respondents about their health and disabilities found that 85.2% rated themselves to be in excellent health, 14.5 % stated they had a disability which would affect employment and 0.3% said they had more than one disability which would affect their employment. No significant differences among academic groupings were found.

Life satisfaction

For both stages of the study the life satisfaction categories were collapsed such that on the scale of 1 to 7 (with 7 = completely satisfied and 1 = completely dissatisfied), 1 to 2 was recoded to low satisfaction, 2 to 5 medium satisfaction, and 6 to 7 high satisfaction. The life satisfaction of all groups at stage one of the study appeared similar and degree of satisfaction appeared unchanged by stage two of the study, that is six months into the year post-graduation, as shown in Table 6.48.

Table 6.48 A Comparison of the Distribution of the Life Satisfaction of Respondents at Time One and Two of the Study (Final Year University and the Following Year)

	% Low life satisfaction	% Medium life satisfaction	% High life satisfaction	N
Prior to graduation	4.9	56.1	39.0	367
Post graduation	7.0	57.8	35.2	199

Satisfaction with Location

Satisfaction with location at time one tended to be homogeneous for the different academic groups. For N=367 the proportion of responses were distributed among the 1 to 7 categories of satisfaction (with 7 = satisfied) as shown in Table 6.49.

Even when the ratings were collapsed into three categories (low, medium and high satisfaction) no significant differences among the academic groups were found. Satisfaction with location was higher at time two.

Table 6.49 A comparison of Percentage Satisfied with Location (on a 1 to 7 Scale, 1 = dissatisfied, 7 = satisfied) for Both Stages of the Study

Satisfaction Rating	Percentage Time One (N=367)	Percentage Time Two (N=194)
1	20.7	2.0
2	33.0	9.7
3	19.6	15.7
4	11.4	12.2
5	9.3	13.7
6	5.7	26.4
7	0.3	20.3
	100.0	100.0

6.6.3 Leisure activities

With respect to the number of leisure activities at time two there were no significant differences among the groups and 10.1% undertook a single leisure activity, 32.3% engaged in 2 leisure activities and the remaining 57.6% engaged in three leisure activities (N=198).

For leisure satisfaction (satisfaction with way free time is spent), reducing the seven point scale to low, medium and high satisfaction, showed 14.1% fell into the low category, 50.3% into the medium category and 35.7% into the high category¹ (N=199).

6.6.4 The relationship between leisure and work

The question concerned with the relative importance of work and leisure produced no significant differences among the groups. Responses (N=191) were distributed among the categories such that the job was considered more important than leisure activities by 17.3%,

¹ To produce the low satisfaction category, categories 1 and 2 were collapsed; categories 3, 4 and 5 became the medium satisfaction category; categories 6 and 7 became the high satisfaction category.

the job and leisure activities were considered to be of equal importance by 57.6% and the job was viewed as less important than leisure by 24.6% with .5% regarding this question as not applicable to them.

6.6.5 Subjective well-being

For subjective well-being at time one there were some differences among groups but only at the .05 level. The Likelihood Ratio was 31.73385 with 20 d.f., $p < .05$. Cramer's V was not significant. Lambda with the Index of Well-Being at time one dependent was .04348. Goodman and Kruskal's tau was .19616 (ASE = .06772), $p < .03413$, giving about a 20% reduction in prediction error. Eta with the Index of Well-being at time one dependent was .47466, thus giving a reasonable $100\eta^2$ of 22.2%.

The maximum index of well-being score was 14. The categories were collapsed such that 1 to 5 was recoded low well-being, 6 to 10 medium well-being, and 11 to 14 high well-being. The largest percentage (72.9%) fell into the medium well-being category, the next largest percentage (22.4%) into the high well-being category and the remaining percentage (4.7%) into the low well-being group (N=85).

The groups with a percentage falling into the low well-being category were Computer Science (16.7%), Accountancy (11.1%), Horticulture (5%) and Technology (12.5%). The academic groups which had a percentage falling into the high well-being category were Sciences (21.4%), Horticulture (45%), Humanities (20%), Social Science (60%) and Veterinary Science (50%). Any differences seemed to lie in groups such as Veterinary Science and Social Science where the largest percentage reported high well-being. For these groups, 60% of the Social Sciences and 50% of the Veterinary Sciences reported their subjective well-being to be high which is in contrast to the 22.4% for the respondents overall.

At time two there were no significant differences among the groups with respect to well-being. However, as at time one, most rated themselves as experiencing a medium level of well-being (78.0%) and a smaller percentage rated themselves as experiencing either higher (8.5%) or lower well-being (12.8%) (N=47).

Happiness

For happiness at stage two of the study no significant differences emerged among the academic groups. Overall (N= 194), 22.7% said they were very happy, 67.5% said they were pretty happy and 9.8% said they were not too happy.

6.7 Differences and similarities among academic groups for Social Support Variables

The social support statements can be grouped into social support questions asked in a matrix response format in relation to a number of people in different relationships with the respondent. The other type of social support question asked for a Yes or No response rather than using a rating category to do with how true the statement was for the respondent. The matrix questions are discussed first.

The social support responses for the questions presented in matrix format were summarised by grouping those statements which indicated the statements were true to some extent (either very true, somewhat true or a little true) and those responses which indicated the statements were not true for that individual (not too true, and not at all true) into two categories respectively. A third category was that of the statement being not applicable to a respondent.

6.7.1 Superficiality of social relationships

In relation to the statements like "My relationship with my wife/husband, girlfriend etc. is pretty superficial" there were no significant differences among the groups for the relationships reported in Table 6.50 except for the relationship with the boss (the distributions of the sum of the "true" "not true" categories are given). Table 6.50 shows respondents regard their relationships with their intimate friends, other friends, relatives and their workmates as not superficial. However, the relationships with neighbours, and the boss tended to be rated as superficial.

Table 6.50 Distribution of Responses which Agreed or Disagreed with Statements about the Superficiality of Relationships (N = 187)

Relationship	% of summed "true" responses	% of summed "not true" responses	% "Not applicable"	N
Intimate	14.5	82.9	2.6	187
Friends	14.5	82.9	2.6	187
Neighbours	53.5	17.7	28.8	187
Relatives	18.1	78.2	3.7	188
Workmates	31.5	51.5	17.0	188
Boss	47.8	35.7	16.5	188

Superficiality of relationship with boss

Most groups were almost evenly divided as to whether their relationship with their boss was superficial or not. However, a larger percentage of the Veterinary Science group (81.3%) said their relationship with their boss tended to be superficial. The differences among groups for superficial relationship with the boss were significant but only at the .05 level (The Likelihood Ratio chi-square was 61.63, d.f. 45).

6.7.2 Able to talk about personal concerns

The distributions of the sum of the true and not true categories for being able to talk about personal concerns ("I talk about my personal concerns and difficulties with my wife/husband, girlfriend etc.") is given in Table 6.51. Of these there were significant differences among the academic groups only for talking about personal concerns to the boss. With respect to the other relationships, those talked to about personal concerns by the sample were partners, friends, relatives and workmates.

Talk about personal concerns to boss

The significant difference among the academic groups with respect to talking about personal concerns with the boss is displayed in Table 6.52. The percentage rating this question as non applicable was 21.5. The Pearson chi-square value of 78.96 with 45 d.f. was significant at the .001 level. The Likelihood Ratio was 75.65 with 45 d.f., $p < .01$. Cramer's V of

.28753 was significant ($P < .001$). Lambda was .14388 ($ASE = .05070$). The Goodman and Kruskal tau with 'talk to boss' dependent .07673, the ASE was .01878, $p < .00531$. The eta was .31335, thus about 10% of the variance in talking to boss about stresses and strains in life was associated with academic grouping. The differences among the groups appeared to lie mainly in the atypical responses of the Veterinary Science group which had 31.3% rating this statement somewhat true, as compared to 5.8% of the respondents overall.

Table 6.51 Percentage of "Talk about Personal Concerns" Statement in the True and Untrue Categories

	% of summed "true" responses	% of summed "not true" responses	% "Not applicable"	N
To wife/husband	13.3	0%	86.7	188
To girl/boyfriend	44.5	02.1	53.4	191
To friends	89.0	10.0	01.1	190
To neighbours	11.1	62.5	26.5	189
To relatives	73.3	22.0	04.7	199
To workmates	48.2	31.4	20.4	191
To boss	08.9	69.6	21.5	191

6.7.3 Being able to rely on others

For the matrix of social support responses to the statement, "I can rely on my wife/husband, girlfriend etc... for help when things get tough", the distribution of the sum of the "true" and "not true" type of responses are given in Table 6.53. A majority of the respondents rated themselves as relying on those in an intimate relationship, on friends, relatives and the boss. There were no significant differences among the groups, meaning that the sample as a whole responded in a similar manner to this statement as it applied to their wife, friends etc.

As would be expected, neighbours and the boss were relied upon less than others in a more intimate type of relationship.

Table 6.52 Degree to which Statements about Talking to the Boss were True for the Academic Groups

GROUP	Count Row Pct Col Pct	TALK TO BOSS					Row Total
		VERY TRUE	SOMEWHAT TRUE	A LITTLE TRUE	NOT TOO TRUE	NOT AT ALL TRUE	
		1	2	3	4	5	
Sciences	1		1 3.2 9.1	6 19.4 14.3	9 29.0 23.1	7 22.6 13.5	31 16.2
Computer Science	2		1 5.3 9.1	2 10.5 4.8	5 26.3 12.8	3 15.8 5.8	19 9.9
Accountancy	3			7 23.3 16.7	3 10.0 7.7	17 56.7 32.7	30 15.7
Business Studies	4	1 11.1 16.7		2 22.2 4.8	3 33.3 7.7	2 22.2 3.8	9 4.7
Horticulture	5	4 8.0 66.7	3 6.0 27.3	9 18.0 21.4	6 12.0 15.4	16 32.0 30.8	50 26.2
Agriculture	6			3 42.9 7.1	1 14.3 2.6	1 14.3 1.9	7 3.7
Technology	7	1 25.0 16.7			2 50.0 5.1	1 25.0 1.9	4 2.1
Humanities	8			5 38.5 11.9	3 23.1 7.7	2 15.4 3.8	13 6.8
Social Sciences	9		1 8.3 9.1	2 16.7 4.8	3 25.0 7.7	3 25.0 5.8	12 6.3
Veterinary Science	10		5 31.3 45.5	6 37.5 14.3	4 25.0 10.3		16 8.4
Column Total		6 3.1	11 5.8	42 22.0	39 20.4	52 27.2	191 100.0

Table 6.53 Distribution of Responses which Agreed or Disagreed with Statements about Being Able to Rely on Others

Relationship	% of summed "true" responses	% of summed "not true" responses	% "Not applicable"	N
Husband/wife	12.9	0.5	86.8	186
Girl/boyfriend	45.8	1.1	53.2	188
Friends	93.6	4.8	1.6	187
Neighbours	22.1	50.3	27.6	185
Relatives	87.2	9.6	3.2	187
Boss	48.9	32.3	18.8	186
Workmates	10.6	63.9	25.5	188

6.7.4 Not wishing to burden others

Table 6.54 Distributions of Responses Concerned with Not Wishing to Burden Others with Own Difficulties

Relationship	% of summed "true" responses	% of summed "not true" responses	% "Not applicable"	N
Wife/husband	6.9	4.8	88.4	189
Girl/boyfriend	10.4	33.8	55.7	192
Neighbours	38.1	22.7	39.2	189
Friends	43.1	52.2	2.7	188
Relatives	48.1	46.1	5.8	189
Boss	49.0	27.9	23.2	190
Workmates	47.4	32.1	20.5	190

For the responses to the statement " I do not talk to my wife/husband, girlfriend etc... about my problems or difficulties because I don't want to burden him/ her/ them" there were no significant differences among the academic groups. The distribution of the sum of the true/not true responses in relation to each of the relationships (wife, friends etc.) was as in Table 6.54. The sample was almost evenly split in saying whether this statement was true for them

or not. Slightly more of the respondents said they did not wish to burden their wife or husband, their neighbours, their friends, relatives, boss and workmates (see Table 6.54).

6.7.5 Fear of loss of respect

For the statement "I do not talk to my wife/husband, girlfriend etc..about my problems because I am afraid he/she will lose respect for me" where no significant differences among the academic groups were found, the responses were distributed as in Table 6.55. There was not a fear of loss of respect among those in an intimate relationship or with friends, neighbours, relatives, the boss or workmates.

Table 6.55 Distribution of Responses Concerned with not Talking about Difficulties to Others for Fear of Loosing Their Respect

Relationship	% of summed "true" responses	% of summed "not true" responses	% "Not applicable"	N
Wife/husband	2.1	10.6	87.3	189
Girl/boyfriend	5.2	40.9	53.9	191
Friends	13.8	84.6	1.6	188
Neighbours	19.2	42.2	38.5	187
Relatives	15.5	79.2	5.3	187
Boss	30.4	47.3	22.3	188
Workmates	28.2	51.1	20.7	188

6.7.6 Others going out of their way to be helpful and offer support

For the statement about others going out of their way to be helpful for example, "My wife/husband, girlfriend etc. goes out of his/her/their way to be helpful when I am down", the findings for the different relationships are shown in Table 6.56. The majority of the respondents said the others offering them such support were those in an intimate relationship, friends and the boss. Neighbours, on the other hand were not said (by 23.5% of the sample) to go out of their way to offer support.

Table 6.56 Percentage Responding to the Statement that Others Offer Help Was True (Sum of The True Type of Responses) and Not True (Sum of Responses Saying not too true and not at all true)

Relationship	% of summed "true" responses	% of summed "not true" responses	% "Not applicable"	N
Wife offers help	14.3	0.0	85.7	189
Girl/boyfriend	44.6	2.0	53.4	191
Friends	92.1	6.8	1.1	190
Neighbours	23.5	49.8	26.7	191
Boss	52.8	27.8	19.4	191

Relatives going out of their way to be helpful

In the case of the statement "My relatives go out of their way to be helpful when I am down" for N=191, there were significant differences among the academic groups. The Pearson chi-square was 64.76 (45 d.f.), $p < .05$ but the Likelihood Ratio of 73.33 (45 d.f.) was significant at the .01 level. Cramer's V of .26041 was significant $p < .05$. Lambda with relatives helpful dependent was .08871 (ASE = .06487). The Goodman and Kruskal tau value was .06824 (ASE = .01668), $p < .05$. Therefore, about 6% to 8% of error reduction (dependent on the estimate used) in prediction is likely. Eta with relatives helpful dependent was .22932 showing about 6% of the variance to be shared.

For some of the groups the responses to the statement were all located in only one of the true response categories. For other groups a percentage did not find their relatives to be helpful. These latter groups were Computer Science (15.8%), Accountancy (23.3%), Horticulture (10%), Humanities (15.4%), Social Sciences (25%) and Veterinary Science (18.8%). Only 5.2% said this statement was not applicable to them. Table 6.57 gives the crosstabulation of relatives helping by academic group.

Workmates go out of their way to be helpful

For the statement " My workmates go out of their way to be helpful when I am down", the Pearson chi-square was non-significant. However, The Likelihood Ratio was significant with a value of 74.82 (45 d.f.), $p < .01$. Cramer's V was non-significant. Lambda with

worknates helpful dependent was .09375 (with an ASE of .04337). Goodman and Kruskal's tau was significant. It was .07324 (ASE = .01642), $p < .01$. Thus a 7% or 9% reduction of error in prediction is likely. Eta was .20349 giving a shared variance of only about 4%.

Table 6.57 Academic Group Responses Relating to Relatives Going out of Their Way to be Helpful

GROUP	Count Row Pct Col Pct	RELATIVES HELP					Row Total
		VERY TRUE	SOMEWHAT TRUE	A LITTLE TRUE	NOT TOO TRUE	NOT AT ALL TRUE	
		1	2	3	4	5	
Sciences	1	13	10	4			31
		41.9	32.3	12.9			16.2
		22.0	14.9	12.5			
Computer Science	2	6	6	4	3		19
		31.6	31.6	21.1	15.8		9.9
		10.2	9.0	12.5	16.7		
Accountancy	3	8	6	9	3	4	30
		26.7	20.0	30.0	10.0	13.3	15.7
		13.6	9.0	28.1	16.7	80.0	
Business Studies	4	5	3	1			9
		55.6	33.3	11.1			4.7
		8.5	4.5	3.1			
Horticulture	5	15	16	10	5		50
		30.0	32.0	20.0	10.0		26.2
		25.4	23.9	31.3	27.8		
Agriculture	6	2	4	1			7
		28.6	57.1	14.3			3.7
		3.4	6.0	3.1			
Technology	7	2	2				4
		50.0	50.0				2.1
		3.4	3.0				
Humanities	8	6	3	2	1	1	13
		46.2	23.1	15.4	7.7	7.7	6.8
		10.2	4.5	6.3	5.6	20.0	
Social Science	9		8		3		12
			66.7		25.0		6.3
			11.9		16.7		
Veterinary Science	10	2	9	1	3		16
		12.5	56.3	6.3	18.8		8.4
		3.4	13.4	3.1	16.7		
Column (Continued) Total		59	67	32	18	5	191
		30.9	35.1	16.8	9.4	2.6	100.0

(Table 6.57 continued)

GROUP	Count		RELATIVES		HELP
	Row	Pct	N.A.		Row Total
	Col	Pct			
			6		
Sciences	1		4		31
			12.9		16.2
			40.0		
Computer Science	2				19
					9.9
Accountancy	3				30
					15.7
Business Studies	4				9
					4.7
Horticulture	5		4		50
			8.0		26.2
			40.0		
Agriculture	6				7
					3.7
Technology	7				4
					2.1
Humanities	8				13
					6.8
Social Sciences	9		1		12
			8.3		6.3
			10.0		
Veterinary Science	10		1		16
			6.3		8.4
			10.0		
	Column Total		10 5.2		191 100.0

Some differences among groups are apparent from examination of the crosstabulation (Table 6.58). Those groups where a smaller percentage did not find workmates helpful in this way were, Sciences (3.2%) and Social Sciences (8.3%). For the other groups the percentages ranged from 14.3% for Agriculture to 33.3% for Accountancy. However, 17.3% of respondents said this statement was not applicable to them.

Table 6.58 Academic Group Differences for Workmates Helping

GROUP	Count Row Col	Pct Pct	WORKMATES HELPING					Row Total
			VERY TRUE	SOMEWHAT TRUE	A LITTLE TRUE	NOT TOO TRUE	NOT AT ALL TRUE	
			1	2	3	4	5	
Sciences	1		4	12	6	1		31
			12.9	38.7	19.4	3.2		16.2
			17.4	19.0	15.4	3.8		
Computer Science	2			7	2	3	1	19
				36.8	10.5	15.8	5.3	9.9
				11.1	5.1	11.5	14.3	
Accountancy	3		4	4	11	7	3	30
			13.3	13.3	36.7	23.3	10.0	15.7
			17.4	6.3	28.2	26.9	42.9	
Business Studies	4			6	2			9
				66.7	22.2			4.7
				9.5	5.1			
Horticulture	5		5	17	10	7	2	50
			10.0	34.0	20.0	14.0	4.0	26.2
			21.7	27.0	25.6	26.9	28.6	
Agriculture	6		1	3		1		7
			14.3	42.9		14.3		3.7
			4.3	4.8		3.8		
Technology	7		1	1	1	1		4
			25.0	25.0	25.0	25.0		2.1
			4.3	1.6	2.6	3.8		
Humanities	8		3	3		3		13
			23.1	23.1		23.1		6.8
			13.0	4.8		11.5		
Social Sciences	9		2	7		1		12
			16.7	58.3		8.3		6.3
			8.7	11.1		3.8		
Veterinary Science	10		3	3	7	2	1	16
			18.8	18.8	43.8	12.5	6.3	8.4
			13.0	4.8	17.9	7.7	14.3	
(Continued)	Column Total		23	63	39	26	7	191
			12.0	33.0	20.4	13.6	3.7	100.0

(Table 6.58 continued)

GROUP	Count		WORKMATES HELPING	
	Row	Pct	N.A.	Row Total
	Col	Pct		
			6	
	1		8	31
Sciences		25.8	16.2	
		24.2		
	2		6	19
Computer		31.6	9.9	
Science		18.2		
	3		1	30
Accountancy		3.3	15.7	
		3.0		
	4		1	9
Business		11.1	4.7	
Studies		3.0		
	5		9	50
Horticulture		18.0	26.2	
		27.3		
	6		2	7
Agriculture		28.6	3.7	
		6.1		
	7			4
Technology			2.1	
	8		4	13
Humanities		30.8	6.8	
		12.1		
	9		2	12
Social		16.7	6.3	
Sciences		6.1		
	10			16
Veterinary			8.4	
Science				
	Column		33	191
	Total		17.3	100.0

6.7.7 Others really care

For the statements about others really caring "My wife/husband, girlfriend etc... really cares about how things are going for me", no significant differences among academic groups were apparent (see Table 6.59). The majority of respondents said those in an intimate relationship with them cared and their friends, relatives, boss and workmates really cared. Only neighbours were regarded as not really caring.

Table 6.59 Academic Group Responses to the Statement that Others Really Care

Relationship	% of summed "true" responses	% of summed "not true" responses	% "Not applicable"	N
Wife/husband cares	13.8	0.0	86.2	189
Girl/boyfriend	44.5	1.0	54.5	191
Friend	97.4	1.6	1.0	191
Neighbours	33.2	42.6	24.2	190
Relatives	92.2	6.8	1.0	191
Boss	72.0	12.6	15.4	190
Workmates	74.8	8.9	16.3	191

6.7.8 Other social support statements

For the following social support questions (with Yes/No response alternatives) there were no significant differences among the academic groups. The statement "I have someone to talk to about any personal problems" had 91.0% agree with this but 8.3% say they had no such social support (N=193). For the statement "I prefer to keep my worries and my problems to myself", 56.0% said "yes" to this and 44.0% said "no" (N=191). In response to the statement "I have someone other than my wife/husband/girlfriend/boyfriend with whom I can talk about things that bother me" 83.9% agreed and 16.1% disagreed (N=193). The greater percentage appeared to have social support beyond that found in their most intimate relationships. For the statement "I usually talk personal problems through with at least one other person" 71.5% agreed with the statement and 28.5% (N=193) said they did not talk over problems with another person. In response to the statement "I have a number of friends in the community where I live" 56.0% said this statement was true for them while 44.0% (N=193) said they did not have such friends. For the statement "I have friends who would be willing to give me a hand with household tasks and projects" of the 191 responding to this question 86.4% said they did have friends who would do this and 13.6% said they did not. For the statement "I have friends who would lend me money if I needed it" of the 192, 91.7% said "yes" and 8.3% said "no".

6.8 Summary

In the case of the work adjustment variables correspondence between work needs and reinforcers occurred in most cases. Social status need-reinforcer correspondence occurred for the Accountancy, Business Studies and Computer Science groups. However, Social Sciences and the Sciences group tended to have their social status work needs met to a lesser extent than did the sample overall. The job satisfaction findings identified those areas expected to be less satisfying in the early stage of employment, areas such as authority, recognition and social status satisfaction. The tenure related measures had indicated students expected to remain in their jobs for a shorter time than others in the same position and they expected to remain about two years.

A higher level of self-efficacy was evident at stage two of the study with the most frequently used categories being 6, 7 and 8 at the extremely confident end of the scale. Only Accountancy and Horticulture showed low self-efficacy and that was in relation to their work fitting into their lifestyle. The same academic groups tended to demonstrate higher self-efficacy for each of the different work need items. They were the Veterinary group, Humanities, Technology, Sciences, Accountancy, Computer Science and Horticulture. These same groups reported a higher level of well-being with Veterinary Scientists and the Social Sciences groups reporting the highest level of well-being.

Of the quality of life measures as represented by the satisfaction domains, respondents were most satisfied with accommodation, their health, the amount and usefulness of their education and their job, followed by being satisfied with their location, with neighbours, friendships, intimate relationships, family life and homemaking. Of all the satisfaction domains respondents were the least satisfied with their savings. The importance of the same quality of life measures showed health and friendship to rate the highest followed by location, accommodation, the New Zealand way of life, the amount of education, intimate relationships and family life, all rated a '2'. Savings and housework were all rated less important again, '3' and '4').

With respect to the social support variables, the larger percentage reported having someone to talk to. With superficiality of relationships, a greater percentage rated their intimate relationships and friendships and relationships with relatives as non-superficial. However,

more regarded their relationships with neighbours and the boss as superficial. Respondents tended to talk about personal concerns to friends, relatives and to a lesser extent, workmates (Table 6.51). The Veterinary Scientists reported talking to their bosses more. Individuals relied most on their friends, both intimate and other. Individuals felt able to rely upon their friends most of all. A slight majority of respondents were not as concerned to burden friends with their difficulties, they tended to fear a loss of respect if they talked about their difficulties, and believed most individuals will offer support. Neighbours were thought to really care least of all. Overall respondents tended to rate neighbours as the least supportive (as based on all of the social support statements) followed by the boss and sometimes workmates. Those usually rated as being supportive were those in an intimate relationship, friends and relatives.

Although a slight majority did burden their contacts with their difficulties, this of course means that the other half did have such fears. More than half tended not to be concerned that talking about problems would bring disrespect upon themselves. However, the other half did have such concerns. The people viewed as going out of their way to offer support were mainly friends and those in an intimate relationship and, to a lesser extent, bosses. Some groups did not find relatives to be helpful. Workmates were found to be helpful and supportive less so for the Science and Social Science groups. Friends, intimate friends and relatives were viewed as really caring and a reasonable percentage (74.%) rated workmates and the boss (72.0%) as caring. A large percentage (83.9%) had individuals other than those with whom they were in an intimate relationship to whom they could talk. A high percentage had friends who would help them with household tasks (86.4%) and lend them money (91.7%). Overall more respondents rated job and leisure to be of equal importance.

From examining the intercorrelations of the expanded model, the self-efficacy measures appear to have a role to play even if only a limited one because of their small degree of association with other variables in the Dawis and Lofquist work adjustment model. On the basis of the sizes of correlations, many of the additional variables correlate to an equal or greater extent than the variables of Dawis and Lofquist's model. Of particular note (see Table 6.37) are the Personal Competence, well-being, job importance, leisure satisfaction, social reference group, job fits lifestyle, and general adjustment to places and locations, measures. These intercorrelations and others of this chapter are explored in chapter seven in a more formal manner through investigating the specific research hypotheses.

CHAPTER SEVEN

RESULTS: RESEARCH PROPOSITIONS AND HYPOTHESES

7.1 Dawis and Lofquist's individual propositions

The aspects of Dawis and Lofquist's work adjustment theory examined related to individuals' needs, reinforcers, level of satisfaction, satisfactoriness and tenure. The propositions investigated in the present study grouped again as in chapter five section 5.2.1, are those concerned mainly with job satisfaction (propositions III, VII and XIV), those concerned mainly with moderating relationships (propositions V and XII) and those concerned with job satisfaction and satisfactoriness together (propositions I, VIII and XVII), as shown in Figure 7.1. The statistical analyses included multiple regression and MANOVA using the Statistical Package for Social Sciences, version X (SPSS*).

7.1.1 Proposition III

Proposition III, "Satisfaction is a function of the correspondence between the reinforcer pattern of the work environment and the individual's values, provided that the individual's abilities correspond to the ability requirements of the work environment", was investigated. It is a particularly important proposition in any exploration of Dawis and Lofquist's theory of work adjustment because it is the one much of their own research and the research of others has been focused upon.

In the measurement of job satisfaction, the distribution of the scores for the single item measure was slightly skewed, as expected, with a larger percentage responding towards the positive or satisfied end of the scale (7 on the 1 to 7 scale). The mean was 5.0, the mode 6, and the median 5. The first three units at the dissatisfied end of the scale attracted 7% (21% in total) of the responses per unit, while 15% responded with a 4 (the central point on the scale). The fifth unit of the scale was used by 20%, the sixth by 32%, and the seventh unit (the positive end of the scale) was used by about 12%. Therefore, about 21% of the respondents used the dissatisfied end of the scale, 15% the mid-point of the scale, and about 65% rated themselves as satisfied.

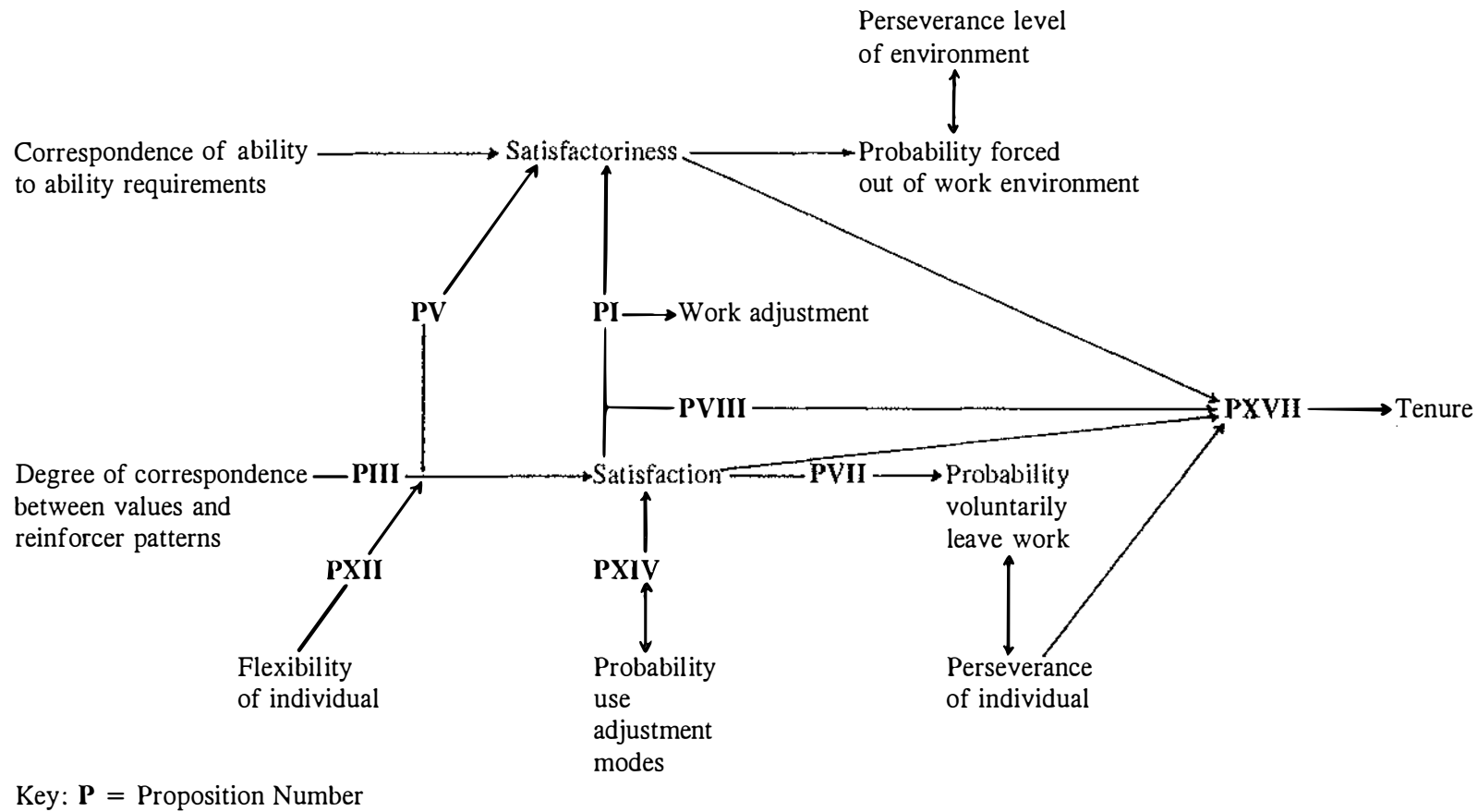


Figure 7.1 The Dawis and Lofquist propositions investigated in the present study

One method of examining the degree of correspondence between work needs and reinforcers is to correlate ratings of the needs which are important in a respondent's ideal job with those respondents believe are available to workers in that job generally. This was done for data from the second stage of the research, as given in Table 7.1. The only significant ($p < .001$) correlations between the needs seen as ideal and the work needs respondents' jobs reinforced, are shown in Table 7.1.

Table 7.1 Correlations Between Work Needs and Reinforcers Respondents Perceived to be Available in that Job Generally

Types of work needs and their reinforcers	Coefficients
	Pearson's r
Moral values	.38 ***
Company policies and practices	.27 ***
Security	.26 ***
Social service	.26 ***
Supervision (human relations)	.23 **
Independence needs	.19 **
Recognition needs	.16 *
Creativity needs	.13 *

Note. *** = $p < .001$, ** = $p < .01$, * = $p < .05$.

The needs which did not correlate significantly were, ability utilisation, achievement, activity, advancement, authority, compensation, co-workers, responsibility, social status, variety, supervision (technical) and working conditions. The magnitude of the significant correlations were small to moderate which suggests the degree of correspondence for any of the needs with their reinforcers may not be high.

The second and more usual method of creating need-reinforcer correspondence scores uses difference scores (the square of the differences between the work needs and the perceived reinforcers in the job) correlated with satisfaction scores, as in Tables 7.2 and 7.4. For example, the difference between the score achieved for ability utilisation ideally and the score

for the presence of that need in that job usually, as perceived by the respondent, was squared and then correlated with the satisfaction score for ability utilisation achieved on the Minnesota Satisfaction Questionnaire for that job. The correlations greater than .31 are of particular interest because there the amount of variance accounted for was at least 10%.

Table 7.2 Non Parametric Correlations of Need-Reinforcer Correspondence, Difference Scores Between Ideal Needs and Reinforcers Perceived to be in Existence, and Job Satisfaction Scores for each of the Needs, (N=162), $p < .05$

Work Needs	Correlation	Correlation Squared
Ability utilisation	.43**	.19
Achievement	.39**	.15
Activity	.19	.04
Advancement	.44**	.19
Authority	---	---
Company policies and practices	.34**	.12
Compensation	.41**	.17
Co-workers	.26	.07
Creativity	.48**	.23
Independence	---	---
Moral values	.12	.01
Recognition	.31	.10
Responsibility	.35**	.12
Security	.19	.04
Social service	----	----
Social status	---	---
Supervision (human relations)	.24	.06
Supervision (technical)	.48**	.23
Variety	.40**	.16
Working conditions	.28	.08

Note. ** = $p < .01$

Some of the correlations were small in size while others were moderate. Those producing moderate relationships with satisfaction were, ability utilisation, achievement, advancement, company policies and practices, compensation, creativity, recognition, responsibility, technical supervision and variety. The remainder produced either small or nonsignificant correlations. With reference to the r^2 column of Table 7.2, only creativity, technical supervision, ability utilisation, advancement, compensation correspondence scores were able to account for

approximately 20% of the variance in satisfaction scores, while compensation and achievement accounted for 17% and 15% of the variance, respectively.

One would expect the degree of satisfaction with the needs to be lower where there is no significant correlation between the ideal job and the perceived reinforcers of the job in question. That the variables were positively associated indicates the relationships were in the direction expected, satisfaction with needs was lower where correspondence was lower. However, for some needs, those exhibiting higher correlations coefficients in Table 7.2, correspondence appeared to be more strongly associated with job satisfaction.

Table 7.3 Rank Order of the Nonparametric Correlations from Table 7.2 of Need-Reinforcer Correspondence with Job Satisfaction for Individual Needs

Independence	NS
Social status	NS
Social service	NS
Authority	NS
Moral values	.12
Security	.19
Activity	.19
Supervision (human relations)	.24
Coworkers	.26
Working conditions	.28
Recognition	.31
Company policies and practices	.34
Responsibility	.35
Achievement	.39
Variety	.40
Compensation	.41
Ability utilisation	.43
Advancement	.44
Supervision (technical)	.48
Creativity	.48

The range of correlations in Table 7.3 of .12 to .48, and Table 7.4 of .17 to .43 for general satisfaction, compare favourably with those of previous research. Weiss, Dawis, England and Lofquist (1965) found cross-validated correlations of between .23 and .48. Using different indices of correspondence, significant correlations between job satisfaction and need-reinforcer correspondence ranging from .23 to .45 have been found (Betz, 1971) for female cashiers and sales personnel. For male and female clients together, followed up from a

vocational assessment clinic after a one to two year period, Lichter (1980) cited in Dawis and Lofquist (1984) found significant correlations of .37 and Rounds (1981) found correlations of .14 to .55, with a median correlation of .33. Correlations ranging from .18 to .34 resulted from a group of respondents more similar to those in the present research (Salazar, 1981). That is, the group used consisted of 69 graduates of a counsellor training programme who obtained positions in educational institutions.

Table 7.4 Needs-Reinforcer Correspondence Using Difference Scores, Correlated with the General Satisfaction (Composite) MSQ Score, and the Single Item Satisfaction Score

	General (N = 162)	Single Item Satisfaction (N = 186)
	r	r
Ability utilisation	.42 ***	.22 ***
Achievement	.43 ***	.23 ***
Activity	NS	.20 **
Advancement	.24 ***	.16 *
Authority	NS	.19 **
Company policies	.23 **	NS
Compensation	NS	NS
Coworkers	.22 **	NS
Creativity	.26 ***	.16 *
Independence	NS	NS
Moral values	.17 *	NS
Recognition	.26 ***	.30 ***
Responsibility	.26 ***	.15 *
Security	NS	NS
Social service	NS	NS
Social status	NS	NS
Supervision/human	.27 ***	NS
Supervision technical	.34 ***	NS
Variety	.35 ***	.14 *
Working conditions	.18 **	NS

Note. *** = $p < .001$, ** = $p < .01$, * = $p < .05$

The range of correlations between need-reinforcer correspondence and job satisfaction operationalised by a single-item measure was .14 to .30, refer column two of Table 7.4, but the range for the MSQ general measure was .17 to .43.

Multiple regression analysis of need-reinforcer correspondence regressed on job satisfaction in terms of the General Satisfaction Scale is given in Table 7.5. A multiple r of .50, and an r square of .25 resulted. Therefore, the need-reinforcer correspondence for all work needs accounted for 25% of the variance in satisfaction scores for all of the needs. Not all the work needs could be expected to correspond to a similar degree and for all respondents in all occupations. Some of the needs were not met at all. Also in Table 7.5 are the percentage of respondents achieving need-reinforcer correspondence for each of the needs. The mean percentage satisfied for the different correspondences was 61.6% (S.D. 6.6). Overall, reasonable levels of satisfaction were obtained, with around 65% of respondents rating themselves as satisfied. The range of being satisfied with the job with respect to the different work needs (50% to 72%) indicates that some work needs were being satisfied for half of the respondents and others for up to 72% of the respondents. Obviously the remaining percentage of the respondents were not satisfied in relation to these same work needs. Although the percentage column of Table 7.5 shows a similar percentage of respondents achieved need-reinforcer correspondence in the case of all the needs involved, in contrast the correspondence scores of the different needs contributed in differing amounts to the variance in the satisfaction scores.

The average squared correlations between the covariates (the need-reinforcers correspondence scores) and the predicted dependent variable (satisfaction), calculated via multiple analysis of variance using MANOVA in SPSS_x provided the proportions of variance in satisfaction scores accounted for by correspondence between each of the needs (as shown in the second column of Table 7.5). Not all of the need-reinforcer correspondences were involved in a relationship between work-need reinforcer correspondence. The individual need-reinforcer correspondence scores showing large variance estimates, between 17% and 28%, numbered only four. Only the first four listed in Table 7.5 had more than 10% of the variance in job satisfaction accounted for by need-reinforcer correspondence and of these achievement and ability utilisation accounted for a reasonable percentage of the variance (28% and 27%, respectively). Variety and supervision (both of the human relations and technical kind) followed closely, accounting for moderate amounts of shared variance 20% and 17%. The next highest group of work need-reinforcer correspondence accounting for variance in job satisfaction included recognition, responsibility, creativity and advancement. The next group steadily drop away to 06% and down to 04% in the case of working conditions. It seems apparent that important variables other than work need-reinforcer correspondence might be contributing to job satisfaction. It is also important to remember that for some work needs

anything from half to a quarter of the respondents did not experience correspondence for this to have any impact or otherwise on job satisfaction. That correspondence between needs and reinforcers accounts for only some of the variance in job satisfaction is of course evident in the r square (based on the multiple r) being only .25, that is, only 25% of the total variance was accounted for by need-reinforcer correspondence.

Table 7.5 Percentage of Respondents Achieving Need-Reinforcer Correspondence for each of the Needs and Average Squared Correlations of Correspondence Scores Regressed on Job Satisfaction (MSQ General Satisfaction Scale)

Need-Reinforcer Correspondence	Percentage	Manova average squared correlations
Achievement	63	.28
Ability utilisation	64	.27
Variety	61	.20
Supervision (technical)	53	.17
Supervision (human relations)	70	.03
Recognition	64	.06
Responsibility	60	.12
Creativity	56	.07
Advancement	55	.06
Company policies and practices	65	.02
Co-workers	72	.01
Working conditions	64	.04
Moral values	71	.00
Security	72	.00
Social service	64	.03
Activity	55	.01
Compensation	50	.01
Social status	53	.00
Independence	62	.00
Authority	58	.02
Mean 61.6%		
(N = 20, S.D. = 6.6%)		

With respect to Dawis and Lofquist's work values (factors derived from their factor analyses of work needs), the individual need-reinforcer correspondence scores showing the larger variance estimates were representative of their achievement, comfort and safety factors, (and the achievement, working conditions, policies and practices factors of the nonorthogonal rotation of the present research as discussed in the next chapter). The first two represented achievement and the second two comfort and safety, respectively. Those correspondence

scores showing some variance in common with satisfaction scores but to a lesser amount, ranging from 13% to 20%, represented the factors of safety, status, autonomy and altruism (and the policies, achievement, autonomy, altruism and working conditions factors of the non-orthogonal rotation of the present research, as discussed in the next chapter). The remainder of the correspondence scores contributed little, less than 10%, to the relationship between correspondence scores and were representative of the comfort, altruism and status factors only (which are the working conditions, altruism, achievement and autonomy factors of the present research). Five of the correspondence scores related to the comfort factor of the present research, and two each related to the altruism and status factors of Dawis and Lofquist's model. Five related to the working conditions, two to the autonomy and one each to the achievement and altruism factors of the present research. This suggests that not all of Dawis and Lofquist's factors are important to job satisfaction, at least in this respondent group.

7.1.2 Proposition VII

The seventh proposition that, "The probability that an individual will voluntarily leave the work environment is inversely related to the individual's satisfaction" was rephrased to enable investigation using the variables of the present study. By rephrasing this proposition as *the probability that the individual will remain in the work environment is positively related to the individual's satisfaction*, it can be examined by looking at expected tenure and job attachment as estimates of voluntarily leaving the environment. Using expected tenure, operationalised as years expected to stay in the job as the independent variable, only 4% of the variance was found to be shared between this and satisfaction ($r = .20$). Dawis and Lofquist's measure, the general job satisfaction score obtained from the MSS, correlated .15 with expected tenure, thus accounting for 2% of the variance.

If the proposition is reworded as above and job attachment is used to operationalise the statement "unlikely to voluntarily leave the work environment", a positive rather than an inverse relationship would be expected. Job attachment correlated .67 with the single-item job satisfaction measure and .51 with the General Satisfaction scale, giving an r square of .45 and .26, respectively.

Multiple regression analysis produced a multiple r of .66 with an r square of .44, that is 44% of the variance in job attachment is accounted for by the satisfaction measures. When

expected tenure, years expected to stay, was used as the dependent variable a smaller multiple r of .37 with an r square of .14 resulted. Satisfaction and degree of attachment to a job were more highly associated than were satisfaction and expected tenure.

7.1.3 Proposition XIV

This proposition stated that "The probability that the individual will use adjustment modes is inversely related to the individual's satisfaction". With reference to Table 7.6, inverse relationships were apparent for the active and reactive modes and for perseverance such that low satisfaction was associated with use of the adjustment modes. Dawis and Lofquist's proposition appears to hold for the active and reactive modes and for perseverance. However, both speed and effort would be expected to increase when satisfaction is low, and such inverse relationships are apparent in Table 7.6.

Table 7.6 Correlations Between Job Satisfaction and Work Adjustment Styles for the Single-item Job Satisfaction Measure and the General Satisfaction Scale of the MSQ

Job Satisfaction Correlation	Pearson's r		Manova average square	
	Single-item	MSQ	Single-item	MSQ
Correlated with Styles				
Active	-.30	-.26	.43	.39
Reactive	-.22	-.20	.24	.23
Flexibility	.15	.16	.11	.18
Perseverance	-.40	.39	.84	.83
Speed	-.40	-.35		
Effort	-.38	-.27		
Steadiness of pace	.12	.15		
Predictability of pace	.04	.12		
Endurance	.24	.15		

Both types of measures of satisfaction produced a very similar pattern of results. Lower satisfaction scores were more strongly associated with the use of the active than the reactive adjustment, and low satisfaction was associated with high perseverance but low flexibility. A single factor emerged from Principal Axis factoring of the adjustment styles. The significant intercorrelations among adjustment styles were those between active and flexibility

($-.17, p < .01$), active and perseverance ($.47, p < .0001$), reactive and perseverance ($.22, p < .01$) and reactive and active ($.25, p < .001$). The higher correlation between active adjustment style and perseverance is consistent with these two variables exhibiting the greatest degree of association with job satisfaction. The single factor found accounted for 28% of the variance. The reproduced correlation matrix produced residuals which were all less than .05 demonstrating a good fit between the original correlation matrix and the matrix of correlations of the one factor solution. Chi-square was also non-significant indicating the similarity among the variables. But within the single factor solution there appeared two subsets of variables such that active style and perseverance were largely responsible for the shared variance. Their communalities were .54 and .43 respectively whereas the communalities for flexibility and reactivity were only .06 and .11, respectively.

To summarise the results relating to propositions concerned with the adjustment modes, the probability that adjustment modes would be used did tend to relate inversely to individual level of satisfaction as Dawis and Lofquist proposed, but a large proportion of the variance was not accounted for. The correlations involved were either low or moderate. A single factor emerged when adjustment styles were factor analyzed, and the styles of active and perseverance had the largest communalities. The adjustment style variables correlated significantly with satisfaction indicating they are important variables in the work adjustment process.

7.1.4 Proposition V

The fifth proposition stated "Satisfactoriness moderates the functional relationship between satisfaction and value-reinforcer correspondence". Perceived satisfactoriness interacted significantly with some of the correspondence scores ($p < .001$) in the need/reinforcer correspondence affects job satisfaction relationship. The correspondence scores involved were those of authority, (.15), pay (.15), social status (.21), technical supervision ($-.14$), and variety ($-.25$). Therefore, when pay, authority, social status, technical supervision and variety are perceived as satisfactory this correspondence between these needs and their reinforcers will result in higher job satisfaction. In the case of technical supervision and variety, the effect correspondence had on satisfaction was not only different for different levels of satisfactoriness but the relationships were inverse ones. Therefore, in the case of high technical supervision correspondence scores produced high satisfaction when satisfactoriness was low, or low satisfaction when satisfactoriness was high. For the high variety need-

reinforcer correspondence scores, high satisfaction resulted when satisfactoriness was low, and low satisfaction when satisfactoriness was high.

With respect to the other correspondence scores with significant interactions, the relationships were positive. High correspondence produced high satisfaction only when satisfactoriness was high. Although the interaction terms were significant, the average squared correlations between the interaction terms (or moderating variable relating to satisfactoriness and the predicted dependent variable) were only .02 for authority, .02 for pay, .04 for social status, .02 for technical supervision, and .06 for variety. Therefore, the proportion of variance satisfactoriness accounted for in moderating the value-reinforcer correspondence was no greater than .06 for any one need-reinforcer correspondence term. For the remainder of the needs, satisfactoriness did not influence the effect of correspondence on satisfaction, that is, satisfactoriness was independent of satisfaction. This finding is consistent with the low to moderate relationship between the two which Dawis and Lofquist (1984) interpreted as indicative of relative independence.

That the construct of satisfactoriness was operationalised differently from the way Dawis and Lofquist had operationalised it may in itself help to account for its failure to moderate the relationship between need correspondence and job satisfaction for all the needs. Satisfactoriness did rely on self-ratings in the present instance. Because only some aspects of satisfactoriness were involved, composite scores may make all the variables appear independent. In this way those needs which are involved in a moderating relationship are most likely to be disguised and any interdependence of satisfaction and satisfactoriness go unnoticed. Also in a graduate group, satisfactoriness may be expected to be at a reasonable high base level anyway and by being less variable might be less of a moderator on the need-reinforcer-correspondence-affecting-job satisfaction compared with some other groups of employees.

7.1.5 Proposition XII

This proposition, "The flexibility of the individual moderates the functional relationship between satisfaction and value-reinforcer correspondence" was supported for most of the work values involved. The magnitude of the relationships between value-reinforcer correspondence terms and satisfaction were small to moderate and the amount of variance each correspondence term accounted for was limited, as shown in Table 7.7.

With reference to Table 7.7, only ability utilisation, achievement, advancement and variety value-reinforcer correspondence had a reasonable amount of variance in common with satisfaction. Advancement shared about twice as much of its variance with job satisfaction than with the other two needs. Of all the needs it is the only one which has more than half of its variance in common with job satisfaction. It can be considered the most important need-reinforcer correspondence in relation to job satisfaction. Flexibility acted as a moderator in the relationship between value-reinforcer correspondence and work satisfaction, as operationalised by the General Satisfaction Scale, MSQ, for some of the work values. The interaction terms which accounted for variance included, ability utilisation (.33), achievement (.29), responsibility (.13) social status (.13) and variety (.16), giving r squares of .12, .03, .02 and .02, respectively.

Flexibility had its greatest effect on ability utilisation and achievement. Responsibility and social status correspondence shared little variance and therefore were not associated to any meaningful degree. The interaction terms for these are not of any importance therefore, that is, if a relationship is of little significance knowing whether or not it is moderated by another variable is of little or no practical value.

7.1.6 Proposition I

With respect to Proposition I, "Work adjustment is at any time indicated by an individual's concurrent levels of satisfactoriness and satisfaction". Dawis and Lofquist (1984) include the construct of work adjustment in their propositions but not in their diagrams. This proposition is not presented as a causal statement as other of the propositions are. Work adjustment is not said to be a function of satisfaction and satisfactoriness but rather these are called indicators, they are work adjustment operationalised. Work adjustment is expected to be jointly influenced by both variables and could be said to be a function of them. But the emphasis in work adjustment theory was more on the work adjustment process and tenure as an outcome of that process rather than focusing on causes of high tenure.

Firstly, let us look at the relationship between work adjustment and job satisfaction as represented by tenure and job satisfaction. The two different measures of job satisfaction used were, the single item measure, and the Minnesota Satisfaction Questionnaire's General Satisfaction Scale (the 20 items of the MSQ, one from each of the twenty sub-scales which yields a score in the range 20 to 100). The two measures of tenure used were the respondents'

estimate of time expected to remain in the job and their self-reported job attachment. The correlation of the single item job satisfaction measure with job attachment at .67 and correlation of the MSQ general satisfaction scale and job attachment measure of .50, were higher than the correlation of .22 of the single item satisfaction measure and the expected tenure measure. These were also higher than the .20 correlation of expected tenure with the MSQ measure.

Table 7.7 Amount of Variance Need-Reinforcer Correspondence and Job Satisfaction Items Have in Common

	r Square
Achievement	.28
Ability utilisation	.27
Variety	.20
Creativity	.07
Recognition	.06
Advancement	.05
Working conditions	.04
Supervision (human)	.03
Social service	.03
Company policies & practices	.02
Authority	.02
Compensation	.01
Activity	.01
Independence	.01
Responsibility	.01
Co-worker relations	.01
Social status	.00
Supervision (technical)	.00
Security	.00
Moral values	.00

The magnitude of the relationship between job satisfaction and job attachment is of a size reasonable enough to support that part of Proposition I which expects a relationship between satisfaction and work adjustment, if the latter is operationalised as job attachment. Multiple regression analysis using the General Satisfaction Scale and individual self-report satisfactoriness items (from the self-efficacy scale at time two), as independent variables, and job attachment as the dependent variable, yielded a multiple r of .69 and an r square of .48. Job attachment therefore shared 48% of its variance with satisfaction and perceived

satisfactoriness. The items from the satisfactoriness scale were confidence that performance is good, confidence that skills and abilities can be exercised, confidence of adhering to rules and procedures, and confidence of promotability.

That work adjustment, operationalised by job attachment, and degree of satisfaction and satisfactoriness had nearly half of their variance in common supports Proposition I on the one hand, but also indicates these are not the only variables which account for the degree of work adjustment (as operationalised by job attachment). Dawis and Lofquist's proposition was supported only to the extent that job attachment operationalises work adjustment. In section 7.2 and Proposition XVII it is concluded that job attachment and tenure are probably not the same construct (Tenure has been found to be negatively related to job satisfaction in the literature as discussed in section 4.4.1 herein). It was thought job attachment may be predictive of work adjustment.

Therefore, although one of the major tenets of Dawis and Lofquist's theory, that work adjustment is a function of or indicated by concurrent levels of satisfaction and satisfactoriness, was supported to some degree, satisfaction and satisfactoriness were not found to contribute equally to work adjustment. Multiple regression analysis showed the amount of variance shared between satisfaction and job attachment alone to be around 41%. Each of the satisfactoriness measures were shown to produce r squares of only 4 to 5 percent in relation to tenure. However, when scores such as confidence about skills and abilities were used as estimates of satisfactoriness, up to 60% of the variance was accounted for. The satisfactoriness measures where less variance was accounted for may have influenced the work adjustment process less in the respondent group because many would have gained qualifications that are directly applicable to their occupation, thus increasing the likelihood of being satisfactory. In other words, they probably have the skills and abilities to do the work satisfactorily but may be unsatisfactory in a particular job in terms of other factors.

In discussing research relating to this proposition, Dawis and Lofquist argued that Proposition I required the relative independence of satisfactoriness and satisfaction. The correlations they quoted in support of this contention, correlations between sets of satisfactoriness and satisfaction scores for six occupational groups, ranged between .12 and .31. They concluded that the variance common to satisfactoriness and satisfaction did not exceed 10% for any of the groups. Dawis and Lofquist noted studies in the applied psychology literature which support the independence of job performance, satisfactoriness and job satisfaction (Brayfield,

1955; and Pervin, 1968). However, this relative independence of satisfaction and satisfactoriness was inconsistent with having these variables act as moderators for relationships affecting each other (as discussed in chapter four).

To examine Dawis and Lofquist's argument that Proposition I required the relative independence of satisfactoriness, the correlations between satisfaction scores and the satisfactoriness scores were examined, as reported in Table 7.8. With reference to this table, the measures used to operationalise satisfactoriness in testing Proposition I when correlated with satisfaction ranged from .19 ($p. < .05$) to .38 ($p. < .01$), with the variance common to satisfaction and satisfactoriness not exceeding 14%. These results were similar to those of Dawis and Lofquist, but satisfaction and satisfactoriness were slightly more related in the present study. It could be argued that correlations in the .30s can be called moderate, therefore to interpret them as representing relatively independent variables, as Dawis and Lofquist did, is erroneous. Also when Dawis and Lofquist state that the two variables are relatively unrelated they do not say relative to what. In their research and that of others to do with other aspects of their work, correlations of this same size are statistically significant and treated as supporting the existence of a relationship. For example Rounds, Dawis and Lofquist (1979) in the prediction of MIQ scale scores from biographical data items report validity coefficients ranging from .13 to .47 with a median of .35 as statistically significant and as supportive of their work.

When two other measures were used to operationalise satisfactoriness, 'confident can use skills and abilities' and 'confident can achieve', correlations between these and satisfaction were as high as .70, $p. < .01$. The two variables shared nearly 50% of the variance. Using these measures, satisfaction and satisfactoriness would not be regarded as relatively independent.

If satisfaction with a particular need is compared with its satisfactoriness, which could be done in the present research only for those included in the satisfactoriness instrument, satisfaction and satisfactoriness measures appear quite dependent (which is contrary to what Dawis and Lofquist maintained). Examples of an apparent relatedness are the correlations of

Table 7.8 Correlation between Satisfaction MSQ Scores and Satisfactoriness Scores

Satisfaction	Satisfactoriness							
	Per	Prom	Abs	Proc	Tea	Rules	Skill	Ach
Au	---	.21*	---	---	.27**	---	.70**	.66**
Ach	---	.24*	.22*	---	.19*	---	.70**	.68**
Act	---	---	.27**	.22*	.23*	---	.58**	.44**
Adv	---	.38**	---	---	---	---	.47**	.49**
Aut	---	---	.26**	---	.20*	---	.51**	.56**
Ccp	---	---	---	---	---	---	.28**	.35**
Com	---	---	---	---	---	---	---	---
Cw	---	---	---	---	.26**	---	.28**	.35**
Cre	---	.19*	.29**	---	.30**	---	.58**	.61**
Ind	---	---	---	---	---	---	.27**	.26**
Mv	---	---	---	---	---	.28**	---	---
Rec	---	---	---	---	.22*	---	.44**	.51**
Res	---	---	.20*	---	---	---	.58**	.61**
Sec	---	.26**	---	---	.19*	---	.29**	.21*
Sse	---	---	---	---	.19*	---	.47**	.54**
Sst	---	.19*	.26**	---	---	---	.47**	.49**
Shr	---	---	---	---	.23**	---	.27**	.31**
St	---	---	---	---	.21*	---	.36**	.39**
Var	---	.24*	.24*	---	.28**	---	.58**	.55**
Wc	---	---	---	---	---	---	.31**	.34**

Note. * p. < .05; ** p. < .01)

Satisfactoriness scores

Per Performance "produce work to a good standard"

Prom Promotable "am promotable"

Abs Absenteeism "maintain a low rate of absenteeism"

Proc Procedures "adapt to changes in procedures and methods"

Tea Team member "can work as a member of a team"

Rules Rules "follow standard work rules and procedures to my employer's satisfaction"

Skill Skill "use and develop my skills to my satisfaction"

Ach Achievement "get a feeling of accomplishment"

Satisfaction scores

Au Ability utilisation

Ach Achievement

Act Activity

Adv Advancement

Aut Authority

Ccp Company policies/practices

Com Compensation

Cw Coworkers

Cre Creativity

Ind Independence

Wc Working conditions

Mv Moral values

Rec Recognition

Res Responsibility

Sec Security

Sse Social service

Sst Social status

Shr Supervision (human relations)

St Supervision (technical)

Var Variety

.70 ($p < .01$), between ability utilisation satisfaction and skill satisfactoriness, and .68 ($p < .01$) between achievement satisfaction and achievement satisfactoriness. These correlations may be a little inflated, however, because they measure the same needs as opposed to a more general satisfaction and satisfactoriness.

7.1.7 Proposition VIII

This proposition stated "Tenure is a joint function of satisfactoriness and satisfaction". When satisfactoriness and satisfaction, the latter measured by the General Satisfaction scale, were regressed on expected tenure, a multiple r of .68 and an r square of .47 resulted. The average squared correlation with job attachment was .56 for the General Satisfaction scale and .96 for the satisfactoriness estimate of achievement (achievement correlated .98 with job attachment, $p < .001$), a greater proportion of variance in expected tenure being accounted for by satisfactoriness than by satisfaction. The General Satisfaction scale correlated .75 with job attachment and .50 with achievement, a greater proportion of the variance in job attachment was accounted for by satisfaction than by the achievement estimate of satisfactoriness. The correlation of .50 between the General Satisfaction scale measure of satisfaction and the achievement measure of satisfactoriness does not support Dawis and Lofquist's contention that they are relatively independent.

7.1.8 Proposition XVII

This proposition stated that, "Tenure is a function of satisfactoriness, satisfaction, and the perseverance levels of the individual and the work environment". Because of the research design and therefore the data which was available, only part of this proposition could be examined. Perseverance levels of the work environment were not able to be taken into account because the present research did not examine such work environment variables.

When satisfaction and satisfactoriness measures were regressed on job attachment, a multiple r of .69, and an r square of .48 resulted. Therefore, nearly half of the shared variance was accounted for. When perseverance levels of the individuals were included using MANOVA, see Table 7.9, job satisfaction, skill, and in particular achievement, were all good predictors of job attachment. Perseverance was able to predict job attachment but not as well as some of the other variables of interest.

Table 7.9 Average Squared Correlations for Tenure as a Function of Satisfactoriness, Satisfaction, and the Perseverance Levels of the Individual

	Average squared Correlations
Achievement	.70
Skill	.52
General job satisfaction	.49
Perseverance	.28
Authority	.24
Active mode	.24
Activity	.21
Autonomy	.20
Reactive mode	.06
Pay	.01
Rules and procedures	.00

7.2 The relationships among variables in the present study

The relationships proposed as additional to Dawis and Lofquist's theory were examined according to the hypotheses in chapter five. These hypotheses are depicted in Figure 7.2.

7.2.1 Satisfaction and satisfactoriness

As already discussed in section 7.1.6 in relation to Proposition I, the General Satisfaction scale correlated with satisfactoriness .50, sharing 25% of the variance which was considerably more than the 10% that Dawis and Lofquist found when advocating the relative independence of the two constructs. As already discussed in chapter four (section 4.2.5), this aspect of Dawis and Lofquist's theory appeared logically inconsistent. It was inconsistent for satisfaction and satisfactoriness to be relatively independent and at the same time act as moderating variables for each other in the correspondence relationships which determined their levels. The findings show the two constructs to be correlated and therefore logically able to act as moderators.

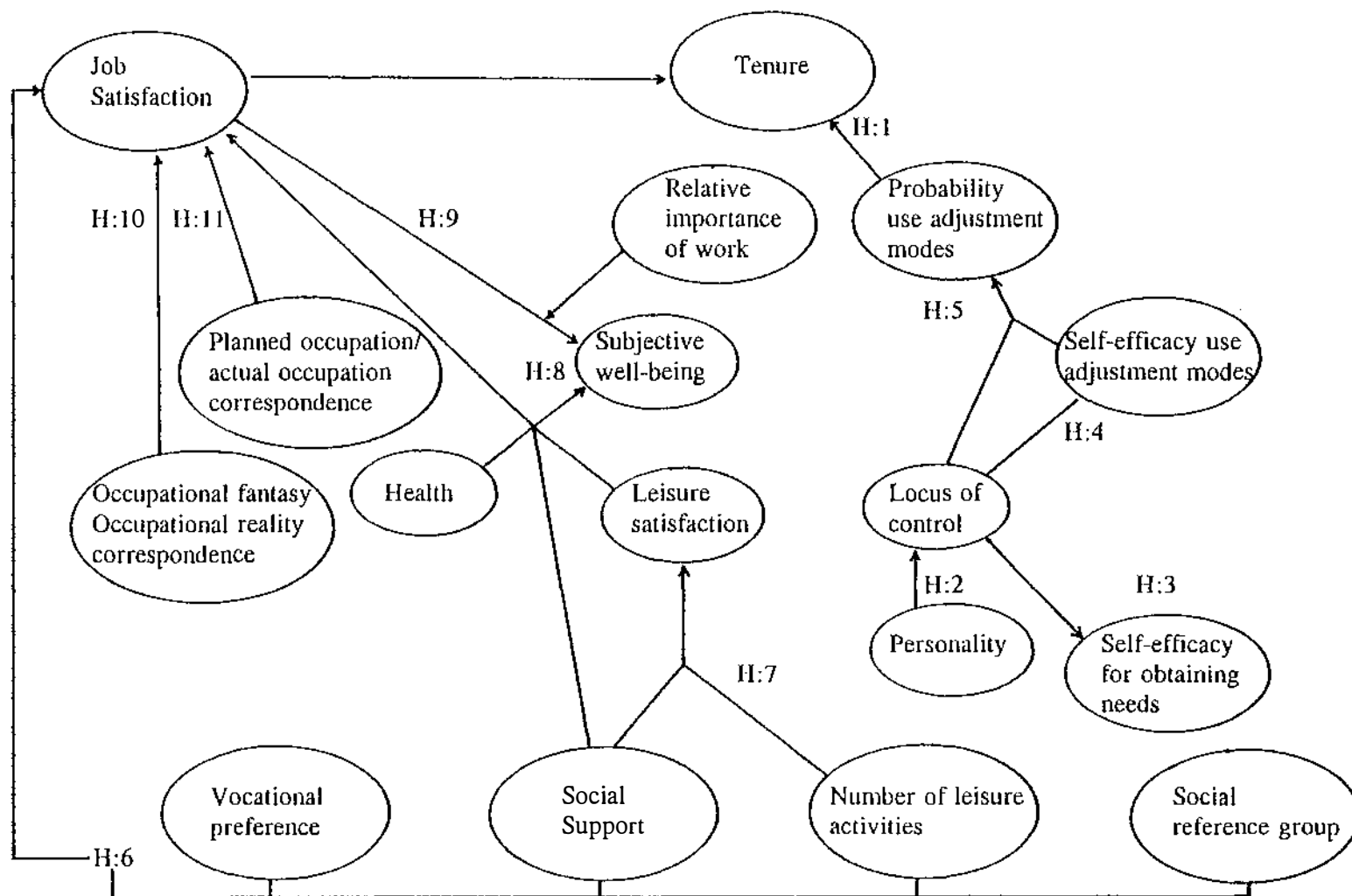


Figure 7.2 The variables added to Dawis and Lofquist's theory

7.2.2 Estimates of tenure

Many of the propositions involved the construct of tenure, or a tenure-related one. Propositions VI, VII and VIII included the construct of tenure. Proposition VI included forced to leave work, Proposition VII voluntarily leaving work, and Proposition VIII remaining at work, all of which are tenure related constructs. These various constructs were operationalised in different ways. The construct of tenure was operationalised as 'expected tenure' as measured by respondents' estimates of the time they expected to remain in their job. Such an operationalisation is probably consistent with Dawis and Lofquist's construct of tenure which appears in their theoretical propositions. Introduced in the present study was a further measure which was expected to be related to tenure but which might be more associated with job satisfaction than tenure itself (as was found). This measure was 'degree of job attachment'. In the case of a group in the initial stage of employment a measure such as job attachment might be more associated with job satisfaction than would tenure. Tenure may be short for most of this group thus showing little variation. However, job attachment may vary more and be a function of variables such as satisfaction. Job attachment might be expected to better demonstrate in the present respondent group the relationship Dawis and Lofquist propose between satisfaction and tenure generally (and the results show this to have occurred).

With the use of different estimates of tenure or tenure related measures, we can explore, assess, what each concept might be measuring. The estimates can be compared through looking at their intercorrelations as presented in Figure 7.3. Job attachment correlated .32 with expected tenure and .46 with perseverance, but perseverance and expected tenure were not correlated. One might conclude firstly, that perseverance influences job attachment but not expected tenure, perhaps only indirectly through job attachment. Job attachment has some association with expected tenure but may not represent the same construct. Job satisfaction however did not correlate highly with expected tenure (.22). Expected tenure is the least related among the variables. This may mean it is a poor measure of tenure, but only if variables like attachment and perseverance are regarded as good estimates of tenure. Expected tenure being only moderately related to job satisfaction is consistent with the weak relationship usually found between job satisfaction and tenure (Landy, 1989).

One would have predicted expected tenure to be a good operationalisation of tenure because previous research has shown self-ratings to be valid (George, 1988). More recently, observer

ratings have been found to be more positive than self-responses on multi-dimensional self-concept ratings (Marsh and Richards, 1990). This modesty bias in self-concept is in contrast to the commonly expected self-favourability bias found by Wylie (1979) in reviewing evaluative tasks. The low to moderate correlations between expected tenure and job attachment (.32) and job satisfaction and expected tenure (.22), and the non-significant relationship between expected tenure and perseverance could suggest either that expected tenure was a poor operationalisation of tenure and that job satisfaction would otherwise be related to tenure, or that job satisfaction does not predict tenure but is better related to other variables such as job attachment and perseverance. Previous research would support expected tenure as an appropriate operationalisation of tenure and job satisfaction as a poor predictor of tenure.

Because job attachment and perseverance have demonstrated little or no association with expected tenure and expected tenure is usually accepted as a reasonable estimate of tenure, one could argue firstly, that job attachment and perseverance are different constructs from tenure. These two variables may be regarded as representing a construct or constructs different from tenure because job satisfaction has predicted them better. Job satisfaction certainly does not appear a major influence on tenure as demonstrated by the correlation which although significant at the .005 level was low and able to explain only 5% of the variance. If expected tenure is regarded as the more likely valid measure of tenure, and it is not predicted by job satisfaction as is the case here, and previous research is heeded in its lack of relationship between satisfaction and tenure, considerable doubt is thrown on the validity of Dawis and Lofquist's proposition that job satisfaction predicts tenure.

If tenure is regarded as an appropriate indicator of work adjustment and both job satisfaction and satisfactoriness are deemed required for work adjustment to occur, one would expect both satisfaction and satisfactoriness to be associated with tenure. As already discussed, tenure in this instance as operationalised, respondents' expected tenure, correlated significantly with general job satisfaction although only a small coefficient of .22 ($p < .01$) resulted. However, expected tenure did not correlate significantly with self-perceived satisfactoriness. When degree of job attachment was used as an estimate of work adjustment, a significant and reasonable correlation of .67 ($p < .001$) was produced using the single item measure of job satisfaction and a low but significant correlation of .20 ($p < .01$) resulted from the self-report measure of satisfactoriness (self-perceived performance). The relationship between satisfaction

and job attachment was of a greater magnitude than the relationship between perceived satisfactoriness and job attachment.

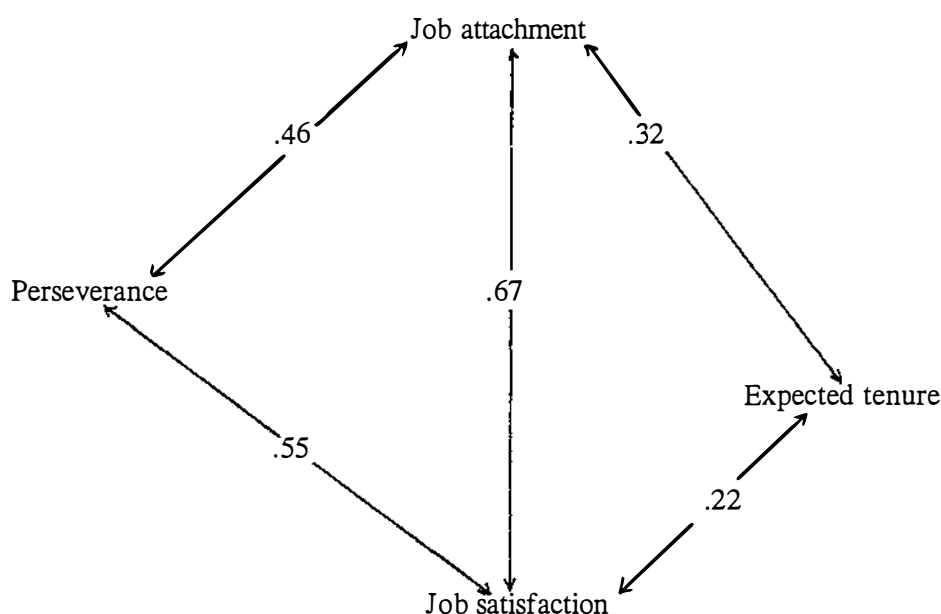


Figure 7.3 Correlations among tenure related variables

To further look at the question whether job attachment and tenure are measuring the same construct, they correlated .32 ($p < .001$). The correlates they were found to have in common were the measures relating to confidence that the following needs were being met in the job, those of skill, achievement, variety, recognition, supervision and the adjustment mode of flexibility. Other variables which correlated with both attachment and expected tenure were, job satisfaction in general and the specific areas of job satisfaction of authority, achievement, activity, independence, security variety, self-efficacy for flexibility, and a high need for authority. Although both job attachment and expected tenure have work needs in common the two constructs behave differently enough to indicate they are probably not the same construct.

Another coefficient which may assist in the assessment of the validity of the operationalisation of tenure in this study is the correlation between expected tenure and the tenure which the position is thought to attract usually. This perceived usual tenure correlation was .21 ($p < .01$) which may indicate that the measure of expected tenure is not a good estimate of tenure. However, students' tenure is likely to be different from usual tenure because this

respondent group is being assessed during the early stages of first employment after graduation. This stage of employment could be atypical of tenure for those positions. Because these positions were those attained upon graduation, and therefore early in a career, they are most likely to be occupied for a shorter time relative to subsequent positions or to holding the same position later in a career. The positions themselves as first positions in a career, or as temporary positions while awaiting a preferred position, would also probably be less senior positions than respondents were likely to be capable of attaining even a short time later. Therefore, job attachment may be a better indicator of work adjustment in a recent graduate group. Because the early stages of employment are involved and the positions are likely to be regarded as short-term only, tenure would probably be short and provide little information about work adjustment itself. Instead, a variable such as job attachment may be more informative. Job attachment may perform for this sample more as measures of tenure might for a group not in the early stages of employment.

Examining the frequency distribution of expected tenure responses helps to indicate whether expected tenure was influenced more by the early employment phenomena or by degree of satisfaction and satisfactoriness. If early employment is an important factor, tenure would tend to vary little among respondents and be relatively independent of satisfaction and satisfactoriness levels. Certainly mean expected tenure of 3.5 years, standard deviation 1.8, suggested this group may be atypical of employees generally in their tenure expectations. In such an atypical group expected tenure would be expected to be less associated with variables such as satisfaction and satisfactoriness.

Another possibility accounting for the lack of association between expected and perceived tenure associated with any position could be that the respondents had unrealistic notions about the usual tenure for their positions. However, this explanation is perhaps the least likely because the respondents having been in their positions about six months would be expected to have a reasonable idea of usual tenure, as a result of both their own observations and discussions with other employees.

From Table 7.10 it can be seen that generally the perceived usual tenure of the positions was greater than the respondents' expected tenure. The spread and range of number of years of usual tenure was greater than respondents' expected tenure. The maximum expected tenure for others was 40 years in contrast to only 10 years for self. The median number of years for expected tenure was located between one and two years but the median perceived usual tenure was located around four years. The distribution for usual tenure was less skewed. Although, there was sufficient variation among the responses in expected tenure to indicate that early employment was not the only factor involved in the estimates of expected tenure, that the responses clustered around only a few number of years tended to indicate respondents regarded these first jobs as short-term employment. They seemed to expect longer employment for others in the same occupation. Other variables such as satisfaction and satisfactoriness seemed to have a role to play but the smaller range of responses compared with those for usual tenure seems to suggest variables like these may affect tenure less, at least for a group in the early stages of employment.

Table 7.10 A Comparison of the Distributions for Expected Tenure for Self and Perceived Usual Tenure for Others in the Same Job.

Years	Expected Tenure		Perceived Usual Tenure	
	%	Cum %	%	Cum %
01	31	31	09	09
02	34	65	30	39
03	08	73	06	45
04	08	81	04	49
05	15	96	15	64
06	02	98	04	68
07	0	98	0	68
08	0	98	0	68
09	0	98	0	68
10	02		15	83
15			04	87
20			02	89
30			09	98
40			02	
Total	100	100	100	100

If a better measure of the construct of work adjustment for this stage of employment is to be found it is important to consider variables which are associated with both satisfaction and satisfactoriness, given these affect work adjustment. The variables which were found to be significantly correlated with both measures were, confidence in attaining authority, autonomy, activity, variety, recognition, being friendly with workers, being able to persevere, using an active adjustment style and being creative. Other correlates were confidence in work fitting in with lifestyle, adjusting to a new club and location and the self-efficacy measures of achievement, authority and autonomy. Any one of or a combination of these may better indicate that a worker is both satisfied and satisfactory and therefore adjusted. At the same time other variables may be less sensitive to the time during a career that the measurement of work adjustment takes place. However, because individuals vary in the specific needs which correspond for them, vary in the importance of difference needs, and vary in terms of which needs correlate with job satisfaction, it is unlikely that any one of these variables on their own will represent the construct of work adjustment. It is arguable that tenure may not be a good indicator of work adjustment, in part because past research has shown one of the expected relationships, between satisfaction and tenure, to be weak. In particular, tenure does not appear to be a good indicator of work adjustment for the period of initial employment for this respondent groups and perhaps generally also. Tenure would be expected to be influenced in some instances by factors which have less to do with work adjustment directly. Such factors might include the availability of better jobs, distance travelled to work, the opinion of others, or non-work factors.

As previously discussed, satisfaction and satisfactoriness may not contribute to work adjustment or estimates of it to the same degree and such an expectation seems more symmetrical than one would expect in reality. Satisfaction correlated .50 with job attachment while satisfactoriness correlated .98. Tenure, as estimated by job attachment, appears to have a strong association with both satisfaction and satisfactoriness, with the latter producing the correlation of greater magnitude. When satisfactoriness and satisfaction were regressed on job attachment the average squared correlation was higher for satisfactoriness .96, than for satisfaction, .56.

7.2.3 Tenure as a function of use of adjustment styles

Hypothesis 1: "Given Proposition XVI tenure is also a function of use of adjustment styles". The adjustment styles when regressed on tenure operationalised as job attachment yielded a multiple r of .49 ($r^2 = .24$), thus supporting the proposition to some degree.

Table 7.11 Correlations of Adjustment Style Variables with Job Attachment and Average Squared Correlations between Covariates, Use of Adjustment Styles, and the Predicted Dependent Variable, Job Attachment

Self-ratings about predicted use correlated with job attachment			Self ratings of confidence are using styles correlated with job attachment		
	r	r^2		r	r^2
Perseverance	.72	.52	Perseverance	.80	.64
Active mode	.51	.26	Active	.66	.26
Flexibility	-.47	.22	Flexibility	.38	.14
Reactive	.38	.15	Reactive	.31	.15

With reference to Table 7.11, the amount of variance in job attachment as explained by predicted use of adjustment style was high in the case of perseverance but moderate with respect to the active and reactive mode and flexibility. As in Figure 7.3 perseverance at stage one of the study correlated more with job attachment (.46) than expected tenure and could be regarded as likely to be a moderate predictor of remaining in the work environment, or at least being adjusted to work. The average squared correlations between the covariates, use of adjustment styles and job attachment, demonstrated that perseverance explains the greater amount of variance (64%) in job attachment in respondents' positions. The two estimates of adjustment style, self-ratings about the use of the styles generally and confidence that they are being used, produced the same pattern of correlations. Perseverance was the best predictor of job attachment.

7.2.4 Relationship between locus of control and personality variables

Hypothesis 2: "The locus of control of an individual is related to personality". The regression of locus of control, operationalised as the sum of the Personal Competence Measures, on the personality orientations of Holland (1973) produced a multiple r of .32.

There were only some significant correlation coefficients among scores on Holland's Vocational Preference Inventory and the locus of control measure used in stage one of the research. Although statistically significant, they were all small in magnitude and involved the Holland types of conventional (.12), enterprising (.13), artistic (-.11) and status (.16). Traits associated with the conventional orientation are, conforming, status-oriented, appearing controlled, productive in well-structured tasks and adopting an obsessive, orderly pattern of adjustment. Traits associated with the enterprising orientation are dominant, sociable, cheerful, adventurous, a preference for ambiguous verbal tasks and a greater need for power than with the conventional orientation. The traits associated with the artistic type are, a need for self-expression, artistic interest, anxiety and immaturity, originality, unconventionality and erratic effort and behaviour. The status orientation is represented by the need for status, prestige and upward mobility.

The direction of the relationships were positive, a high score on the personality type being associated with high locus of control with the exception of the relationship between Personal Competence and the artistic type. This was a negative correlation, a high artistic score was associated with a low locus of control score, that is an external locus of control. There were no significant relationships between Personal Competence and the remaining Holland personality types, that is, Personal Competence was not associated with the realistic, sociability, intellectual, self-control, masculinity, or infrequency scales.

The lack of association between locus of control and the Intellectual scale was perhaps the most surprising. The Intellectual scale is defined as being characterised by a value of science and aesthetic problems and would "deprecate social, political and business activities" (p.18). It could be argued at least that being scholarly, persistent and having high educational aspirations would be associated with an internal locus of control, even if other characteristic factors of the Intellectual scale are not. Characteristic factors such as a lack of interest in political, social and business activities may not be expected so much to be associated with locus of control. It is these latter characteristics which may account for the overall lack of

association between the Personal Competence Scale and Holland's Intellectual Orientation. Not all factors which make up this scale may be uniformly associated with being competent and it may have been those specific factors which mitigated against scores on the Intellectual scale correlating significantly with locus of control.

For stage one of the research, the correlations between Holland orientations and Personal Competence correlations, although significant, were small and therefore probably of limited explanatory value. Stage two of the study produced even fewer significant correlations, and again none were of a reasonable magnitude. Holland's personality orientations were associated with locus of control competence measures only to a small degree, the square of the multiple r of .32 being .10. Thus only about 10% of the variance in personality and locus of control measures was shared.

7.2.5 Relationships between self-efficacy and locus of control

Hypothesis 3: "Self-efficacy for obtaining needs is related to locus of control". For stage one of the study although some of the items of the indices of Personal Competence and self-efficacy expectations intercorrelated significantly, the relationships were small in magnitude. Multiple analysis of variance produced small average squared correlations of the self-efficacy items and locus of control, and a non-significant F . The multiple r of .32, indicated that locus of control and self-efficacy measures shared only 10% of their variance, and that the personal competence measure predicted self-efficacy to only a limited extent.

When need self-efficacy at stage one of the study was correlated with locus of control at stage one, see Table 7.12, significant correlations resulted.

Examining correlations between locus of control at stage one and self-efficacy at stage two, as a way of assessing whether locus of control is likely to predict self-efficacy, revealed a smaller number of significant correlations than occurred in comparisons between stage one self-efficacy and locus of control. The work needs involved in significant correlations between stage one locus of control and stage two self-efficacy were, in descending order, those of status, activity, recognition and ability utilisation. These work needs represented Dawis and Lofquist's achievement, comfort and status factors and excluded their safety and autonomy factors, although one of the achievement related items (achievement itself) did not correlate significantly. With respect to the factors identified in the present study, achievement and comfort were represented but safety, autonomy and moral value factors were excluded.

The other work needs seemingly unaffected by locus of control were those of authority, pay, security, variety, work friends, human relations and technical supervision and creativity. With the exception of creativity, these results would be expected because the work needs in question involve other individuals and the work environment and are therefore less able to be influenced by factors such as the self-efficacy of the individual.

Table 7.12 Stage One Self-efficacy Correlated with Locus of Control at Stage One and Two, and Self-efficacy at Stage Two Correlated with Stage Two Locus of Control

	Self-efficacy and Locus of Control stage one	Self-efficacy Stage Two and locus of control Stage one	Self-efficacy and Locus of Control Stage two
Self-efficacy	Stage One	Stage One & Two	Stage Two
Ability utilisation	.27**	.18**	.30**
Achievement	.21**		.27**
Authority	.22**		.16*
Pay	.22**		
Reactive mode	.13*	.20**	.16*
Promotability	.14*		.18**
Security	.25**		.32**
Variety	.14*		.18**
Status	.19**	.23**	.37**
Perseverance	.20**		.16*
Recognition	.23**	.20**	.30**
Work friends	.16*		.21**
Supervision (technical)	.12*		.18**
Absenteeism	.24**	.16*	
Supervision (human relations)	.14*		.21**
Creativity	.14*		
Lifestyle	.16*		
Adjustment new club	.24**		.19**
Adjust to new environment	.18**		
Flexibility	.16*	.17**	
Activity	.21**	.20**	
Active mode			.22**
Repetitive			.19**
Performance			.22**
Procedures			.20**
Team work			.21**

Note. ** = $p < .01$, * = $p < .05$

For the first stage of the study most of the relationships produced small correlations either in the vicinity of .10 or .20. The measures which demonstrated the larger of the correlations were those of expected skill, achievement, authority, pay, security, perseverance, recognition, absenteeism and adjustment to a new club.

7.2.6 Relationships between self-efficacy for use of adjustment styles and locus of control

Hypothesis 4: "Self-efficacy for the use of adjustment styles is related to locus of control".

The correlations in Table 7.13 show locus of control measures only at stage two to be correlated with the use of adjustment styles.

Table 7.13 Correlations between Locus of Control and Adjustment Styles

Variable	Work adjustment styles			
	Flexibility	Active	Reactive	Perseverance
Locus of control 1	.016	.005	.045	.071
Locus of control 2	-.450	.213	.682	.732

Average Squared Correlations between the covariates and personal competence upon employment, as in Table 7.14, show the reactive adjustment style and perseverance to be associated with personal competence or locus of control. For the second stage of the study means, standard deviations and N for these variables are given in Table 7.15.

Using MANOVA to assess the relationship between locus of control and pre-employment and self-efficacy measures for use of adjustment styles, univariate F tests revealed only one significant F. This involved self-efficacy for perseverance. The F of 8.96 was significant at the .01 level. The multiple r for perseverance self-efficacy was .18, multiple r squared being .03. Multiple regression analysis of the same variables produced a non-significant F and a multiple correlation not significantly different from zero also for flexibility, but a significant

F for reactive self-efficacy ($5.35 p < .05$). An F ratio of 13.74 ($p < .001$) for perseverance resulted. Using multiple regression analysis, the reactive adjustment mode and locus of control produced an F ratio of 5.35 ($p < .05$).

The two adjustment style dimensions showing a degree of association between stage one and two of the study were the reactive mode, with an average r^2 of .20, and flexibility with an r^2 of .16. The adjustment styles of perseverance and the active mode were not predicted by locus of control from stage one of the study. This finding is surprising in that an internal locus of control would be expected to be associated with an active mode and perseverance.

Table 7.14 Average Squared Correlations Between Personal Competence (Locus of Control) and Adjustment Styles

Adjustment styles with Personal Competence	Average r^2
Flexibility	.202
Active	.045
Reactive	.465
Perseverance	.536

Table 7.15 Means, Standard Deviations, and N for the Variables included in Hypothesis Four

	Mean	Std Dev	Cases
Locus of control 1	14.044	4.296	362
Locus of control 2	14.560	3.254	193
Active 1	4.810	1.486	316
Reactive 1	4.661	1.595	322
Perseverance 1	5.418	1.267	232
Active mode 2	5.031	1.336	161
Reactive 2	4.944	1.359	160
Flexibility 2	5.006	1.296	161
Perseverance 2	5.708	1.165	161

Note. 1 = stage one (prior to graduation and employment), 2 = stage two (after completion of graduate year).

An examination of the effect of locus of control prior to employment on self-efficacy for use of the adjustment styles on the job, revealed small associations. Locus of control had an influence on self-efficacy for the use of the reactive style and for flexibility, the multiple r for each being .20 and .16 respectively. The F for reactive style self-efficacy was 7.15 ($p < .01$) and for flexibility 3.87 ($p < .05$). Multiple regression analysis of locus of control at time one having an effect on self-efficacy for use of adjustment styles at time two, produced a non-significant multiple correlation for the active mode and for perseverance. The reactive mode self-efficacy produced a multiple r of .12 and an F of 6.23 ($p < .01$) and flexibility self-efficacy produced a multiple r of .09 but a significant F of 3.8 ($p < .05$).

When the effect of locus of control for the second stage of the study on self-efficacy measures at that same stage was investigated, the correlations for active, reactive, flexibility and perseverance were .22, .16, .17, and .16, respectively. The F ratios were 8.24 ($p < .01$), 4.15, 4.39 and 3.90, the latter three significant at the .05 level. Multiple regression analyses produced a multiple r of .2, with $r^2 = .04$, and an F of 15.79 for active mode self-efficacy. A multiple r of .14 and F of 7.82 ($p < .01$) was produced by the reactive mode. Flexibility self-efficacy resulted in a multiple r of .15, F of 8.56 ($p < .01$) and perseverance self-efficacy produced a multiple r of .14 and an F ratio of 7.56 ($p < .01$). Although the multiple correlations are small and their corresponding squares also small, it is useful to note that it is only locus of control at the time of employment which is associated with self-efficacy for all of the adjustment style variables.

In looking at whether locus of control influences self-ratings of use of adjustment styles rather than the self-efficacy for their use, a significant multiple r of .11 resulted and the F ratio of 4.598 with 1 d.f. was significant ($p < .05$).

7.2.7 Relationships among adjustment styles, locus of control and self-efficacy for using adjustment styles

Hypothesis 5: "Use of differing adjustment styles is jointly related to locus of control and self-efficacy for use of adjustment styles". The adjustment styles produced similar multiple r 's in relation to locus of control and self-efficacy. The modes of reactive, flexible, active and perseverance produced moderate multiple r 's of .38, .29, .29, and .33, respectively with r squares of .14, .08, .08, .11. In view of hypothesis 5 incorporating aspects of hypotheses 3 and 4, and that these received limited support, it follows that hypothesis 5 would also be

expected to receive some support. Statistically significant results were obtained, and the prediction of the use of adjustment styles by examining locus of control and self-efficacy variables would be obviously better than chance. Although, in practical terms, the magnitude of the relationships would suggest, because so much of the variance was unaccounted for, that other variables may be of more importance. However, the magnitude of these correlations were similar to many of those quoted by Dawis and Lofquist in support of their propositions. Therefore, relative to other work adjustment variables Dawis and Lofquist identified as important, they are no less important.

Higher correlations between self-efficacy for the use of adjustment styles and self-ratings about use of adjustment styles for stage two of the study may have been related to the likelihood that once respondents were in their jobs, their self-efficacy ratings could be more realistic and therefore closer to the adjustment styles they rated as being in use. At stage one of the study, because the reactive style correlated with the later use of the active style, it may be reasonable to conclude that styles become part of a repertoire such that confidence about the use of one style is likely to affect confidence about the use of other styles as well. Respondents seemed to choose an adjustment style over others during stage one of the study, but preferences at that stage tended not to be predictive of use of the same styles by stage two. For example, perseverance at stage one correlated more highly with the active mode at stage two. Perseverance also seemed to be the best overall indicator of use of adjustment modes. No other styles correlated more highly between the two parts of the study. The different circumstances associated with being a student and a graduate may account for the differences. Adjustment styles respondents believed to be appropriate while students and those perceived to be important once employed, may be different.

7.2.8 The association of vocational preference/training correspondence with other variables

Hypothesis 6: "Job satisfaction is associated with vocational preference/training correspondence, perceived satisfaction of social reference group and social support". In order to examine the relationship between job satisfaction and vocational preference/training correspondence, the existence of any difference among the vocational groups in the sample in terms of job satisfaction was looked at first. If there was no difference among the groups in their job satisfaction, there would be no variability to attempt to account for in this group, therefore vocational preference/training correspondence would not be effecting satisfaction.

The chi-square (20 d.f.) for the vocational groups was non-significant. It is not meaningful therefore to talk of job satisfaction being a function of vocational preference/training correspondence.

The social reference group and social support variables were both found to be associated with job satisfaction. The social reference group variable of having more job satisfaction than friends produced a high correlation, .78 ($p < .001$), $N = 184$. Some social support related variables correlated more highly than others with job satisfaction. Having a boss who helps, correlated .33 ($p < .001$), having workmates who help, correlated .30 ($p < .001$) and having a boss who could be relied upon, correlated .30 ($p < .001$). Having relatives who help correlated, -.21 ($p < .01$), having neighbours who help, correlated .19 ($p < .01$) and having someone to discuss personal problems with, correlated .15 ($p < .05$).

7.2.9 Non-employment satisfaction, leisure activities and social support

Hypothesis 7: "Non-employment satisfaction is related to the number of leisure activities and ability to seek social support". When leisure satisfaction was regressed on the number of leisure activities and social support, operationalised as self-ratings about extent respondents can talk to significant others, a multiple r of .23 resulted, with an r square of only .05. Leisure activities and social support when considered together as predictors of non-employment satisfaction performed poorly.

7.2.10 Variables associated with subjective well-being

Hypothesis 8: "Subjective well-being is associated with employment satisfaction, social support, non-employment satisfaction, and health". The domain of job satisfaction, that is the single-item measure of job satisfaction and the MSQ general satisfaction scale, correlated positively with Converse, Campbell and Rodgers' (1976) Index of Well-being. The single item measure produced a moderate correlation of .39 (1-tailed significance $p < .0001$), accounting for about 15% of the shared variance. The MSQ job satisfaction measure produced a lower correlation of .15 ($p < .05$) which accounted for only 2% of their shared variance.

Satisfaction domains and well-being correlations (as shown in Table 7.16, with the domains ordered according to degree of correlation with well-being) demonstrated that leisure, friendship, education use, intimate relationships and job satisfaction were correlated similarly

with well-being and all were significant at the .001 level. However the correlations for leisure and friendships were the highest, each sharing around 25 % of their variance with that of well-being. The next three domains, education use, intimate relationships and job satisfaction, each shared 16% to 18% of their variance with well-being. The remainder of the domains shared smaller but similar amounts of variance with well-being, ranging from 7 % for neighbourhood satisfaction to 12% for location satisfaction.

Table 7.16 Correlations ($p < .001$) Between Well-being and Satisfaction Domains

	r	r ²
Leisure satisfaction	.50	.25
Friendship satisfaction	.49	.24
Intimate relationship	.42	.17
Education use	.41	.18
Job satisfaction	.40	.16
Location satisfaction	.34	.12
Compared with friends	.33	.11
Level of education satisfaction	.31	.10
Satisfaction with life in N.Z.	.29	.08
Home satisfaction	.28	.08
Family satisfaction	.28	.08
Neighbourhood satisfaction	.26	.07
Savings	.20	.04
Health	.14 *	.02

Note. * $p < .05$

Neither satisfaction with living standard nor accommodation satisfaction correlated with well-being. With respect to Hypothesis 8 and the degree of association, all the variables of interest correlated with well-being, but leisure and job satisfaction correlated to the greatest degree. This was followed by the social support variables of friendship and intimate relationships and then the other social support variables of family and neighbourhood satisfaction. The latter could be regarded as the potentially more emotionally distant forms of social support. Although still statistically significant, health showed the weakest relationship with well-being.

For this respondent group, the variables accounting for most of the variance in well-being were leisure and friendship satisfaction at 25 %, while job satisfaction accounted for less at 16%. It is important to note that some of the satisfaction domains are not independent of each

other. For example, measures of the domains of location and neighbourhood satisfaction will be related because the neighbourhood forms part of an individual's location. Some of the domains are more global in nature, for example satisfaction with life in New Zealand would include judgements about many of the other domains taken together.

A question allied to hypothesis 8 is the extent to which the importance to the individual of the various satisfaction domains might affect on well-being. That is the effect the satisfaction domains have on well-being may be moderated by the importance of those domains. These were Campbell, Converse and Rodgers's (1976) expectations also. Despite their findings to the contrary, intuitively it is difficult to dismiss the expectation that the importance of the various domains to the individual, influences satisfaction ratings. A relationship in the other direction may exist, that is, the level of satisfaction with a domain might be expected to affect the importance of that domain.

Ratings on a scale of 1 to 7 about the importance of satisfaction domains exhibited similar standard deviations. The importance of health and friends rated the highest (median of 1 = extremely important), most other domains were rated either 2 or 3 and the importance of housework achieving a median rating of 4. Such a rating representing the mid-point of the scale indicates that housework is either considered to be in the mid-point on a continuum of extremely important to not at all important or that this mid-point was chosen to represent a neutral one as an indication of indifference or of non-applicability to the individual. However, because this notion of indifference is in fact accounted for by one end of the scale, "not at all important", it would be more appropriate to interpret the mid-point as representing an average amount of importance or as the middle of a continuum of importance.

The distribution of use-of-scale scores for each of the domains showed the extremely important category was employed by some respondents. The range of use of the category was from 1.5% to 61%, with a mean percentage of 30.67%. The not at all important end of the scale was not used for all of the domains, the maximum score being 6 for the domains of, job, leisure, health, friends and family. This end of the rating scale was employed less often than the extremely important end. The percentage of use of the last two low importance categories of the scale ranged from 0.3% to 4.3% for a rating of 6 and 0.3% to 4.1% for a rating of 7. However, the degree of closeness among the measures of central tendency, mean, mode and median, tended to indicate a lack of skew, the ratings closely approximating

a normal distribution (this similarity of distribution of scores for the different domains satisfies the assumptions for using means, and Pearson's r , for making comparisons).

The satisfaction domains were grouped according to how important they were ranked on average, using the mean and median as measures of central tendency, see Table 7.17.

Table 7.17 Comparison of Average Importance Ratings for Satisfaction Domains (1 = extremely important, 7 = not at all important)

Median	Mean	Domains	% in category	s.d.
1	1.54	Health	61	0.85
1	1.70	Friends	58	1.05
2	1.84	Leisure	32	1.03
2	2.60	Location	37	1.39
2	2.50	Accommodation	41	1.35
2	2.20	Life in N.Z.	38	1.16
2	2.29	Amount of education	42	1.89
2	2.13	Education usefulness	41	1.16
2	2.09	Job	41	1.01
2	2.68	Living standard	35	1.32
2	2.01	Intimate relationship	32	1.25
2	2.06	Family life	35	1.18
3	2.89	Savings, investments	23	1.51
3	2.80	Neighbourhood	27	1.82
4	4.04	Housework	27	1.47

The domains associated with activities external to the work place involving the well-being of self, in relation to physical and psychological factors, have been rated to be of the most importance. The factors which could be categorised more as maintenance tasks, such as housework and savings, were rated the least important. The other domains were all rated to be of importance and included personal relationships, living circumstances and job and education factors. Not all ratings of satisfaction with the various domains correlated significantly with the ratings of their importance. Those which did produce correlations ($p < .001$), although only moderate in size, were reported in Table 7.18.

Certainly for the domains of key interest in this study, those of job and leisure satisfaction, correlated with their importance. For these domains then, a high rating of importance was associated with a high rating of satisfaction, except in the case of living standard where the correlation was negative. When satisfaction with living standard was lower, its importance scores were higher.

It is not surprising in a study involving the early stages of employment that the importance of health and savings were less associated with job satisfaction. Although the location and neighbourhood may not always be ideal when people begin in paid work, respondents may consider them satisfactory for that stage. This may be the case where choice of location, and neighbourhood are more likely to be dependent upon factors such as proximity to work and accommodation that can be afforded. The actual ratings of the domains rated less important were still above the midpoint of the importance scale, so that all the domains in fact were rated important. The importance of family may be less for this group than for other groups, because many of the respondents were at the age of separating from their families to begin life as independent adults. Also they have been in a period of strong peer influences.

Table 7.18 Correlation between domains of satisfaction and perceived importance of the domains ($p. < .001$).

Domains	r
Use of education	.33
Job satisfaction	.22
Leisure satisfaction	.33
Living standard	-.23
Family satisfaction	.28

From Tables 7.16 and 7.17 it can be seen that friendship satisfaction was associated with a sense of well-being and was rated as one of the three most important domains. However there was no significant correlation between its importance and the degree of satisfaction. Health was also rated as one of the most important domains but satisfaction with health did not correlate with its importance and it was not associated with well-being. The age of the sample was young and therefore may enjoy a better standard of health than the general population. Most did in fact report to be in good health. Health was probably less of an issue because it

appeared not to create any problems for the respondents. Probably for similar reasons, health did not correlate significantly with either the single-item job satisfaction measure or the MSQ General Satisfaction scale.

Job satisfaction correlated significantly with the index of well-being for the second stage, $r = .40$ ($p < .001$), accounting for 16% of the variance. With respect to the other domains of satisfaction, correlations of a size similar to that found for job satisfaction occurred. Satisfaction with accommodation and with living circumstances were the only two where a significant correlation did not emerge.

Table 7.19 The Proportion of Shared Variance (r^2) between the Index of Well-being and the Satisfaction Domain Scores for two studies (Campbell, Converse and Rodgers (1976) and the present study

	Campbell et al	Present study
	r^2	r^2
Non-work	.29	.25
Family life	.28	.08
Standard of living	.23	.01
Work	.18	.16
Marriage	.16	.18
Savings	.15	.03
Friendships	.13	.24
Location	.11	.11
Housing	.11	.01
Amount of education	.09	.10
Neighbourhood	.08	.07
Life in N.Z.	.08	.08
Usefulness of education	.08	.17
Health	.08	.02

A multiple r of .54 resulted when subjective well-being was regressed on employment satisfaction, leisure satisfaction and health. Using multiple analysis of variance and averaged squared correlations, employment satisfaction produced average squared correlations of .27 with subjective well-being, .42 with leisure satisfaction, and .02 with health. The social support variables of satisfaction with neighbourhood, friendships, love, family and home resulted in average squared correlations of .11, .52, .30, .11 and .12, respectively with subjective well-being. Leisure satisfaction and satisfaction with friendships appear to be the

variables with the most variance in common with subjective well-being. Level of satisfaction compared with others accounted for a similar amount of variance as did job satisfaction, 22% and 27% respectively.

In comparing the present results with those of Campbell, Converse and Rodgers (1976), similar proportions of variance in the index of well-being were explained by satisfaction scores in both pieces of research, but different domains were involved. The coefficients of determination, or r squared, are shown in Table 7.19. The rank order of domains accounting for the most variance, beginning with the higher variance, was, the four domains of, non-work, friendships, marriage and work. This was at variance with the order found by Campbell et al of, non-work, family life, standard of living and work. In both studies leisure time shared a greater proportion of its variance with well-being than did work. The non-work activities of friendships, marriage or family life and standard of living had more variance in common with well-being.

A comparison was made in Table 7.20 between size and rank order of regression coefficients for predicting life satisfaction from domain important ratings for the American and New Zealand data.

Table 7.20 Rank Order Comparison for New Zealand and American Group of Life Satisfaction as a Function of Domain Importance Regression Coefficients (rank order)

	Massey Graduates		Campbell et al	
	r	rank	r	rank
Health	.10	2	.21	6
Marriage/family life	.02	6	.36	1
Housing	.04	4	.30	3
Job	.03	5	.27	4
Community	.01	6	.25	5
Non-work activities	.10	2	.21	6
Financial situation	.23	1	.33	2

From Table 7.20, it is evident that the regression coefficients are of differing magnitudes between the two pieces of research with the New Zealand group exhibiting much smaller

coefficients. For the New Zealand group, financial situation, non-work activities and health importance ratings were the better predictors of life satisfaction. For Campbell et al marriage and financial situation contributed most to life satisfaction. Housing, job and community were ranked the same in both groups. Marriage was the least associated with life satisfaction for the New Zealand group. This might be expected to some extent because the group were recent graduates for whom marriage may not be an immediate goal. Health and non-work activities were better predictors of life satisfaction for Campbell et al.

7.2.11 Relative importance of work as a moderator

Hypothesis 9: "The effect employment satisfaction has upon subjective well-being is moderated by the relative importance of work, that is, employment satisfaction will have less of an effect upon subjective well-being where employment is considered less important than leisure activities."

Using MANOVA the interaction term of importance of work was examined in the employment/satisfaction well-being relationship. The correlation between the Index of Well-being and job satisfaction, single-item measure, was .96, and r^2 .92. The interaction term of .29 produced an r^2 of .08. Employment satisfaction and well-being had most of their variance in common, with the importance of work acting as a moderator but accounting for little of the variance. In contrast to Campbell, Converse and Rodgers findings with respect to their domain importance ratings, differences in satisfaction ratings were accounted for to some extent by differences in their importance.

When job satisfaction is regressed on well-being alone, a large proportion of their variance was found to be in common. However, when leisure satisfaction was included along with other factors, such as in Hypothesis 8, leisure satisfaction accounted for a relatively larger proportion of the variance.

7.2.12 Occupational fantasy and job satisfaction

Hypothesis 10: "Job satisfaction is associated with the degree of correspondence between occupational fantasy and occupational reality".

There were some occupations which respondents tended to favour when given the opportunity to record the occupation or occupations they would like to do given no barriers to taking up any occupation.

The fantasies mentioned the most are shown in Table 7.21. Each respondent recorded up to four fantasies. Those in Table 7.21 shows the frequency of those most often mentioned.

Table 7.21 Frequency of Most Common Fantasy Occupations

Occupational fantasy	Frequency
Veterinarian	30
Airline Pilot	21
Professional Sports person	21
Tour and Travel Guide	10
Horticulturist	09
Stockbroker/Sharebroker	08

Although Airline Pilot was a frequently mentioned occupational fantasy, Veterinary Science was the most popular fantasy. However, it is perhaps also significant that Massey University has the only Veterinary school in New Zealand and has recently developed an Aviation School (although none of the respondents were enrolled in this school). However, the rural nature of New Zealand makes Veterinary fantasies more likely and Airline Pilot is a world preferred occupation. Professional Sports person was as equally popular as Airline Pilot and may reflect the way of life and climate in New Zealand, in particular the emphasis on outdoor activities.

The veterinarian students tended to record their own discipline as their fantasy occupation. This group were the only respondents whose occupational fantasies matched their occupational reality. Although the job satisfaction scores for the veterinary group tended to be towards the high end of the satisfaction scale, their level of satisfaction was not significantly different from that of the other vocational groups. Therefore, for this group of respondents, as an example of a group where occupational fantasy correspondence to occupational reality was higher, higher job satisfaction was not the outcome.

Allied to hypothesis 10 is the question of the extent to which the occupations individuals expect to occupy in the long term are related to their occupational fantasies. Such a question clarifies whether occupational fantasies for some are expected to become occupational realities. The nearer an individual is to achieving such a goal the more satisfying their job would be expected to be. The first nominated occupational fantasy was usually not associated with any of the occupational plans (plan A, B, or C). The second fantasy mentioned correlated with plan C only (.31, $P. < .01$). The third occupational fantasy mentioned correlated with both plans A and B (.34 and .44, respectively).

The first four occupational fantasies correlated with expected long term occupations. With respect to the second long term occupation mentioned, the first mentioned fantasy correlated .21, the second .57 and the third .61. ($p. < .01$). It seems the later a fantasy was included in a list of fantasies the more it was similar to expected long-term occupations and was thus perhaps approaching expected reality. The nature of the construct of occupational fantasy may be such that some fantasies are more fanciful and would not be expected to eventuate while others are achievable long-term goals. Similarities among respondents were found in the initial occupational fantasies recorded.

Consistent with the findings about occupational fantasies and occupational plans, the first position taken up correlated .65 ($p. < .05$) with the fourth occupational fantasy mentioned, but not with any of the other fantasies. However, only 10 of the respondents included a fourth occupational fantasy. For those respondents their last mentioned fantasy more closely approximated their occupational plans, thus probably becoming less of a fantasy and more of a dream which could be realised or an occupational goal.

7.2.13 Job satisfaction and planned occupation/actual occupation correspondence

Hypothesis 11: "Job satisfaction is a function of the degree of correspondence between planned occupation and actual occupation".

The correlations between positions taken up and occupational plans in Table 7.22 show that both the first and second plans were associated with positions taken up. The magnitude of the association between occupational plans and the first position taken up was smaller than for the second position. But these figures need to be interpreted with caution because the first position and the current position were not always independent measures. In some cases the

first position was also the one respondents were in at the time they were surveyed. Because the size of the groups varied for these correlations some caution needs to be exercised in their interpretation although they were all significant at the .01 level.

Table 7.22 Association between Occupation and Previous Occupational Plans

Occupation	1st plan	2nd plan	3rd plan
1st position	.29	.20	NS
position at follow up	.51	.52	NS

With respect to short term occupational plans prior to graduation, over 70% of the respondents classified the probability of their carrying out their first plan as very good or good on a five-point scale of very good to very poor. For the second plan given, the median was around the 'average' probability. For plan B, 19% intended to re-train in some way, 3% wished to work part-time, 45% planned to work full-time, 11% wished to travel, 2% planned self-employment, and the remaining expected to be in temporary employment (18%), unemployed (0.3%) or did not know what would do (1.7%).

When likely long-term occupation was compared with respondents' first expected occupation, respondents were found to nominate up to four occupations they would be likely to undertake in the long term. Only the first occupation mentioned correlated significantly with their plans upon graduation, resulting in a correlation of .15 at the .01 level. Thus most of long term plans were different from those being adopted in early employment. The degree of correspondence of planned occupation and actual occupation was not high at this early stage of employment, certainly not high enough to be related to levels of job satisfaction. Again because there were no significant differences among levels of job satisfaction for the different vocational groups, a search for causes such as degree of correspondence between planned and actual occupations becomes irrelevant.

7.3 A summary of the findings in relation to Dawis and Lofquist's theoretical model

A summary of the findings of the propositions examined in the present study is presented next in section 7.3.1. This summary gives a brief statement of the proposition, whether it was supported (or supported for only some aspects) and the percentage of shared variance between the variables of the proposition (subsection 7.3.1). Following this, interpretation of the findings is given for those relating to job satisfaction (subsection 7.3.2), for satisfactoriness (subsection 7.3.3), for tenure (subsection 7.3.4) and for adjustment styles (subsection 7.3.5). Implications of the findings relating to the relationships among Dawis and Lofquist's key variables investigated in this study are presented in subsection 7.3.6. The implications of the variables introduced in the present study are examined in section 7.4.

7.3.1 A summary of Dawis and Lofquist's Propositions and the Hypotheses of the present study

Proposition	Support	% shared variance
I		
Satisfaction and Satisfactoriness predict work adjustment for satisfaction	YES 41 %	48 %
for satisfactoriness items	5 %	
III		
Satisfaction a function of need- reinforcer correspondence	for some needs only for achievement, variety, ability utilisation, supervision (technical)	25 %
V		
Satisfactoriness as a moderator on the effect of need-reinforcer correspondence on satisfaction	for some needs for authority, pay, social status, supervision (technical), variety	2 % 2 % 4 % 2 % 6 %

VII

Voluntarily leave job related to satisfaction	held for expected tenure	4 %
	job attachment (inversely)	45 %
	for composite measure (MSQ)	26 %

VIII

Tenure, a joint function of satisfactoriness and satisfaction	for tenure	47 %
	for job attachment satisfaction (MSQ General)	56 %
	satisfactoriness (achievement)	96 %

XII

Flexibility moderates effect of need-reinforcer correspondence on satisfaction	supported, achievement	8 %
	for ability utilisation,	11 %
	responsibility,	2 %
	social status,	2 %

XIV

Use of adjustment modes inversely related to satisfaction	supported for, active	9 %
	reactive,	5 %
	perseverance,	16 %
	speed,	16 %
	effort	14 %

XVII

Tenure function of satisfaction satisfactoriness, perseverance and levels of individual's environment	supported to some extent using job attachment	48 %

Hypothesis 1

Given proposition XVI tenure is related to adjustment styles (using job attachment)

held for perseverance, active mode, flexibility but less so for reactive

24%

Hypothesis 2

Locus of control related to personality factors

held for enterprising artistic status Holland Codes

10%

Hypothesis 3

Self-efficacy for obtaining needs, a function of locus of control

for status, activity, recognition, ability utilisation

10%

Hypothesis 4

Self-efficacy for use of adjustment styles function of locus of control

for reactive, perseverance, flexibility

up to 4%

Hypothesis 5

Use of adjustment styles joint function of locus of control and self-efficacy

for reactive, flexibility, active, perseverance

14%

8%

8%

11%

Hypothesis 6

Job satisfaction function of vocational preference/training correspondence

not supported

Hypothesis 7

Non-employment satisfaction function of number of leisure activities & social support

significant but weak relationship

5%

Hypothesis 8

Subjective well-being function	for job satisfaction,	16%
of employment satisfaction,	social support,	24%
social support, leisure	leisure satisfaction,	24%
satisfaction, and health	health	2%

Hypothesis 9

Job satisfaction affects	supported	92%
Well-being		
Relative importance of work	interaction	9%
moderates the job satisfaction -		
well-being relationship		

Hypothesis 10

Job satisfaction function of	not supported
degree of fantasy and	
occupational	
reality correspondence	

Hypothesis 11

Job satisfaction function of	not supported
degree of correspondence	
between planned occupation	
and actual occupation	

With reference to the above summary of the support for the propositions and Figure 7.4, unqualified support for Dawis and Lofquist's propositions occurred in the case of only two (I and VIII) of the ten propositions examined. Propositions involving tenure were supported to a lesser degree when tenure was operationalised as expected tenure rather than job attachment. The percentage of variance the variables had in common with each other varied such that it ranged from 2% to 96% but rarely exceeded 50%. The findings in relation to the key concepts of Dawis and Lofquist's theory are discussed next in the remainder of this chapter while the findings in relation to the factor structure of work needs are discussed in chapter eight.

7.3.2 Job satisfaction

The key findings in relation to job satisfaction were that not all work needs had to correspond with their work reinforcers for satisfaction to occur and satisfaction as a predictor of tenure in this instance showed little promise. The particular respondent group again may have contributed to this because the factors other than satisfaction are more likely to account for expected tenure in a group of graduates in early employment.

Satisfaction with work has been found to demonstrate a curvilinear relationship with organisational tenure. However only 1% of the variance was accounted for by this relationship. The lowest satisfaction evident was at the so called advancement career stage (age 30 to 45), (Morrow and McElroy, 1987). However, the differences reported there were small and not tested for significance.

That not all work needs had to correspond with their work reinforcers in order for a reasonable level of job satisfaction to occur has implications for how easily the theory of work adjustment can be applied. Individuals achieving an equal level of satisfaction are likely to have attained this through differing work needs being reinforced (perhaps only a single-item, global measure of need-reinforcer correspondence may be needed as a predictor of job satisfaction where little specificity of work needs is required). That different work needs and their reinforcement account for satisfaction in different individuals makes the application of the theory easier at the individual than the group level. For individuals, selection and placement of personnel, development and training, their unique profile of correspondent work needs could be of assistance. However, with respect to groups of individuals and occupational groups, there is less likely to be a unique profile representative of the work needs. In job analysis and job design there may be no group of work needs and reinforcers unique to a particular job. Therefore, it may be difficult to achieve Dawis and Lofquist's aim of selection equations based upon groups of satisfied workers. Although need satisfaction equations for individuals might be more easily developed, accomplishing the same for groups of workers or for particular occupations would be more difficult, if impossible in some cases.

If the lack of success of correspondence in relation to work needs and reinforcers as predictors of job satisfaction is because important variables are missing, one variable did emerge as being capable of explaining more of the shared variance in job attachment than correspondence, by accounting for 61%. This variable was, job satisfaction compared with

that of friends, which was found to influence job attachment to a greater degree than did need/reinforcer correspondence. If respondents judged themselves to be better satisfied than their friends, their job satisfaction was higher. The highest correlations, those of job satisfaction compared with friends, and life being rewarding, were more strongly associated with job satisfaction measures than any of the need-reinforcer correspondence scores. Subjective well-being was also a correlate of job satisfaction. In the case of respondents making comparisons of themselves with friends, such a finding may be unique to a young respondent group, where the influence of the peer group could be expected to be greater.

7.3.3 Satisfactoriness

The operationalisation of satisfactoriness was thought to affect observed relationships of satisfactoriness with the tenure related measures. Skill and achievement measures correlated more with both job attachment and expected tenure rather than the other measures which would normally be regarded as estimates of satisfactoriness, such as following rules and procedures, and performance. The use of achievement may not be an appropriate measure because an individual rating themselves high on achievement does not necessarily mean they are achieving to a satisfactory standard in accordance with the criteria of the organisation. However, achievement may be a more appropriate measure of satisfactoriness than exercising skills and abilities. The latter may simply indicate confidence about being able to use skills and abilities. However, exercising skills and abilities may only be appropriate as operationalisations of satisfactoriness if those skills and abilities match those of the work environment. This was not investigated further in the present research because correspondence between abilities and work environment ability requirements were not one of the main foci of investigation.

7.3.4 Tenure

The expected tenure of the respondent group did not correlate well with the tenure perceived to be usual for the job. It was concluded that the expected tenure for this group was atypical for the occupations involved. This implies that tenure may not be an appropriate indicator of work adjustment in this case. Aside from this it is argued also that tenure may not be a good indicator of work adjustment per se because tenure could be influenced by other factors which have little to do with work adjustment. It seems that Dawis and Lofquist were focusing upon

tenure as an indicator of work adjustment and an outcome of satisfaction and satisfactoriness. They put less emphasis on satisfaction and satisfactoriness as important predictors of tenure.

If the focus had been on the prediction of tenure (rather than tenure as an outcome), then satisfaction and satisfactoriness would not have been expected on their own to emerge as good predictors (for reasons discussed in chapter four). Many other variables, both internal and external to the work setting, would be expected to be associated with tenure and these would need to have been considered if prediction of tenure had been the main objective.

As expected, satisfaction and satisfactoriness were poor predictors of tenure. The construct of job attachment correlated better with satisfaction and satisfactoriness than with expected tenure. On this basis degree of job attachment would probably provide a better estimate of degree of work adjustment. All that tenure may show is a limited amount of association with work adjustment. It may be influenced by other factors more specifically for this group. Such other factors might include the stage of employment. This group were in the initial stage of their employment and may not remain in their positions long. More generally, the other influencing factors might be the tenure for particular positions generally and the average tenure for all occupations (which might be dependent upon other factors again such as economic climate, employment needs and patterns of individuals moving to different jobs).

Tenure may indicate at the very least that a level of work adjustment exists which allows an individual to remain in a job at least for the minimum period that is usual. From the point of view of an employer the minimum level of work adjustment which will result in tenure and satisfactory work is all that may be expected. From the individual's perspective, however, a higher level of work adjustment may be of greater importance and their emphasis may be on job satisfaction more than job satisfactoriness. They probably recognise the need for their work to be at least at the minimum level of satisfactoriness which will allow them to remain on the job, should they wish to stay, but they may emphasise the amount of satisfaction they receive as the main contributor to their perception of their work adjustment. If an individual is attached to their job it also tends to suggest they are satisfied at least to a minimum level sufficient to allow them to remain on the job. An individual may aim for a minimum level of satisfactoriness but a higher level of satisfaction while the employer would probably have a higher level of satisfactoriness taking priority over satisfaction. However, high job attachment, in contrast to tenure, may be indicative of more than minimum levels of satisfaction and even satisfactoriness.

It could be argued that tenure as an indicator of work adjustment may reflect only minimum levels of work adjustment or in some cases workers may be adjusted but leave for reasons unrelated to work adjustment. Therefore, indicators of work adjustment other than tenure may be more appropriate (such as job attachment and job commitment). A more direct measure of work adjustment such as self-perceived work adjustment may be another useful indicator. There were other correlates of both satisfaction and satisfactoriness which may be useful in assessing work adjustment. Such correlates found here were confidence in attaining authority, in gaining autonomy and recognition, in engaging in work where there was activity and variety, in having friendly co-workers, in persevering, in being creative and in adopting an active adjustment style.

7.3.5 Adjustment styles

That the correspondence between needs and reinforcers was moderated by the adjustment style of flexibility for only five of Dawis and Lofquist's twenty work needs (ability utilisation, achievement, responsibility, variety and social status) suggests their theory probably needed to be more specific about which of the needs are more likely to be moderated by flexibility. Of course not all needs were found to be important for all individuals, and not all corresponded with reinforcers in the work environment, both of which would need to happen for the moderating relationship to be able to occur. But for those where these conditions existed, that is the need was considered important and did have available reinforcers, and the moderating relationship then did not occur, we can question the validity of this particular proposition of Dawis and Lofquist. An alternative explanation might be of course that for this respondent group not all needs are moderated in this way.

In relation to the finding that not all of the adjustment modes were inversely related to job satisfaction level, one would expect there to be an inverse relationship for the active and reactive modes (as was found) and for perseverance, (in the case of the latter the higher the satisfaction the less need there would be for perseverance). That speed and effort were inversely related to satisfaction was also not contrary to expectations. As satisfaction increased one would expect speed and effort to decrease. The relationships which were not as Dawis and Lofquist predicted were the positive relationships between the use of flexibility and satisfaction and between endurance and satisfaction. Because these relationships were different for different adjustment styles, they could be said to be type-of-adjustment-style dependent.

The theory again needs to be more specific, this time about expectations regarding individual adjustment styles.

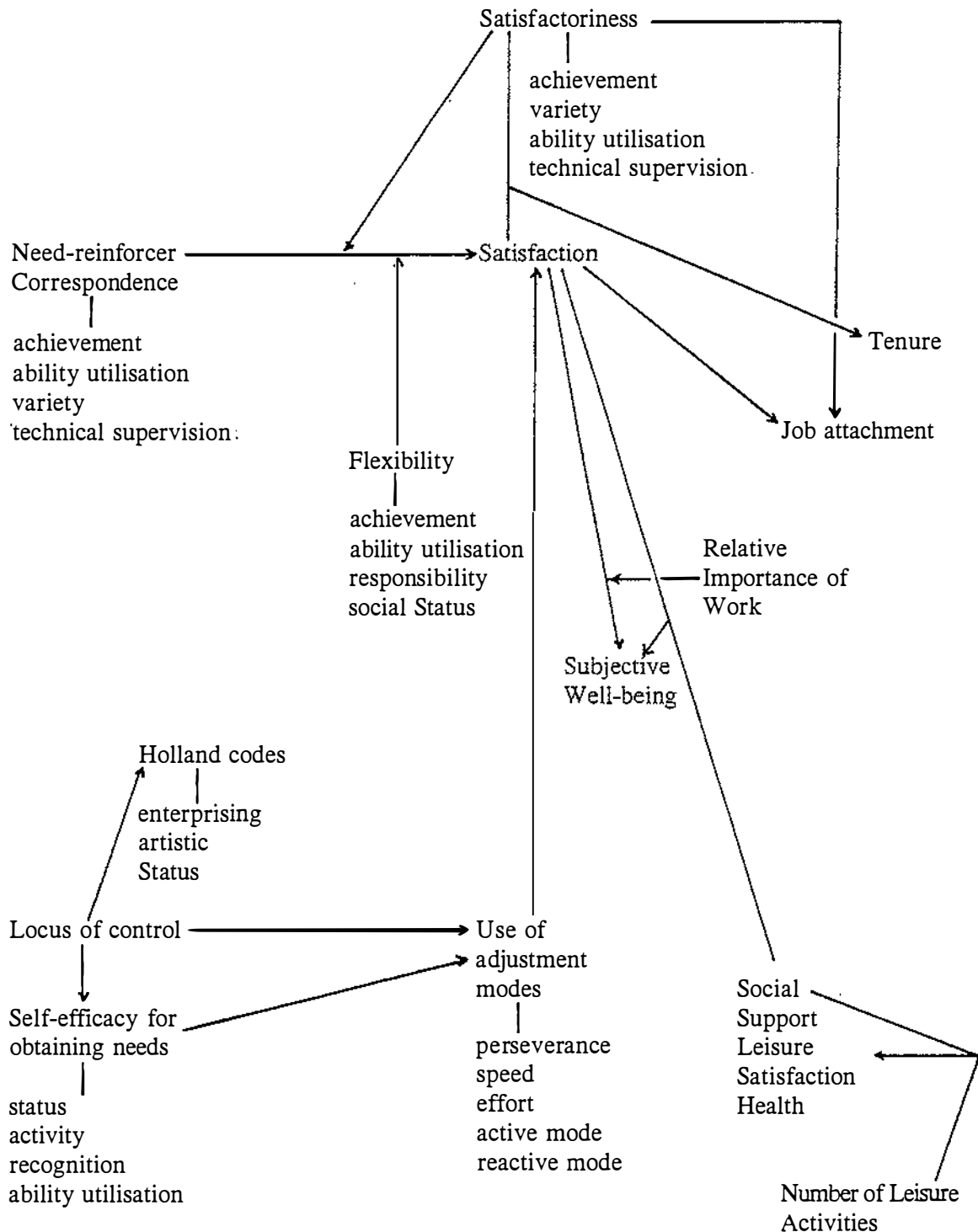


Figure 7.4 Diagrammatic representation of summary of findings for Dawis and Lofquist's Propositions and the Hypotheses of this study

The basic notion relating to adjustment styles and satisfaction (that as satisfaction decreased the need for the use of adjustment styles would increase) was supported for only some of the styles. However, one might not expect flexibility and endurance to operate in the same way as the other modes. It seems to make sense that low flexibility and endurance might be associated with low satisfaction. However, it also seems congruent that one could be satisfied and still demonstrate both high flexibility and endurance. A degree of flexibility may be required to attain satisfaction and endurance might be needed to persist with behaviour that can maintain job satisfaction.

7.3.6 Summary

Dawis and Lofquist justify the use of their theory as a personality theory and a motivation and learning theory. They believe it to be useful in the areas of human development, social behaviour and abnormal behaviour. They may have attempted to generalise their theory too far. They claimed it provides a stimulus response orientation. Their theory was consistent with the general behavioural tradition predominant at the time of their writing. However, the theory could be interpreted without reference to a stimulus-response or the general behavioural model of the time. Alternatively, cognitive and humanistic approaches may well provide better explanations of the underlying relationships in a work adjustment model.

The criticisms extended in chapter four herein and discussed next appear to be justified. Those which Neff (1985) listed and which were independently noted earlier when the present research was begun, have validity. These were the abstract theoretical model not mirroring the less well ordered reality, not all work needs being involved to the same extent, and satisfaction and satisfactoriness not having an equal effect upon tenure. The finding that another variable, job attachment, was more closely associated with satisfaction and satisfactoriness may be generalisable to populations other than university graduates in the initial stage of employment. Job attachment could well be interpreted in the framework of the concepts of modern industrial psychology such as 'employment importance' (Feather, 1986) or the work referents of 'career involvement', 'job involvement' and 'organisational commitment' that Morrow (1983) recommended be operationalised separately. In the event of individuals being employed in many different jobs during their working life (in response to their own needs, to economic climates and to changing work patterns) job satisfaction and performance may have less of an influence on tenure than other factors. It might be preferable to regard job satisfaction as a better outcome variable than tenure. This would be in keeping

with Mobley, Horner and Hollingsworth's (1978) findings that job satisfaction may be more closely associated, negatively, with thoughts of leaving and intention to search for another job, than with tenure. However, regarding satisfactoriness in the same way as an outcome variable (but in its case as an outcome of the ability-ability requirement relationship) may not be equally valid because satisfactoriness was seen to have a greater effect on tenure than satisfaction. However, using both satisfaction and satisfactoriness together to predict work adjustment (as in Dawis and Lofquist's Proposition I) would be expected to be more valid than using the same two constructs to predict tenure. The two constructs could both be treated as outcome variables and be regarded as indicators of the work adjustment construct but not tenure.

Dawis and Lofquist's newer part of work adjustment theory, that to do with adjustment styles, seems to have suffered from over simplification or lack of specificity. It does not seem reasonable to expect that typically a particular style would be favoured over others or be characteristic of particular occupations. A more useful concept might be the extent to which individuals are able to adapt by using the adjustment styles which will maximise both satisfaction and satisfactoriness.

The generalisation of work adjustment theory across time to other stages of employment may be more appropriate than applying it to the employment of university graduates in the initial stage of employment. Although Dawis and Lofquist's believed that the maturation of the work personality coincides with beginning employment, this may not be the case for university graduates. Individuals' work needs at the two stages of the present study were not identical, however Dawis and Lofquist did not state how dissimilar they would have to be before they would be regarded as unstable and therefore immature. In the present research a further assessment at a later stage would have been required to see if and when the work needs had stabilised. Because work adjustment theory assumes a mature work personality, the application of it to a group for whom stability of needs has not been generally established, needs to be undertaken with this in mind.

The whole area of the stability and maturity of work needs raises some general issues. The climate in which Dawis and Lofquist's theory emerged was one of a more stable work force. Currently with employees expecting to change jobs more often, their work needs may correspondingly alter to some extent. Dawis and Lofquist believed work needs remained stable unless other marked changes were affecting the individual. The changes they referred

to could be happening periodically throughout an individual's working life, thus their work needs may not stabilise or only for short periods. Therefore, it may not be appropriate per se to view work needs as stable and unchanging. Even when an individual's work situation remains relatively stable and unchanging intuitively one would expect some changes in work needs as the individual goes through stages in their life cycle.

The respondent group in this study may have particular characteristics that interact with the application of work adjustment theory to them. Satisfactoriness and satisfaction not having identical effects on tenure might be expected in a well-qualified respondent group which would be likely to regard themselves as satisfactory in their job (if their academic training and experience have direct application). Therefore, they may believe their satisfactoriness to have little influence on their degree of job attachment (and therefore work adjustment). This group of respondents may have a baseline of satisfactoriness which would predispose them towards being work adjusted on that account, leaving more of the variance in work adjustment to be explained by satisfaction and other factors. They may be unsatisfactory only in a small number of factors. When a certain level of satisfactoriness is achieved and likely, it may no longer influence work adjustment. Where satisfactoriness occurs at the beginning of employment or soon after, it may not be part of the work adjustment process, until the job changes in some way to produce new demands and the need for new or different skills.

If this respondent group is unsatisfactory in only a few factors these factors may be ones that have less of an influence on job attachment than others. The lack of strong association between satisfactoriness and tenure related variables may also have resulted from 'satisfactoriness' having been measured differently in the present research. However, even though this particular respondent group may view themselves as satisfactory to some extent, because they have received the appropriate training and qualifications for the job, their satisfactoriness may be less when they are first employed. In this early employment stage, job attachment could be expected to be less because there has been little time for it to build. When first employed, individuals may not expect to be satisfactory workers (until they have had more training and experience perhaps). The graduates were in their first half year of employment which could coincide with the induction period within which any job training that may be necessary would probably be given. The level of respondents' satisfactoriness would not necessarily influence the degree to which they are attached to their jobs at this early stage, because both their satisfactoriness and their attachment could be developing still, and levels of both might be expected to be lower than in a later stage of employment.

Of the other potential measures of work adjustment, job attachment may be a contender because it correlated more highly with satisfaction. Expected tenure may tell us little about the degree of work adjustment for this respondent group, because the average expected tenure was so low. This seems consistent with these respondents being in their first job which may be seen as a stepping stone to other jobs or the first step of a career. Therefore, job attachment may provide a better outcome measure of job satisfaction and degree of work adjustment for this group.

7.4 Summary and implications of findings in relation to the variables additional to Dawis and Lofquist's theory

Of the variables introduced to the study, the findings in relation to personality type of factors such as locus of control, self-efficacy and the use of adjustment styles are discussed in section 7.4.1 and the less work related factors such as non-work activities, general happiness, life satisfaction and subjective well-being findings are discussed in section 7.4.2.

7.4.1 Locus of control, self-efficacy and use of adjustment styles

Locus of control

Locus of control (operationalised using the personal competence measure) was of interest, being associated with some of Holland's personality orientations, and the adjustment styles of flexibility and perseverance. The lack of a relationship between personal competence (or locus of control) and the reactive and active adjustment styles, may relate to adjustment styles being situation specific. Personal competence and locus of control may be associated more with choosing the appropriate style in response to a stimulus rather than the confidence to use one or other of the styles.

The locus of control measure had a role to play along with self-efficacy, in the use of adjustment styles. Any estimate of the use of adjustment style may be an important indicator of future work adjustment, particularly if the use of adjustment styles is viewed as an indicator of the potential to become adjusted to work. Measures of self-efficacy about having work need reinforcers available and adopting adjustment styles taken at the first stage of the longitudinal study correlated well with self-ratings about having work needs met and the use of adjustment styles once on the job. That personality orientations of Holland were unable to

be of assistance in predicting level of personal competence/locus of control, may be allied to the measure used for locus of control in this study or to the usefulness of the VPI more generally. Further research using one of the longer and better known instruments, such as that of Rotter (1966) refined along the lines O'Brien (1986) suggested, may be preferable to use to examine this possibility.

Self-efficacy and self-efficacy for the use of adjustment styles

As would be expected, self-efficacy was associated more with variables operating at the personal level than at the organisational level. That parental socio-economic level was associated with level of self-efficacy is also not surprising. Self-efficacy has implications for the preparation of individuals entering the work force. Obtaining estimates of self-efficacy for obtaining work reinforcers (that are potentially under the control of the individual to attain) and self-efficacy for adopting adjustment styles could be informative for the individual by clarifying their attitudes and how these affect their work and further vocational options. Any need for intervention to improve self-efficacy could be identified and acted upon. Self-efficacy estimates may also be of assistance in the employee selection process as an indicator of personal attitudes which may interact with other factors which are likely to affect job suitability, performance, work adjustment and tenure.

Self-efficacy has received support relatively recently as a promising and legitimate construct with respect to the study of careers, as demonstrated by an extensive literature review and account of the empirical status and future directions of career self-efficacy (Lent and Hackett, 1987). Career self-efficacy was reported to have been examined in terms of career entry variables such as career choice and academic achievement, persistence, and choice, the career adjustment process, and in relation to causal links between self-efficacy and performance behaviour.

Possible gender differences in career self-efficacy has been a recurring theme. Although gender differences in self-efficacy have been found to predict gender differences in considering taking up certain occupations, no gender differences in overall self-efficacy were identified here. Support has been found for the existence of career self-efficacy as a unique construct distinct from overall self-confidence which could offer useful but not necessarily sufficient information to aid in the prediction of career-related choices and behaviour. This support was in the form of nonsignificant correlations between career self-efficacy and measures of self-esteem and career indecision (Lent et al, 1986).

Self-efficacy had been recognised as having potential for the understanding of career adjustment (Hackett and Betz, 1981) and initial efforts were being made in this area at the same time as the present research was being conducted, that is, Hackett, Betz and Doty (1985) were seeking to define specific job-related skills critical to an academic career. Hackett et al found self-efficacy to be moderately related to performance. Pre-test assessment of self-efficacy was found to have an affect on performance. It was thought that the method of ascertaining self-efficacy enabled students to perform more competently by giving them information about expected performance. Although not assessed in the present research, this possible reactivity of the self-efficacy measure may be less of a problem here because self-efficacy measures were taken a year prior to the assessment of performance and as such would not be expected to exert much influence.

Of the areas of self-efficacy research, the present research examined the career adjustment process through self-efficacy for having work needs met (Betz and Hackett, 1981), rather than via self-efficacy for being qualified for, and being able to do different occupations. A common criticism of self-efficacy research is that it creates a "blame the victim" viewpoint, that if the source of a problem lies with the individual then a lack of success at work can only be blamed on the individual. Hackett, Lent and Greenhaus (1991) believed this criticism to be unjust viewing self-efficacy instead as part of a social learning framework which takes into account the reciprocal nature of person-environment relationships. However, at the same time they suggested the expansion of self-efficacy theory to give more consideration of self-efficacy in relation to environment variables (which occurred in the present research when self-efficacy for obtaining work environment reinforcers was assessed).

In discussing further areas for career self-efficacy research, Hackett, Lent and Greenhaus (1991) identified many others that have already been the subject of this present research (thus giving some support and validity to their inclusion as suggested important constructs to consider along with Lofquist and Dawis's theory of work adjustment). Among areas identified as ripe for research in relation to the impact of self-efficacy in the workplace are careers adjustment, the prediction of job tenure, the prediction of satisfaction, career changes, and occupational stress. As was examined in the present research, one of the theoretical speculations of Hackett, Lent and Greenhaus (op. cit.) was that self-efficacy is related to work adjustment. They postulated that,

"When self-efficacy is defined operationally as perceived competence in the skills required for one's work performance, it is likely that high self-efficacy workers

report more job satisfaction, receive higher performance ratings, and achieve greater job tenure than low self-efficacy workers (with actual ability held constant)." (p 378)

It was noted that some circumstances may produce curvilinear relationships between self-efficacy and indices of work adjustment. The example given was that workers with moderate self-efficacy may be more satisfied with repetitive and dull work than those with either very low or very high self-efficacy expectations.

Support for extending the application of the self-efficacy model is evident in Hackett, Lent and Greenhaus' (op.cit) conclusions where they noted support for the need to investigate aspects of career development, in addition to occupational or major choices, when testing the career self-efficacy model.

7.4.2 Factors less directly related to work: Non-work activities, happiness and life satisfaction, social support and subjective well-being

Non-work activities

The principal findings in relation to the constructs explored to expand work adjustment theory to include taking non-work activities into account were, that for this groups of respondents, leisure was rated as more important than work (although work was usually still rated as important). Satisfaction with non-work activities was seen to have a greater association with well-being than did job satisfaction. On this basis alone it would seem important to consider non-work activities when examining work adjustment because it may help account for attitudes to work that are unexplained by work activities alone. In relation to leisure satisfaction (like its work place counterpart, job satisfaction), the relative importance of work and leisure interacted with it. As the relative importance of the job increased, the degree of satisfaction with leisure activities decreased.

Happiness, life satisfaction and subjective well-being

The factors which are more external to the job itself but which were believed to have some impact upon work adjustment (that is, happiness and life satisfaction measures or subjective well-being, leisure satisfaction and social support) were found to be important to the work adjustment process in the present study. Comparison of life and job satisfaction measures indicated that more than half of the respondents were satisfied in their job and expressed life satisfaction. Although more than half of the respondents saw themselves as being satisfied

with their job, a greater percentage still were satisfied with their life. For that proportion satisfied with their life but dissatisfied with their job, there is the implication that being satisfied overall may indicate a potential for obtaining job satisfaction. For these individuals reasons for having attained life satisfaction may assist in the assessment of what is further needed to obtain job satisfaction.

At the same time some of the skills used to achieve life satisfaction may be generalisable to the work place in any attempt to achieve job satisfaction. Also the changes in happiness and life satisfaction over time, as evidenced in this longitudinal study, can be used as a way of identifying factors associated with those changes. As in previous research (Campbell et al, 1976) the happiness measures were only moderately correlated with well-being, supposedly reflecting the lack of a cognitive component which seems to contribute to satisfaction rather than to happiness measures, while life satisfaction measures achieved one of the highest correlations (of $r = .93$) with well-being.

Some estimate of work adjustment from a measure of subjective well-being would seem to have some validity because factors relating to the work place (such as self-efficacy for use of adjustment styles and having work needs met, the use of adjustment styles and personal competence) were found to be associated with well-being. That other factors external to the work place (such as, satisfaction with education, level, friends and intimate relationships) were also associated with well-being tends to indicate there is a relationship between work adjustment type of factors and more general adjustment factors. When individuals make ratings about their subjective well-being their judgements would be expected to include both work and non-work factors, such that subjective well-being and work adjustment are related measures which overlap. Looking at subjective well-being and work adjustment variables may be of assistance in answering questions about the relationship between work and general adjustment. The variables that were of importance to particular respondents tended to be more associated with experiencing well-being in those areas. Although accounting for a small amount of variance, the effect that job satisfaction had upon well-being was greater where work was more important relative to non-work activities. It may be important to establish the relative importance of the two domains of work and non-work while examining any reciprocal relationships between well-being and job satisfaction (such as the influence of well-being upon job satisfaction).

In the second stage of the study, having work reinforcers available for individual needs and using adjustment styles were both less associated with well-being than self-efficacy for well-being had been in stage one. This is consistent with work related factors being less associated with well-being than non-work factors were. It is not surprising therefore that the work need which was introduced in this study, that of the job being compatible with one's lifestyle, was one of the work needs associated with well-being. A measure of satisfaction with living circumstances was also associated with well-being for the second part of the study.

The other work needs associated with well-being could be categorised into (a) the more personal needs of using skills and abilities, achieving, gaining autonomy and recognition, (b) the needs more influenced by the organisation (pay, job security and supervision), and (c), some of the adjustment style variables (the active mode and perseverance).

Social Support

The availability of social support was associated with the measures related to general adjustment such as satisfaction with living circumstances, happiness, well-being and life satisfaction. In recent research examining social support and self-esteem, social support has been found to have a positive relationship with self-esteem. The relationship between psychological adjustment and later social support has been found to be more positive than the relationship between social support and subsequent psychological adjustment. In terms of establishing a causal direction, this was interpreted as suggesting that social support results from psychological adjustment (Cramer, 1990), rather than the reverse.

7.4.3 Findings in relation to the broader literature

Dawis and Lofquist in their development of work adjustment theory set out to integrate disparate areas of literature such as the psychometric measures of job satisfaction and the vocationally oriented areas of work motivation. The present research supported the contention that the model needed to be expanded to take into account other significant areas of the literature involving cognitive and social factors. Caution is needed in accepting Dawis and Lofquist's claim for their work adjustment theory as a theory of personality and as a more general theory of behaviour which could be applied to numerous settings. As a personality theory their model does not have all the elements of contemporary personality theory as listed by Staub (1980) and reported in section 2.1.3 herein. The expanded model of the present research in fact does have all the elements present.

The present research echoes Landy's (1985) belief that it is questionable to separate work from non-work attitudes and behaviour. Dawis and Lofquist's need-oriented approach is entitled to more recognition than the need approaches generally and warrants the use of the title of 'theory' because they produced empirically testable interrelated propositions. Also their focus was not only on identifying needs likely to be important to individuals but also on the useful notion of the effect of needs corresponding with reinforcers in the work environment. However, the present research demonstrated the need to expand the model to take into account a motivational approach which acknowledges the importance of cognitive and social factors.

With respect to the integration of some disciplinary perspectives the expanded model, with reference to social reference groups and other social factors such as social support, moves to a more social psychological perspective of accounting for the effect of individual's social groups on their work adjustment related behaviour. Gowler and Legge's (1982) criteria for integration of disciplinary approaches, that is variables operating simultaneously at the level of cause and content, have been met in the present research. The individual's work adjustment variables and their social reference group variables (their job satisfaction level in relation to their friends) are individual and group type of variables, respectively; this is their content level. These variables are investigated at the individual and the group (academic group differences) level; this is the causal level at which the variables are operating. That part of the present research to do with analysis by academic groups and by individuals is in Riley's (1964) terms contextual analysis (as described in chapter one) which primarily focuses on individuals and accounts for differences between groups. As an example of contextual analysis the present research has therefore been more fruitful than if group or individual analysis alone had been used.

The relationship between subjective well-being and job satisfaction is reminiscent of earlier work adjustment research models where work adjustment was examined in relation to general adjustment (Fisher and Henn, 1931; Menninger, 1942; Schaffer 1953; and Clark, 1953). This is in contrast to Ginzberg (1962) maintaining that personal and general adjustment are not related and Super's (1957) contention that no one type of adjustment would correlate highly with the composite of general adjustment. The earlier emphasis on the use of job satisfaction to evaluate work adjustment (Lurie, 1942; Heron, 1952, 1954, Gellman, 1953; and Scott, Dawis, England and Lofquist, 1968) was shown to still have relevance. Although Dawis and Lofquist's (1968, 1984) additional concept of satisfactoriness appears to have an important

role to play in predicting work adjustment, their emphasis on and use of tenure as an outcome variable has little predictive value.

A person-environment fit approach focusing on personality factors, such as that of Holland (1959) as measured through his Vocational Preference Inventory and the Strong-Campbell Inventory does not appear to be of particular value in differentiating among the different academic groups of this study. However, the presence of social support (which person-environment fit models expect will moderate the effect of stress) was found to contribute to the existence of reasonable levels of job satisfaction and subjective well-being. The importance of the cognitive perspective, in particular Payne's (1979) contention that the individual's *perception* of demands moderates the effects of stress (as discussed in chapter one) was echoed in the usefulness of the self-efficacy concept in work adjustment, in the self-efficacy for the use of adjustment styles in particular. Self-efficacy has a strong cognitive component in the degree to which individuals perceive themselves to be efficacious in becoming adjusted.

CHAPTER EIGHT

RESULTS: WORK NEED FACTOR STRUCTURE

The results relating to aims three and four of the research, to investigate structural relationships among Dawis and Lofquist's key concepts using LISREL and to explore the underlying structure of work needs (using factor analysis and LISREL) are presented in this chapter. The factor structure of the data is compared with that of Dawis and Lofquist's findings (section 8.1). The work need factors arising from the present study were modelled using LISREL and factor analysis (section 8.2). A meta-analysis involving work need factors is presented in section 8.3.

In general, the findings are reported in a manner which was consistent with the interactive modelling process characteristic of the exploration of the latent structure of variables. In the case of LISREL, initial models were modified in a series of analyses until the best fit for the data, both statistically and substantively, was found. The results of the LISREL analyses are discussed at each stage, before the next modification of a model occurred.

With respect to aim three of the research an attempt was made to apply LISREL to Dawis and Lofquists' paradigm as depicted in Figure 8.2 using the LISREL general model (defined in general terms in section 5.4.3 and Appendix K) and the measurement of it (using the MSQ twenty work need scores, perceptions of available work reinforcers and school examination grades to represent ability estimates, self-efficacy scores for performance to represent satisfactoriness measures and expected tenure as a measure of tenure). However, the model failed to converge. It would appear that either the general LISREL model was inappropriate or the data too large and the variables too diverse. However, as will be seen in section 8.2, when applied to the five work need factors which had emerged, the LISREL model was found to be most useful.

8.1 Factor analyses

The factor analyses of work needs undertaken to replicate Dawis and Lofquist's factor analysis are reported in section 8.1.1, and a nonorthogonal rotation of factors assuming a correlated factors model of work needs is reported in section 8.1.2.

8.1.1. Replication of Dawis and Lofquist's factor analysis for the present data

The work needs operationalised as the responses to the MIQ questionnaire items, were first factor analyzed in the same way Dawis and Lofquist's had analyzed MIQ results. These exploratory factor solutions like those of Dawis and Lofquist (1984) as reported in Tables 3.5 and 4.1, used a principal factor solution with squared multiple correlations as communality estimates and orthogonal rotation to a varimax criteria. Such an analysis of the present data resulted in less factors, five instead of six, as reported in the rotated factor matrix, Table 8.1.

Table 8.1 Principal Axis Factoring Rotated to a Varimax Criteria for MIQ Data

Advancement	.71570	.21136	.21320	.04714	-.19671
Recognition	.69590	.26269	.10573	.09495	-.04885
Social status	.60226	.16327	-.01680	.20931	.11427
Compensation	.49298	.02565	.31130	.36230	-.23323
Achievement	.48546	.44836	.21152	.17900	.25675
Authority	.43391	.41488	.16355	.19836	-.11935
Security	.41828	-.03671	.33046	.35237	.06158
Responsibility	.26191	.80523	.14046	.12258	-.02075
Creativity	.22316	.74603	.05259	.06125	.21186
Ability utilisation	.40637	.53627	.17204	.13606	.22115
Independence	-.01145	.43062	.10915	.30261	.01350
Supervision/human	.10173	.23602	.72568	.12125	.16760
Company policies	.06805	.06806	.70757	.08076	.26738
Supervision/technical	.22383	.09772	.69301	.15014	.02573
Coworkers	.24007	.07898	.28750	.60404	.20337
Variety	.13390	.42460	-.02782	.59292	.07937
Working conditions	.25278	.12359	.37891	.47277	.08681
Activity	.20064	.31609	.07513	.44420	.14455
Social service	-.01928	.23884	.15442	.31599	.63301
Moral values	-.06279	.02598	.16769	.02845	.49422

Although there were some similarities between the Dawis and Lofquist's factor analysis and those of the present study, there were some major differences, as represented in the first two 'need scales' columns of Table 8.3.

With reference to the varimax column of the present study in Table 8.3, factor one involved work needs which were loaded on Dawis and Lofquist's factors of status, achievement and comfort. Factor two consisted of work needs from Dawis and Lofquist's autonomy, achievement and comfort factors. Factor three was the same as Dawis and Lofquist's safety factor. Factor four was made up of Dawis and Lofquist's comfort factor with one item from their altruism factor. Factor five was the same as their altruism factor without the co-worker need scale.

8.1.2 A correlated factors, higher order factor, model

To assess the way in which Dawis and Lofquist's *values* served as *reference dimensions* for work needs (that is, the factors underlying work needs or the latent variables of work needs) and the possible intercorrelations, a correlated factors hierarchical model was examined. Reinterpretation of factors was made to allow the possibility of correlations among them. Upon investigating whether factors were correlated using principal axis factoring (PA2 in SPSS^x, 1983), the nonorthogonal (oblimin) rotation did not converge in 25 iterations. However, using a Maximum Likelihood Solution (and multiple squared correlation as communality estimates) five factors were produced. The structure matrix¹ is reported in Table 8.2 and the pattern matrix in Appendix K (Table K.3). With reference to the factor correlation matrix (shown in Table 8.4), five of the ten possible factor correlations were of a moderate size being between .33 and .46 and three of these were significant at the less than .05 level, ($r_{crit} = .433$, d.f. 19.).

The factor structure (the variables' correlations with the set of factors in the structure matrix of Table 8.2) showed some similarities to the factors which arose from principal axis factoring rotated to a varimax criterion. Only the structure of one factor, Dawis and Lofquist's safety factor, remained the same for all analyses and rotations. This factor included the work needs of supervision, both human relations and technical, and company policies and practices.

¹ The correlations of variables with the factors. The Pattern matrix (the weight matrix to calculate variable standard scores from factor standard scores) is reported in Appendix K.

Table 8.2 Structure Matrix for ML Extraction and Oblimin Rotation for MIQ data

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Achievement	.84385	.40192	-.04248	.48439	.37127
Ability utilisation	.75986	.43271	-.03852	.39625	.47782
Recognition	.63754	.27349	-.46561	.39813	.24501
Social status	.46829	.17533	-.35057	.44966	.26581
Supervision (human)	.35305	.78352	.07324	.37259	.25819
Company policies	.24457	.74428	.14104	.30736	.11409
Supervision (technical)	.32848	.74348	-.11002	.38713	.12349
Advancement	.56383	.33563	-.62247	.35302	.22767
Moral values	.11035	.24413	.38029	.13614	.06751
Coworkers	.32725	.44070	.00959	.75391	.25851
Working conditions	.39765	.48276	-.04213	.62300	.21591
Variety	.41290	.13115	.02285	.59180	.51466
Security	.36083	.43709	-.23539	.54319	.05963
Activity	.40712	.22953	.00583	.53006	.38794
Compensation	.37830	.38688	-.46230	.52745	.10525
Social service	.28090	.32402	.43686	.44212	.36468
Responsibility	.63845	.27470	-.14300	.31416	.77122
Creativity	.62901	.21259	.04438	.27439	.72370
Authority	.44419	.29826	-.42367	.40772	.53680
Independence	.23483	.18766	.04620	.31922	.51691

The factors of the ML solution, as shown in the Oblimin column of Table 8.3, could be interpreted as *achievement*, *management*, *moral values*, *working conditions* (referred to as *conditions* in Table 8.4) and *autonomy*, respectively. The achievement factor consisting of achievement, ability utilisation, recognition and social status, appears to represent Dawis and Lofquist's achievement and the recognition of it as reflected in social status. The factor label of safety does not seem to entirely represent the needs it encompasses, that is, supervision and company policies and practices. Safety is just one of the aspects involved in supervision, administration and training. It is difficult to find a suitable single-word alternative; administration or training on their own seem insufficient. The relationship of the individual with management may represent the factor. Therefore the label of management, to represent management policies and practices, was applied instead.

Table 8.3 A comparison of Factor Analyses of Dawis and Lofquist's MIQ Data with that of the present study

DAWIS AND LOFQUIST		PRESENT STUDY		
Values	Need scales	Need Scales	Need scales	Suggested values
	(Varimax)	(Varimax)	(Oblimin)	
<i>Achievement</i>	Achievement Ability utilisation	Achievement Advancement Recognition Social status Compensation Authority Security	Achievement Recognition Social status Ability utilisation	<i>Achievement/ Recognition</i>
<i>Autonomy</i>	Creativity Responsibility	Creativity Responsibility Ability utilisation Independence	Creativity Responsibility Authority Independence	<i>Autonomy</i>
<i>Safety</i>	Company policies Human relations supervision Technical supervision	Company policies Human relations supervision Technical supervision	Company policies Human relations supervision Technical supervision	<i>Management</i>
<i>Comfort</i>	Activity Variety Working conditions Compensation Independence Security	Activity Variety Working conditions Coworkers	Activity Variety Working conditions Coworkers Security Social service Compensation	<i>Working Conditions</i>
<i>Status</i>	Advancement Recognition Authority Social Status			
<i>Altruism</i>	Co-workers Moral Values Social service	Moral values Social service	Moral values Advancement	<i>Moral values</i>

Table 8.4 Factor Correlation Matrix for ML Extraction and Oblimin Rotation of MIQ Data

Achievement	Management	Moral values	Conditions	Autonomy	
Achievement	1.00000				
Management	.37469	1.00000			
Moral values	-.17580	.00995	1.00000		
Conditions	.46141*	.44161*	-.08970	1.00000	
Autonomy	.44520*	.14427	.03607	.32854	1.00000

Note.* $p < .05$

The moral values factor involved Dawis and Lofquist's advancement and moral values needs. The factor consisting of responsibility, creativity, authority and independence seems well represented by the label *autonomy* because the needs concerned involve a sense of autonomy, individuality and independence. The factor consisting of friendly coworkers, working conditions, variety, security, activity, compensation and social service might be better represented by the label *working conditions* rather than *comfort*. The factors involve more of the conditions of the work environment than might be immediately associated with the word comfort. Therefore, the label comfort seems less descriptive and encompassing with respect to all of the items.

In comparing the varimax and oblimin rotations (Table 8.3) of the present study, work needs which were identified as the same factor for both were: the achievement, recognition and social status needs (of the achievement factor); the creativity, and responsibility needs (of the autonomy factor); the company policies, and supervision needs (of the management factor); and the activity, variety, working conditions and coworker needs (of the working conditions factor). Therefore the work needs changing factors were ability utilisation (from autonomy to achievement), authority (from achievement to autonomy), security and compensation (from achievement to working conditions), social service needs (from altruism to working conditions) and achievement (from achievement to altruism).

It is apparent from Table 8.4, (with its range of correlations) that the achievement factor correlated more frequently with other factors and correlated negatively with moral values only. Moral values was the factor which had the least in common with the other factors by exhibiting zero or near-zero correlations with safety, working conditions and autonomy. The

placement of work needs in different factors resulting from nonorthogonal rotation happened in the case of certain of the factors more than others. It is not surprising that the factors involved were those which were correlated, those involved in the most changes being those the most highly correlated. Work needs moved between the autonomy and achievement factors and these factors were correlated $r = .45$. The work needs of compensation and security moved from the achievement factor to working conditions and these factors had correlated $r = .46$. The authority need moved from the achievement to the autonomy factor and these factors had correlated ($r = .45$). Among the less highly correlated factors moves also occurred. The advancement need moved from the achievement to the altruism factor (these factors had correlated $r = -.18$) and the social service need moved from altruism to working conditions (but these latter two factors had not correlated with each other with an r of $-.09$).

The existence of correlated needs reinforced the researcher's belief that Dawis and Lofquist's six needs were not independent. This belief was based on what makes sense in reality and on an examination of Dawis and Lofquist's own factor analyses. The allocation of some needs to certain factors appeared to be almost arbitrary, some needs could equally have been regarded as belonging to two and sometimes more factors. The use of an orthogonal rotation technique such as Varimax tends to artificially force factors to be independent of each other (Gorsuch, 1983) and this is probably what happened. Because some of the needs were more highly correlated than others, a hierarchical model with more than one order of factors becomes likely.

The simpler model of a single higher order need was investigated first, using confirmatory factor analysis through LISREL V and using half of the work needs. A more complex model postulating more than one level of higher order needs would be better investigated through exploratory factor analytic techniques and using all of the variables, the twenty work needs. Long (1983) noted that generally the easiest way to estimate the confirmatory factor model (CFM) is with software designed for the covariance structure model and that LISREL (version I through V is one of the most commonly available programs).

8.2 Modelling the work need factors with LISREL and factor analysis

The work needs of the present study were modelled using LISREL in section 8.2.1 and the results from higher order factor analysis for the same data are presented in section 8.2.2.

8.2.1 Modelling the work need factors with LISREL

The various work need factor models examined and modified using LISREL to arrive at the best fit between the model and the data are reported in Appendix K. The modelling process is reported in keeping with Hayduk's (1987) recommendations that a modelling history be provided in the reporting of LISREL results. In examining the factor structure of work needs, the work needs part of the sub-model relating to need-reinforcer correspondence in Figure 8.2 was the area of interest. It represents a second-order factor analysis submodel of the LISREL general model with first-order loadings given by Λ_γ and second-order factor loadings given by Γ (These gamma and lambda coefficients are shown in Figure K.1, Appendix K.) The model is of the form of Jöreskog's (1969, 1970, 1973, 1974) ACOVS-model.

Dawis and Lofquist's 1984 basic model or paradigm can be represented by the general LISREL model (described in section 5.2.3 and represented mathematically in Appendix K) and the structural model of the paradigm is depicted in Figure 8.2 with a description of the coefficients given in the footnote to the Table.

The conditions needed for model convergence (Fergusson and Horwood, 1986) appeared satisfied, that is, there was a well specified causal theory which could be expressed as an identified system of linear equations and that the data was of sufficient quality and quantity to fit and test the model. Dawis and Lofquist's interconnected propositions could be specified as a system of linear equations although they had not specified the error portion of their model. The data appeared to be of sufficient quantity and quality. The sample size was more than the recommended minimum number of 200. The values for the work need statements of the MIQ fell within the expected range, they were comparable to the scores of Dawis and Lofquist's data and no completed instruments were rejected through the MIQ's in-built response consistency measure (The Totally Circular Triad Scores or TCTs). On these bases the MIQ data for the present research appeared of good quality.

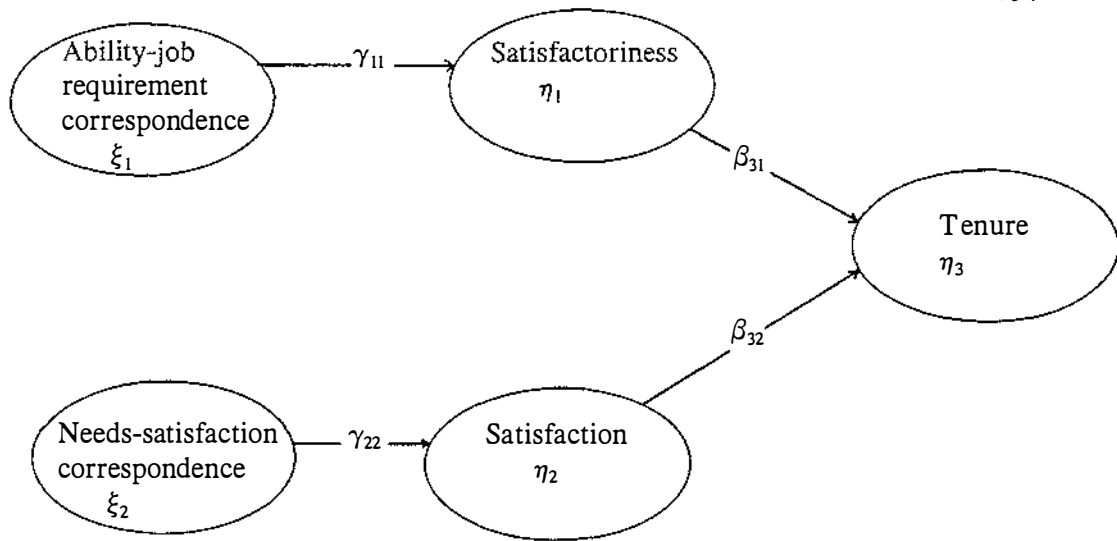


Figure 8.2 Structural Relations among the Latent Variables² (exogenous and endogenous) of Dawis and Lofquist's Basic model

Note. The Latent Variables

ξ_i	the exogenous (independent) variables
η_i	the endogenous variables (variables which are either dependent entirely or which are dependent in relation to some variables and independent in relation to others in the model).
γ_{11}, γ_{22}	gamma coefficients which represent the causal links between the exogenous and endogenous variables.
β_{31}, β_{32}	beta coefficients which link the endogenous variables

Because nonconvergent models can result from sampling fluctuations in covariance matrices or from inconsistencies among multiple indicators (Driel, 1978; Boomsma, 1982, 1985; Anderson and Gerbing, 1984; and Hayduk, 1987), starting with a few well-established indicators in a large model, such as this, is expected to help solve the problem (Hayduk,

² The latent constructs which correspond to the x variables are denoted by the vector $\xi = (\xi_1, \xi_2)$ and the latent constructs which correspond to the y variables are denoted by the vector $\eta = (\eta_1, \eta_2, \eta_3)$ where ξ_1 = ability-job requirement correspondence, ξ_2 = needs-job satisfaction correspondence, η_1 = satisfactoriness, η_2 = job satisfaction, and η_3 = tenure. In the measurement part of the model, which is not given in detail here because of the failure of the entire model to converge, the latent independent or exogenous variables were denoted by the vector $x = (x_1, x_2, \dots, x_q)$ and the latent dependent or endogenous variables denoted by the vector $y = (y_1, y_2, \dots, y_p)$. The ability related scores and the need reinforcer correspondence scores were represented by $x_1 \dots x_q$ and the satisfactoriness scores, the satisfaction scores and the tenure related scores represented by $y_1 \dots y_p$.

1987). Therefore, a smaller number of indicators were chosen because of the difficulties associated with fitting large models early on in the process. To avoid problems of a *positive definite matrix*³ (which had occurred when the entire model was analyzed using LISREL), matrices were kept small initially. Smaller matrices can also lessen the likelihood of identification⁴ problems.

To elaborate on the issue of identification, Saris and Stronkhorst (1984) describe the study of the identification of models in the following way. In LISREL the variances of covariances or correlations obtained from data are expressed in the parameters of a model (a linear structural relations model). The relationships between the variances and covariances or correlations and the parameters of the model are derived. For each combination of variables the variances and covariances or correlations are expressed as a specific function of the parameters of the model. The parameters are of special interest because they are more fundamental (than the covariances etc.) to the causal process. In trying to solve the structural parameters from information supplied by the data a unique solution for the values of the structural parameters cannot always be found from the values of variances and covariances or correlations. It is this "Study of the uniqueness of the solution of the parameters which has been called the study of *identification* of models" (Saris and Stonkhorst, op. cit. p. 131).

There are both *necessary* and *sufficient* conditions for the identification of structural equation models. The general rule in algebra is that a necessary condition for solving unknowns in equations (the unknowns being the structural parameters in this case) is that the number of unknowns should be equal or less than the number of distinct equations. The number of equations equals the number of different variances and covariances (or correlations) of observed variables. The difference between this number and the number of structural parameters provides the number of *degrees of freedom (df)*. The necessary condition for identification is that the degrees of freedom should be equal to or larger than zero. The necessary condition is not always sufficient for identification and each model needs to be checked. A discussion of such other conditions as described in Saris and Stonkhorst (1984) and Hayduk (1987) is not required here.

³ A positive definite matrix occurs when one or more of the variables in the data matrix is completely dependent upon one or more of the other variables in the matrix.

⁴ The question of identification refers to the lack of a unique solution for the values of the structural parameters. The identification issue is discussed in more detail in Appendix K.

Coefficients can lack identification for different reasons, such as collinearity and multicollinearity and impossible estimates such as negative variances (negative variances are impossible because the squaring of negative values which occurs in calculating variances means they take on positive values only). Collinearity and multicollinearity refers to the situation where two (or more in the case of multicollinearity) variables are highly correlated. In multiple regression it has the effect of regression slopes possibly being inaccurate or unstable and there being no unique solution for the slope coefficients. Collinearity is detected by large simple or multiple correlations among the independent variables or by unusually large standard errors for slopes in regression equations. Sometimes indicative of identification problems are matrices for which no inverse can be found (that is, is a singular matrix or one with a zero determinant). Because determinants of matrices are used in solving sets of equations the absence of solutions can be regarded as questions about the rank (to do with a nonzero determinant, invertibility, or nonsingularity) of particular matrices (Hayduk, 1987). Solutions to the problem of collinearity can include eliminating one or other of the collinear variables or combining them to create a single scale.

The Maximum Likelihood estimates produced in LISREL are arrived at within a combination of model and data constraints. The theoretical model constrains the estimates through specification of the variables to be included and the location of the free coefficients (those to be estimated) which link the variables. The data constrains the estimates because the comparison of the Σ (a model-and-estimate implied covariance matrix among the observed indicators) and the data S (the observed covariance matrix) selects the best set of coefficient estimates. It is the failure of the combined data and model constraints to locate or identify *unique* estimates which results in the identification problem. The combined force of the theory and data constraints are then insufficient to determine unique estimates of the structural coefficients, thus more than one set of coefficient estimates imply the same best fitting Σ . Hayduk (op. cit) notes that a way to visualise identified and unidentified coefficients is in the context of the fit function. "LISREL creates maximum likelihood estimates by selecting as estimates those coefficient values implying a Σ maximising the likelihood that the observed data S could arise by chance sampling fluctuations. If more than one set of coefficient estimates imply the same best fitting Σ , we have encountered the identification problem" (Hayduk, op.cit. p. 140).

Although not foolproof or always available, especially where model analysis does not converge, there are checks within the LISREL which alert the researcher to the model not being identified. If there is more than one way to calculate a particular coefficient the model is said to be *overidentified*. If all the coefficients in a model are identified (or overidentified) the entire model is identified. If even a single coefficient is not identified, the entire model is not identified.

The overall goodness of fit of the models were estimated using the log likelihood ratio chi-square statistic. Hayduk (1987) noted that in contrast to the usual role of the null hypothesis smaller χ^2 values are indicative of better fitting models, a nonsignificant χ^2 is desirable, and accepting the null hypothesis amounts to accepting one's theory. Hayduk supported a preference for using a .1 or even a .2 level of significance. Accepting the null hypothesis that the differences between the model-implied covariance matrix Σ and the observed S are sufficiently small to be sampling fluctuations at a .05 level, amounts to accepting a model if the observed sampling fluctuations could be present in about 1 in every 20 samples. Hayduk regards this as not a particularly strong confirmation of a model. It was noted that interpretation of the χ^2 test should acknowledge the existence of an implicit alternative hypothesis, that is an imaginary perfectly fitting model involving a perfect match between the implied Σ and S . A nonsignificant χ^2 is said to inform us that our model is not significantly worse than a perfect model capable of predicting a Σ that is the same as S . At the same time we are reminded that the ability to perfectly reproduce or predict S does not guarantee that a correct model has been specified and estimated, rather it simply means a set of estimates have been located which make the model consistent with the observed data and that the model has survived a challenge that many do not.

Another consideration taken into account in the use of χ^2 in LISREL was that it is an omnibus test of all the model constraints and that tests of significance for single coefficients are made via the difference between chi-squares for nested models or t-tests. The T-values used are the coefficient estimates divided by their standard errors, which therefore provide the number of sampling distribution standard deviations the estimate is away from zero. This value is used to test the null hypothesis that the value of the true parameter is zero. A final consideration related to the feature of χ^2 common to most tests of significance is that with large sample sizes even minute differences tend to be detectable as more than just sampling fluctuations thus producing a statistically significant result.

With respect to chi-square and N , Hayduk (1987) demonstrated, for example, that a sample 100 times as large as the real sample produces a χ^2 a hundred times larger. Among the corrective strategies suggested in the literature are that χ^2 be expressed relative to the degrees of freedom, that is $\chi^2/d.f.$ is a more appropriate measure when N is unusually large. Two figures have been suggested in response to the question of how much larger χ^2 must be than the degrees of freedom (the size of the $\chi^2/d.f.$ ratio) before a model is regarded as a poor fit. Wheaton, Muthen, Alwin and Summers (1977) advocated χ^2 five times the degrees of freedom, but Carmines and McIver suggested (1977) that one to two times was more acceptable.

Hoelter (1983) argued against the $\chi^2/d.f.$ procedure (the ratio is a function of the number of variables and estimated coefficients rather than N) and instead recommended focusing upon the size of N . His formula for what he refers to as the *critical - N* (the size of the sample required to make observed differences between Σ and S just significant at a typical level of significance such as .05) identifies a critical - N as 200 or more as a reasonable criteria. Hayduk noted the same decision criterion can be obtained without Hoetler's formula by just using the χ^2 that results from inserting $N = 200$ in the LISREL program. If the real N is larger (as in the case of the present research), this is effectively ignoring the extra sensitivity or precision that extra cases provide. If the real N is smaller, this is the same as asking if the observed differences are large enough to be detected by a reasonable sized sample ($N = 200$). The most attention is paid to χ^2 as an indicator of model fit if N is modest because if N is large even trivial differences between Σ and S become significant and if N is small χ^2 may not be powerful enough to detect large differences. Hayduk (1977) has found χ^2 to be instructive for N from about 50 to 500. But this range is thought to be dependent upon the types of models estimated. The models examined in relation to sample size have tended to be factor models rather than causal ones. Anderson and Gerbing (1984) found χ^2 compared favourably with several other indices. Hayduk has concluded that it is difficult to generalise about sample size because results can be very different for different types of models, but where N is less than 100 these analyses were thought to be deserving of extra attention.

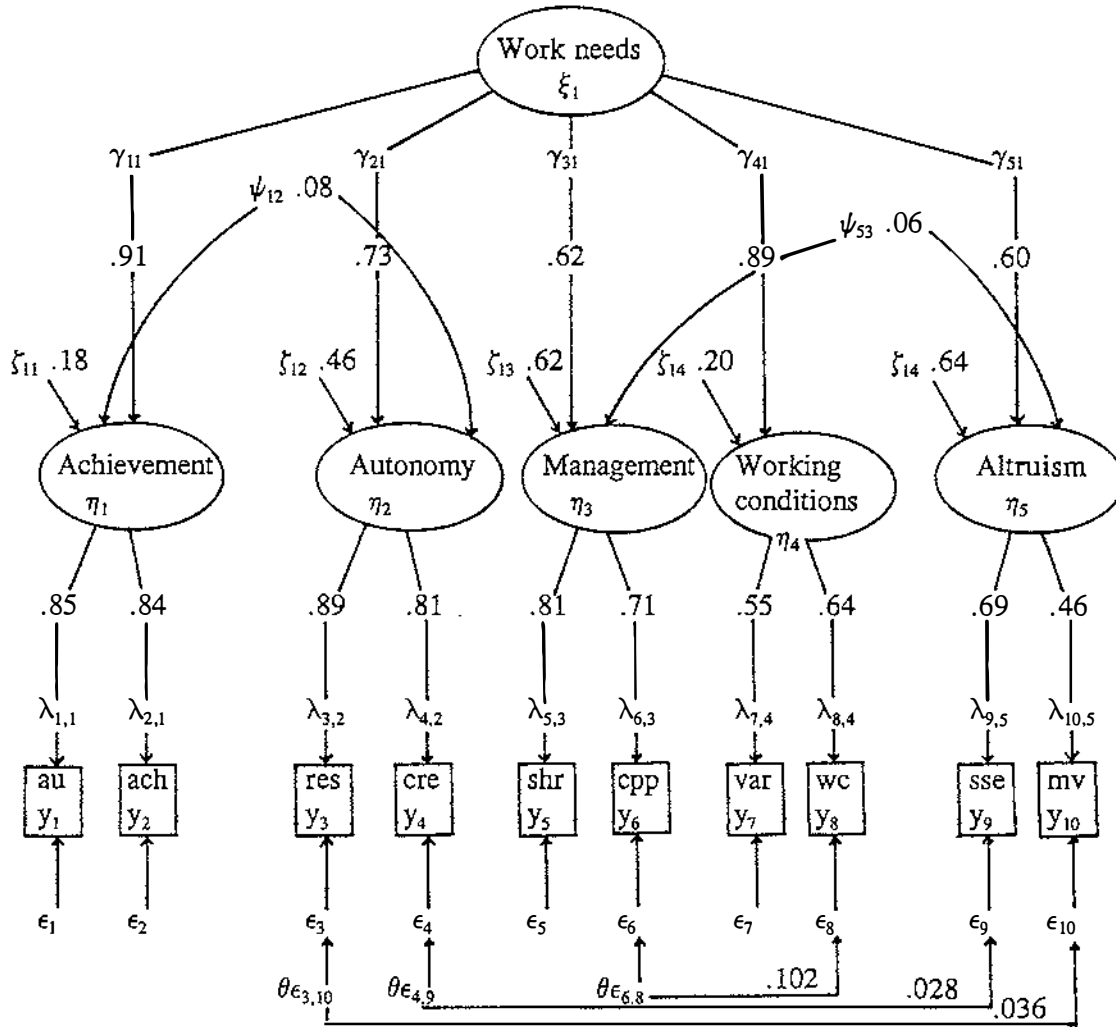
In the present research the real N was located within the 50 to 500 range but the extra sensitivity of an N that much above 200 did allow chi-square to become significant thus showing a difference between the data and the theoretical model which capitalised upon trivial differences. Therefore, an N of 200 (Hayduk's 1987 preference for controlling for a too large

sample size) was inserted in the programme for the purpose of calculating significance level only and on this basis a non-significant chi-square resulted. Chi-square was used as just one of several model quality indicators. The other ways of judging the quality of the model were the examination of residuals, partial derivatives and modification indices.

8.2.2 The fitted model

The Confirmatory Factor Analysis (using LISREL) was undertaken of Dawis and Lofquist's six factor model with the addition of a single second or higher order need and of the five factor analytic solution which emerged from the data of this study. Maximum Likelihood extraction of factors rotated to an oblimin criteria was used. The models in LISREL represented a second order factor model in which there was a general need factor subsuming a number of specific first order factors. The fitted hierarchical model is depicted in Figure 8.3 and a full specification, of the equations and parameter matrices of LISREL, is given in Appendix K (K.3).

Because of the problems associated with multiple indicators and attempting to fit larger models initially as already discussed, a smaller number of indicators (shown in Figure 8.3) than the twenty work needs were chosen to represent the work need factors. In order to keep matrices small, the two better indicators for each factor (those loading most highly on their factor) were selected. These variables were denoted $y_1 \dots y_n$ ($n=12$ in the first model and 10 in the subsequent models). In keeping with the recommendation that a modelling history be provided in the reporting of results of LISREL analyses (Hayduk, 1987), this is reported in detail with accompanying diagrams in Appendix K, K.4. In summary, there were four models examined each involving different numbers of first factors. One model was a representation of Dawis and Lofquist's six factors plus a higher order work need factor using 12 indicators or work need variables. The other models used ten indicators and were five factor hierarchical models with a sixth single higher order factor of work needs. The five factors were selected on the basis of exploratory factor analysis of the data. The five factor hierarchical model was analyzed first without estimating observed variable error terms, then with some of the error terms and disturbance terms, and finally with some correlated error and disturbance terms. Each model successively provided a closer fit to the data. The final standardised solution (the penultimate model investigated) is presented in Figure 8.3.



Note.

au	=	Ability utilisation
ach	=	Achievement
res	=	Responsibility
cre	=	Creativity
shr	=	Supervision (human relations)
cpp	=	Company policies and practices
var	=	Variety
wc	=	Working conditions
sse	=	Social service
mv	=	Moral values
ach	=	Achievement
aut	=	Autonomy
mgte	=	Management
alt	=	Altruism
ξ_1	=	A general work need factor
$\gamma_{11} \dots \gamma_{51}$	=	Gamma coefficients
$\eta_1 \dots \eta_5$	=	First order factors (endogenous variables)
$\xi_1 \dots \xi_5$	=	Eta disturbance terms (ψ = covariances among these errors)
$\lambda_{11} \dots \lambda_{10,5}$	=	Lambda coefficients
$y_1 \dots y_{10}$	=	Observed variables
$\epsilon_1 \dots \epsilon_{10}$	=	Error terms of observed variables
$\theta_{\epsilon_1} \dots \theta_{\epsilon_3}$	=	Covariances among error terms of observed variables

Figure 8.3 Standardised Solution for the 30-Parameter Five-Factor Hierarchical Model

The standard errors of the observed variables in Figure 8.3 (from the theta epsilon matrix of the LISREL computer printout) and the standard errors of the coefficients in the model are shown in Table K.4.7 in Appendix K. Appendix K.4 presents the series of models run in order to arrive at the one which approximated the data best after modifying the model according to the LISREL programme's modification indices. Section K.4.4 compares the models in terms of the quality indicators of chi-square, small residuals and the programme's modification indices.

Using criteria of goodness of fit other than just χ^2 , the 30 parameter five-factor hierarchical penultimate model with correlated error terms and residuals, emerged as fitting the data reasonably well. The final model did provide a nonsignificant chi-square but because the psi matrix was not 'positive definite' the probable identification problems made this model suspect. Consequently the penultimate model was the one used as shown in the standardised solution of Figure 8.3. The tests of significance for the model parameters in Table K.4.3 of Appendix K show all gamma and lambda coefficients to be significant at $p < .001$. The covariances among the disturbance terms (PSI) which were significantly different from zero (all at the $< .001$ except for the error term for altruism which was significant at the .01 level) were the autonomy, management and altruism variances and the covariance between the management and altruism disturbance terms. Only random error remained in the normalised residuals matrix as evidenced by all the standardised residuals being within 2 standard deviations. In the standardised solution (presenting the structural relations of the model) of Figure 8.3, all the coefficients in the model have been expressed in standardised form and may therefore be read in a way analogous to standardised path coefficients.

The correlation matrix for the work need first order factors shown in Table 8.6 is similar to that produced from analyses of the earlier model already reported (except that the management and altruism factors correlate more highly in Table 8.6). If Dawis and Lofquist had looked at whether their factors were correlated their results could have been expected to be very similar. None of the first order derivatives are large. The modification indices were small with the exception of the covariance between the variety and working conditions needs and the first order factors of achievement, autonomy, management and altruism. Using the standard errors and $1 - \psi$ to assess the proportion of variance in each first factor explained by the model, the proportion of variance in each of the factors were as shown in Table 8.7.

Table 8.6 Correlation matrix for Eta (Correlation Among First Order Factors)

	Achievement	Autonomy	Management	Conditions	Altruism ^a
Achievement	1.000				
Autonomy	0.840	1.000			
Management	0.557	0.451	1.000		
Conditions	0.808	0.654	0.550	1.000	
Altruism	0.545	0.441	0.758	0.537	1.000

Note. ^a The terms altruism and moral values can be used interchangeably. All correlations were significant at the .05 level

Table 8.7 Proportion of variance in each first factor explained by the model

	Achievement	Autonomy	Management	Conditions	Altruism
Achievement	.819				
Autonomy		.537			
Management			.379		
Conditions				.797	
Altruism					.363

From Figure 8.3 the gamma coefficients linking the five work need factors to a single higher order work need factor are all of a reasonable magnitude, with a single work need higher order factor affecting the management and altruism factors to a lesser extent. This is consistent with these factors not being as highly correlated (see Table 8.4) as the other factors. The model in Figure 8.3 is the only one of the single higher order factor models which fitted the data. The correlations between errors although effectively zero, as the subjects of the largest modification indices they indicated that together they accounted for a change in chi-square of 60.6 (see Appendix K, Section K.4.4). Because of the need for some error and disturbance terms to be correlated for the model fit to occur, a model with more orders of factors rather than just a single higher order work need factor may fit better without the need for correlated errors. Because the modifications of each model involved changes suggested by the programme's modification indices, the modifications involved only changes to relationships among error terms and latent variables (linking various of the error and disturbance terms and allowing the management and working conditions to be correlated) rather than changes to the number of orders of latent variables. However, the correlation of error and disturbance terms improving the fit of the model suggests their respective variables

and factors may be correlated. It is likely that more than one higher order need may be appropriate. Therefore, changes to the overall model to do with the number of latent variables and the resulting relationships among them was expected to improve model fit (the observed and latent variables with correlated error terms would probably be linked through higher order variables which would therefore account for such links). Rather than trying to test competing models using LISREL by teasing out from the various correlations of errors the number of second order and third order factors and their links with any higher order factors, it was more efficient to apply higher order factor analysis to explore the higher order factor structure of the data. In addition the full twenty work needs could again be used instead of the subset used for the LISREL analyses. In order to explore how higher order factors might be structured exploratory factor analysis of the five factors was undertaken (section 8.2.3).

8.2.3 Higher order factors derived from factor analysis

In exploring the possibility of higher order factors and their likely structure using factor analytic techniques, oblimin had failed to converge in the exploratory factor analysis of the students' MIQ scores using Principal Axis factoring. But the Maximum Likelihood factor extraction technique showed correlations of a size among the five resulting factors which could not be ignored. That a nonorthogonal rotation had resulted in factors correlating in the region of .40 (the range was -.18 to .46) suggested the likely existence of higher order need factors. Principal Axis factoring with varimax and oblimin rotations was conducted. Factor analysis of the correlation among factors from the Maximum Likelihood extraction rotated nonorthogonally using oblimin, was also undertaken.

Both extraction techniques produced two second order factors, which were also correlated significantly. Although the correlations between the primary and second order factors were different in magnitude for the two techniques, their order or ranking was the same. The two second order factors themselves were correlated to an extent, .39 for the Principal Axis extraction (shown in Figure 8.5) and .26 for the Maximum Likelihood analysis (shown in Figure 8.4). These correlations indicated that second order factors were able to be extracted using either procedure with a nonorthogonal approach with the likelihood of a third order underlying factor, a general work need factor. A further higher order factor analysis was therefore undertaken, the results of which appear on Figures 8.4 and 8.5 and are discussed after the description of the second order factors.

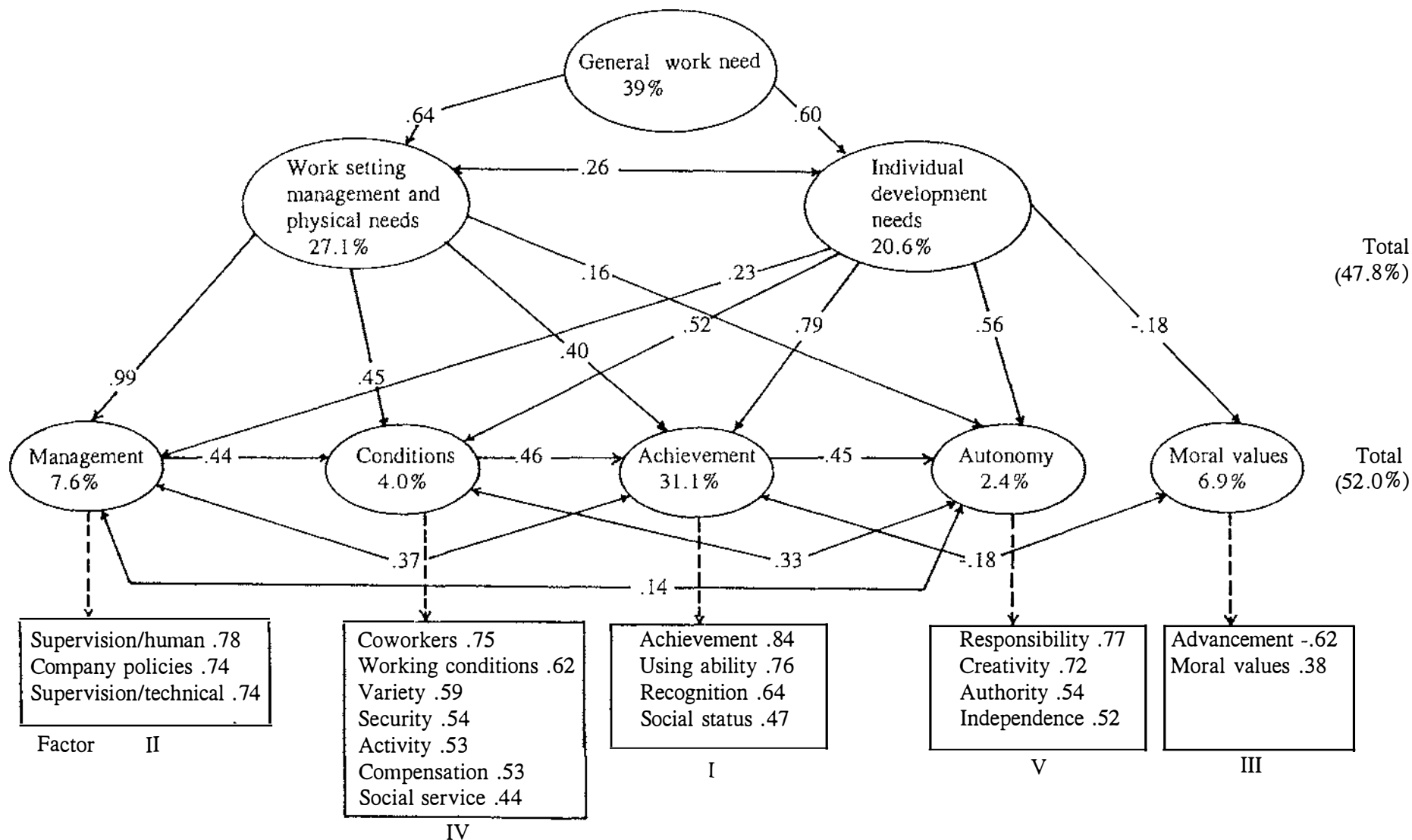


Figure 8.4

Higher order factor structure of work need factors using Maximum Likelihood extractions to give second and third order factors and rotated using oblimin for the second order factors.

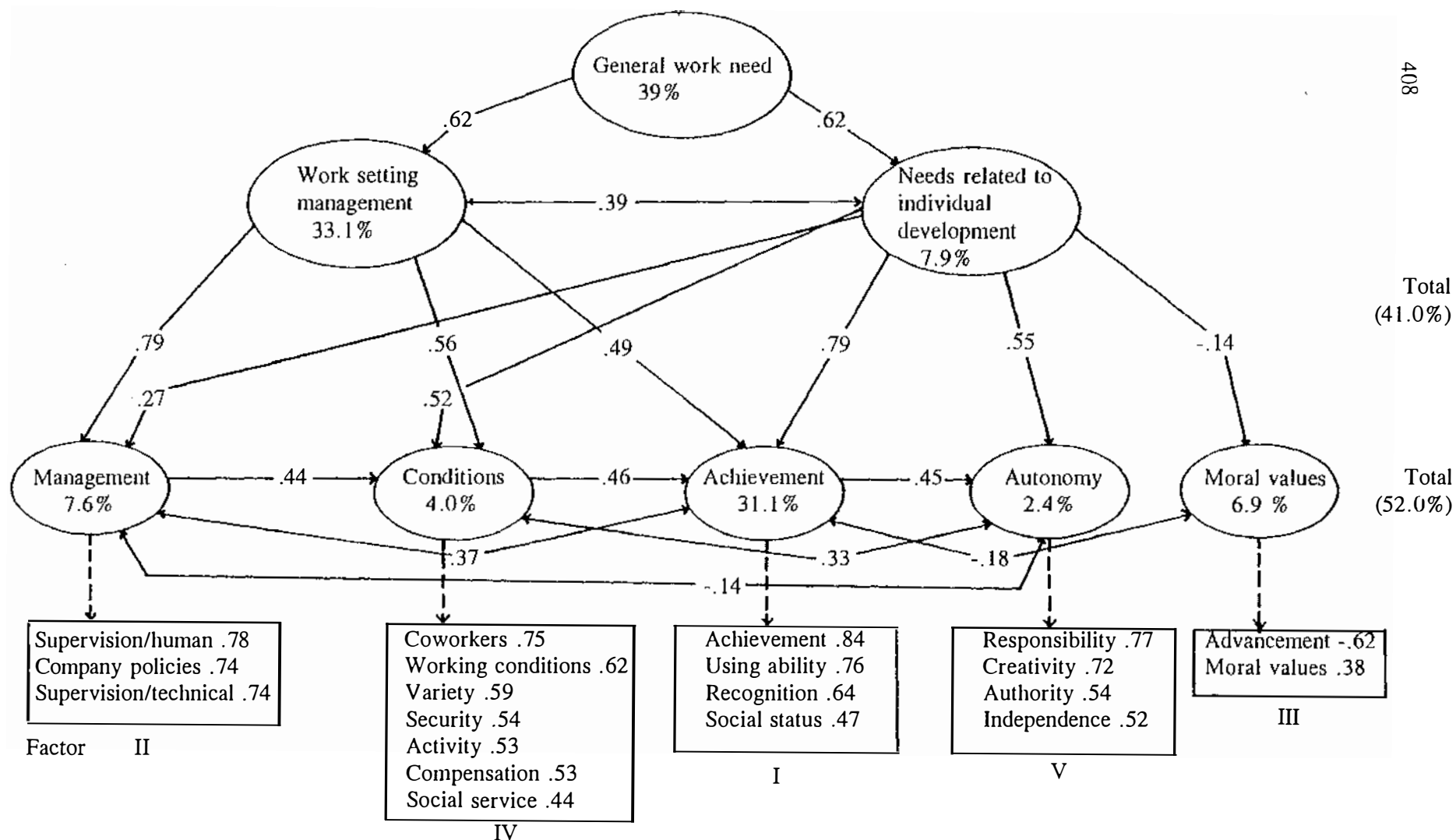


Figure 8.5

Higher order factor analysis of work need factors determined by principal axis factoring at the second and third order factor levels and rotated to oblimin criteria at the second order

The Principal Axis factoring of the primary factors and rotating to oblimin criteria produced two second order factors (shown in Figure 8.5). The factor loadings of each work need from the Maximum Likelihood oblique rotation, which indicated the correlations between the first order factors, are the same as those given at the bottom of Figure 8.4. One second order factor accounted for 33.1 % of the variance and appeared to represent work needs to do with management practices and the work setting because the factor loadings were greatest in respect to the management and comfort factors.

The work needs loading on these two factors had been ones relating to the conditions in the work setting, that is, the work needs of supervision, coworkers, working conditions, variety, security, activity, compensation and social service. Because the first second order factor was loaded most on the management (.79) and the comfort (.56) primary factors, as shown in the structure matrix in section L.2 of Appendix L, it was named a management/work setting factor. It also loaded, but to a lesser extent, (.49) on the achievement primary factor which appeared to belong more to the other second order need factor.

The second higher order factor accounted for 7.9% of the variance and the first order factors loading on it were the achievement (.79), autonomy (.55) and altruism (-.14) factors. As such it appeared to represent the more self oriented work needs or those perhaps associated with the development and expression of the individual (perhaps similar to Maslow's notion of self-actualization). This could be labelled an individual expression/development factor. The altruism factor exhibited the smallest of the factor loadings. It was smaller than achievement's loading on the work setting management second order factor.

When the second order factors were extracted using the Maximum Likelihood and oblimin rotation procedures, as shown in Figure 8.4, two second order factors also emerged. With reference to Figure 8.5 and section L.3, Appendix L, although these second order factors were less highly correlated with each other (.26) than many of the first order factors had been, the magnitude of the correlation was sufficient to consider the existence of a single third order factor, a general factor. The Principal Axis factoring procedure with an oblique rotation gave a larger correlation of .39 between the second order factors (see Figure 8.5)

With reference to section L.3, Appendix L, and the factor matrix for the Maximum Likelihood solution, not surprisingly the conditions primary factor loaded almost equally on the two higher factors, with .45 on the work setting management factor and .52 on the

individual expression/development factor. The work needs of the conditions factor included needs which relate more to some work setting needs and less closely to the individual. These included needs such as the friendliness of coworkers, pay, the security, working conditions and the social service aspects of the job. At the same time the comfort factor included aspects of the nature of the work task itself which relate more to individual needs. These included the variety and activity work needs. The management primary factor loaded more highly at .23 rather than .27 for the individual expression/needs factor when Maximum Likelihood was used as opposed to a Principal Axis solution.

The factor loadings of the second order factors on the first were higher for the Maximum Likelihood than the Principal Axis extraction. The management factor loaded .99 (instead of .79), and the comfort factor loaded .45 (instead of .56) with the work setting/ management factor. Similarly, the achievement factor loaded on the individual expression/development second-order factor .79 (and also .79) , the autonomy factor loaded .56 (rather than .55), and the altruism factor -.18 (rather than -.14). With Maximum Likelihood the two second order factors accounted for a more even share of the variance, 27.1% for the work setting factor and 20.6% for the individually oriented factor, in contrast to a 33.1% and 7.9% share of the variance, respectively, for the Principal Axis extraction.

Further higher order factor analyses, of the correlations between the second order needs, produced a third and single order factor which explained 39% of the variance between the two. In the case of Principal Axis factoring the third order general work need factor loaded .62 on both the second order needs. In the case of the Maximum Likelihood procedure third order need loaded .64 on the work setting/management second order factor and .60 on the individual development second order Factor.

8.3 Meta-analysis of factor labelling, interpretation and comparison with previous findings

A meta-analysis was undertaken of findings relating to, (1) the factor analysis of the MIQ data in this study, (2) the multidimensional scaling of work needs (Rounds, 1970), (3) Doering, Rhodes and Kaspin's study comparing work need factor studies, (4) a reworking of Dawis and Lofquist's factor analysis of work needs using the sensitivity of modern computer programme analysis to look for correlated factors and (5) a factor analysis of the structure

of satisfaction of work needs (measured by The Minnesota Satisfaction Scale, MSQ) of this study's data.

The five first order factors of this study can be labelled in a similar way to Dawis and Lofquist's factors. The five factors can be given the labels of (i) achievement-recognition, (ii) autonomy, (iii) organisational policies and supervision, (iv) working conditions or comfort and lastly (v) altruism or moral values. However the final choice of labelling was (i) achievement, (ii) autonomy, (iii) management, (iv) working conditions, and (v) moral values. These factors bear some similarities to those of Dawis and Lofquist but when the higher order factors are extracted a greater similarity emerges between the findings of the present study and other reorganisations of Dawis and Lofquist's (1984) six factors. Their six factors of achievement, comfort, status, altruism, safety and autonomy were further organised in unpublished work by Rounds (1976), cited in Dawis and Lofquist (1984, p 86), along three dimensions. These were made up of contrasting pairs of values arrived at through the use of multidimensional scaling rather than factor analysis. The dimensions revealed were those of altruism versus status, achievement versus comfort and autonomy versus safety and they are compared with the present findings in Table 8.8.

Table 8.8 Comparison of Multidimensional Scaling and Factor Analyses of
Work Needs

Rounds	Present study
Altruism vs status	Altruism vs achievement (status factor was subsumed in achievement)
Autonomy vs safety	Autonomy vs management
Achievement vs comfort	Achievement vs working conditions

These dimensions are similar to the lower order factors produced in the present study. The opposing dimensions identified in the most part belong to different second order factors, with the exception of altruism versus status. Achievement and autonomy loaded onto the individual development factor, while comfort and safety (or management) loaded onto the work setting/management factor. Although status did not have an equivalent in the present study, the variables which loaded onto it were placed in the achievement and altruism factors. The

first order factors of altruism and achievement loaded onto the individual/expression development second order factor but the achievement factor also loaded onto the work setting/management factor, thus the opposing dimensions of status and altruism had their related variables loaded on different second-order factors. Alderfer's (1969, 1972) sets of needs appear to have some relevance to these findings in particular his grouping of needs into existence, growth and relatedness needs which could equate to the work setting/management, individual development and altruism needs respectively.

Factors were able to be grouped together then by either multidimensional scaling or high order factor analyses, although different types of information are available through the different techniques. Higher order factor analysis provides a more thorough and useful description of the relationships among factors, acknowledges correlations among factors and the different levels of factors which result (rather than just identifying opposing dimensions), provides factor loadings and gives the percentages of the amount of variance higher order factors account for.

Dawis and Lofquist (1978) also reported classification of their six factors as external environmental preferences (safety and comfort), other people preferences (aggrandizement or status and altruism) and intrinsic or self-preferences (achievement and autonomy). The equivalent of Dawis and Lofquist's safety-comfort pair (management/comfort in the present study) belonged to the work setting/management higher order need. Although their dimensions produced by multidimensional analysis were organised in a similar way to that of the second order factors of the present study, their analysis stopped short of looking at the relationship between those pairs and therefore the correlations among them (which in the present study produced a single underlying work factor) and viewing work factors in a hierarchical fashion. The second-order factors of the present study can be categorised using Dawis and Lofquist's classification system by regarding the management/ work setting factor as representing the external environmental preferences, and the individual expression/development factor as representing both the intrinsic or self-preferences and the other people preferences (through altruism).

The factor structure of the needs in the present study were also similar to those of Doering, Rhodes and Kaspin's (1988) study. Research on person-environment correspondence has been said to require commensurate measurement of occupational needs and reinforcers (Shubsachs,

Rounds, Dawis and Lofquist, 1978) but the factor structure of needs and reinforcers had been dissimilar. Doering, Rhodes and Kaspin observed that comparisons have used data from different sample sets of individuals and have involved different levels of analyses. Previously the unit of analysis in the case of the M.I.Q. has been individual responses but in the case of the Minnesota Job Description Questionnaire (MJDQ), the factor structures have been based on group mean occupational profiles. Their study was undertaken to examine needs and reinforcer data from the same set of individuals. Tables 8.9 to 8.11 show the factor loadings greater than .34 across three studies (Doering, Rhodes and Kaspin, 1986; Shubsachs, Rounds, Dawis and Lofquist, 1978; and Tinsley and Weiss, 1974) compared with the factors of the present study.

As shown in Table 8.9 the high loadings of Doering et al.'s Factor I were dispersed between first order factors I and V which in turn were part of higher order Factor two⁵ (Individual development needs) in the present study. The high loadings were for responsibility, creativity, and ability utilisation. As can be seen in Tables 8.9 to 8.11, the moderate loadings of Doering et al.'s were dispersed between the two second order factors. Achievement, independence and authority were loaded on second order Factor Two (individual development needs), and variety, activity, and social service were loaded on Second Order Factor One (Work setting/management). As Doering et al. had found, their Factor I was similar to the autonomy need Factor II and achievement need Factor V identified in previous studies (Gay et al., 1971; Seaburg et al., 1976). Mirroring Doering et al.'s findings, the present Factors I and V, like their Factor I, also differed from previous autonomy-achievement need factors in that advancement was not included while activity, autonomy, independence, and social service did appear.

Doering et al.'s Factor II coincided less clearly with the present study. The second factor was characterised by high loadings on social status and compensation and moderate loadings on recognition, advancement, authority, security, and working conditions. This was said to represent the importance of environmental reinforcement through status and recognition. In other previous studies advancement was excluded but compensation, working conditions, and security were part of Gay et al.'s (1971) and Seaburg et al.'s (1976) Safety Factor (Factor I) and authority and recognition were included in the aggrandizement factor (Factor VI). In

⁵ First order factors are denoted by Roman Numerals and Second order factors by the number in words.

the present study the only loadings coinciding with Factor II were advancement (but negatively), compensation, security and working conditions, while authority, recognition, and social status loaded on Factors V and I and the second order factor two. With the exception of advancement, these loaded on second order Factor one, work setting/management.

As in previous studies, Factor III was defined by the variables of supervision, both technical and human relations, and company policies and practices. Doering et al. interpreted the factor as employee's preferences for safety through stable management. Gay et al (1971) and Seaburg et al. (1970) identified the factor as safety in a predictable environment. In the present study this factor, identified as comfort or conditions in the work environment, belonged to the second-order Factor I (work setting/ management). The altruism factor (IV) was eliminated from Doering et al.'s study because the co-workers and moral values variables did not load greater than .34 on any factor. The altruism factor did emerge in the present study and belonged to the second-order Factor II with loadings of -.62 for advancement and .38 for moral values. However, the altruism factor did not correlate with the other factors and did not load as highly on its second order factor.

The three factors of the MIQ characterised by Doering et al. as autonomy-achievement, environmental reinforcement-aggrandizement and safety are similar to the second order factors of the present study but could not be exactly the same because we are comparing a different number of factors (three factors as opposed to two second-order factors). However, the similarities are that in the present research achievement and autonomy did belong to the same second-order factor (individual development needs) although achievement was also loaded onto the work setting second-order factor. For Doering et al. environmental reinforcement-aggrandizement was separated from the safety factor whereas the factors representing these made up the work setting second-order factor in the present case. Although the variables of the altruism factor loaded more highly than Doering et al.'s criteria of .34, the altruism factor itself had a negative loading of -.18 on the second order factor two for the Maximum Likelihood extraction and -.15 for the Principal Axis solution. Because altruism did not correlate with any of the other factors it would be unlikely to be influenced by the underlying general work need (the single third order factor). Although the three factors of previous studies can be seen to be similar to the second order factors of the present study comparisons are limited by the relationships in the other studies not having been investigated with the possibility of a hierarchy of factors in mind.

Table 8.9
Comparison of MIQ Factors in Four Studies for Doering et al.'s Factor I

	Doering et al. (1986)	Gay et al. (1971)		Seaburg et al. (1976) male		Seaburg et al. (1976) female		This study		
	Factor I	Factor II	Factor V	Factor II	Factor V	Factor II	Factor V	Factor I	V	(Factor I = Achievement, Factor V = Autonomy)
Ability utilization	.62	.38	-.56		.60	.35	.58	.76		
Achievement	.49		-.56		.62		.56	.84		
Activity	.54									
Advancement			-.41		.37					
Authority	.44	.54		.45		.51			.54	
Autonomy	.57									
Co. Policies & Practices										
Compensation										
Co-workers										
Creativity	.67	.77		.78		.76			.72	
Independence	.49								.52	
Moral Values										
Recognition					.35			.64		
Responsibility	.77	.79		.78		.78			.77	
Security										
Social Service	.39									
Social Status								.47		
Supervision-Human Relations										
Supervision-Technical										
Variety	.59			.38		.42				
Working Conditions										

Table 8.10
Comparison of MIQ Factors in Four Studies for Doering et al.'s Factor II

	Doering study	Gay et al. (1986)	Gay et al. (1971)	Seaburg et al. (1976)	Seaburg et al. (1976) male	Seaburg et al. (1976) female	This Study	
	Factor II	Factor I	Factor VI	Factor I	Factor VI	Factor VI	Factor III	Factor IV
								(Factor III = Moral Values/Altruism, Factor IV = Working Conditions)
Ability Utilization						.32		
Achievement								.53
Activity								
Advancement	.49	-.37	-.37	.41	.51	.58	-.62	
Authority	.48		-.40		.47	.42		
Autonomy*								
Co. Policies & Practices		-.64		.71				
Compensation	.60	-.49		.41	.53	.62		.53
Co-workers								.75
Creativity								
Independence							.38	
Moral Values								
Recognition	.59		-.45		.60	.65		
Responsibility								
Security	.39	-.44		.52		.44		.54
Social Service								.44
Social Status	.61		-.55		.68	.57		
Supervision-Human Relations		-.74	-.74	.71	.71			
Supervision-Technical		-.70		.70				
Variety								.59
Working Conditions	.38	-.49		.54		.43		.62

Table 8.11
Comparison of MIQ Factors in Three Studies for Doering et al.'s Factor III

	Doering et al. (1986)	Seaburg et al. (1976) female	This study	
	Factor III	Factor I	Factor II	(Factor II = Management)
Ability Utilization				
Achievement				
Activity				
Advancement				
Authority				
Autonomy				
Co. Policies & Practices	.71	.71	.74	
Compensation				
Co-workers				
Creativity				
Independence				
Moral Values		.41		
Recognition				
Responsibility				
Security				
Social Service				
Social Status				
Supervision-Human Relations	.70	.72	.78	
Supervision-Technical	.72	.61	.74	
Variety				
Working Conditions				

Other more recent factor analyses of work needs, such as that of Oliver (1990) which distinguished between instrumental, participating and task centred values, may have some relevance for the labelling of the factors of the present study. However, again Oliver does not view the factors as being structured hierarchically, thus the conceptualisation of the factor structure of work needs is different in his work from that of the present study.

Reworking of Dawis and Lofquist's Factor analysis

A reworking of Dawis and Lofquist's data (intercorrelations of the 20 MIQ work need adjusted scale scores for an N of 5,358 reported in the MIQ manual, Gay, Weiss, Hendel, Dawis and Lofquist, 1971) was undertaken in the present study and a nonorthogonal model investigated. A principal factors solution with a varimax rotation was applied first. Factors which emerged are shown in Table 8.12. With the use of modern factor analytic computer techniques the number of factors extracted was different from that of Gay et al (op. cit.), that is, a total of four instead of six. The oblimin rotation converged and the structure matrix is presented in Table 8.13 (The pattern matrix is shown in Appendix L).

Table 8.12 Varimax Rotated Matrix of Principal Factor Analysis of Dawis and Lofquist's Data (intercorrelations of MIQ Adjusted Scale Scores for a Sample of 5,358)

	Factor 1	Factor 2	Factor 3	Factor 4
Shr	.66624	.19306	.07923	.31919
Com	.62784	.21785	.22116	-.05397
St	.62230	.15124	.19949	.30521
Cpp	.62038	.14669	.04876	.46232
Wc	.59034	.09105	.43881	.12242
Sec	.55610	.02733	.45195	.03690
Res	.08376	.82117	.16953	.16533
Cre	.04097	.78484	.08222	.25644
Auth	.25904	.58877	.19424	.00257
Au	.17245	.52231	.24704	.35361
Adv	.49075	.51107	.12704	.02580
Rec	.45205	.46893	.26219	.03986
Ach	.21491	.45758	.26707	.40468
Sst	.28659	.36340	.33171	.01516
Act	.26484	.11636	.68501	.19086
Var	.08676	.35975	.56288	.11499
Ind	.17733	.23431	.54619	.00442
Cow	.26564	.12629	.44862	.33464
Sse	-.04374	.23301	.35250	.54951
Mv	.16909	.06988	-.00220	.48531
Percentage of Common variance	34.5	7.5	4.5	4.1
Total variance = 50.6% (continued)				

(Table 8.12 Continued)

Note.

Shr	=	Human relations supervision	Res	=	Responsibility
Com	=	Compensation	Cre	=	Creativity
St	=	Technical supervision	Aut	=	Authority
Cpp	=	Company Policies and practices	Au	=	Ability utilisation
Wc	=	Working conditions	Adv	=	Advancement
Sec	=	Security	Rec	=	Recognition
Ach	=	Achievement	Ind	=	Independence
Sst	=	Social status	Cow	=	Coworkers
Act	=	Activity	SSe	=	Social Service
Var	=	Variety	Mv	=	Moral Values

Table 8.13 Oblimin Rotation of Principal Factors

Structure matrix:

	Factor 1	Factor 2	Factor 3	Factor 4
Shr	.75683	.37799	.35961	.13937
Cpp	.75252	.34358	.32452	.28751
St	.71969	.35073	.44558	.13807
Wc	.64893	.30275	.62027	-.02785
Com	.61659	.35868	.43854	-.20724
Res	.25045	.85483	.37986	.16558
Cre	.22669	.81086	.28951	.26219
Auth	.33427	.64497	.38686	-.04438
Au	.36766	.63474	.43615	.31560
Adv	.54046	.60616	.38295	-.08654
Ach	.41841	.59383	.45976	.35194
Rec	.51907	.58715	.48750	-.06197
Act	.39944	.32387	.75897	.12858
Var	.22465	.48480	.63545	.10806
Ind	.25529	.36118	.60769	-.02659
Sec	.58261	.22397	.59759	-.10304
Cow	.42262	.31231	.56170	.26357
Sst	.35212	.46496	.47409	-.04437
Sse	.20827	.37268	.42652	.55407
Mv	.32573	.17947	.12386	.42542
Percentage of common variance (Total variance = 50.6%)	34.5	7.5	4.5	4.1

Note. For the abbreviations refer to Table 6.12.

Table 8.14 Matrix of Correlations among Factors of the Obliquely Rotated Principal Factors Solution

Factor correlation matrix:

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	1.00000			
Factor 2	.36720	1.00000		
Factor 3	.45620*	.46088*	1.00000	
Factor 4	.07914	.14488	.05517	1.00000

Note. * $p < .05$

Table 8.15 Maximum Likelihood Extraction, Oblimin Rotation Structure matrix

	Factor 1	Factor 2	Factor 3	Factor 4
Act	.73415	-.31832	-.39021	.06821
Wc	.66579	-.28792	-.58163	-.18056
Sec	.65158	-.20302	-.48934	-.24280
Var	.59613	-.49246	-.23218	.09058
Cow	.58075	-.29681	-.42477	.15889
Ind	.57944	-.37728	-.22912	-.05102
Rec	.55394	-.53818	-.45641	-.18585
Sst	.51347	-.42267	-.29146	-.13142
Res	.38958	-.88313	-.28574	.10195
Cre	.30244	-.84525	-.28806	.20100
Auth	.40571	-.64362	-.31734	-.12751
Au	.49239	-.60719	-.39038	.22572
Ach	.52452	-.55822	-.43521	.23668
Adv	.47352	-.55750	-.47199	-.22261
Shr	.41531	-.37109	-.79687	-.08336
Cpp	.40191	-.32849	-.77470	.04531
St	.49568	-.33122	-.75142	-.05491
Com	.50573	-.33725	-.51919	-.38119
Mv	.15579	-.17378	-.39761	.30666
SSE	.43119	-.36129	-.29421	.50888
Percentage of common variance (Total variance = 50.5%)	34.1	7.9	4.5	4.1

The Principal Axis solution shown in Table 8.12 is the one closest to that undertaken by Dawis and Lofquist. Here the largest correlation was entered in the diagonal of the correlation matrix to be analyzed whereas Dawis and Lofquist used multiple correlations as communality

estimates.⁶ Both would be expected to produce similar results but the largest correlation is likely to be closest to the true communality (Gorsuch, 1983).

Table 8.16 Factor Correlation Matrix for the Oblique Rotation of the Maximum Likelihood Solution

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	1.00000			
Factor 2	-.47764*	1.00000		
Factor 3	-.49632*	.35320	1.00000	
Factor 4	-.04617	-.07111	.00193	1.00000

Note. * $p < .05$

Rather than the seven factors Dawis and Lofquist found (although only six of them were interpretable) only four emerged. They can be compared with Dawis and Lofquist's factors as shown in Table 8.17. From Table 8.17 it can be seen that Dawis and Lofquist's factors were combined or reduced, for example, Factor I was made up of their safety and comfort factors. An oblique rotation of the Principal Factors solution produced similar factors. Security did not appear in factor I but in factor III instead, otherwise the factors were the same. The factor correlation matrices (Tables 8.14 and 8.16) for the two extraction techniques showed the factors to be sufficiently correlated to both justify a nonorthogonal model and further analysis to locate another factor level.

A higher order factor analysis of the four factors produced one higher order factor for both the Principal Factors and Maximum Likelihood solutions. The factor matrix for the Principal factors solution is shown in Table 8.18 and 33.0% of the variance was accounted for in both solutions. Only factor four did not load as highly on the higher order factor. It was the altruism factor. The variables loaded onto this factor (moral values and social service) are the same ones which have demonstrated little association with the other work needs throughout. In comparison with Doering et al.'s findings, their Factor II has the supervision and company policies and practices work needs of Factor I of Dawis and Lofquist's re-worked data. Doering et al.'s Factor II has elements of Factors II and III of Dawis and

⁶ The correlations placed in the diagonal here for each of the work needs were ability utilisation .63, achievement .50, activity .50, advancement .53, authority .58, company policies and practices .61, compensation .51, coworkers .44, creativity .77, independence .47, moral values .28, recognition .48, responsibility .43, security .56, social service .33, social status .34, supervision (human relations) .69, supervision (technical).49, variety .50, and working conditions .56.

Lofquist's re-worked data. Their Factor I has elements of Factor II and III of the re-worked data. The safety and altruism factors were the most distinct.

Table 8.17 Comparison between Factors of Dawis and Lofquist's Analysis and those Resulting from a Re-working of their Matrix of MIQ Adjusted Score Intercorrelations

Factor 1	Dawis and Lofquist
Supervision, human relations	Safety
Supervision, technical	Safety
Company policies and practices	Safety
Compensation	Comfort
Working conditions	Comfort
security	Comfort
Factor 2	
Responsibility	Autonomy
creativity	Autonomy
Ability utilisation	Achievement
Achievement	Achievement
Recognition	Status
Authority	Status
Social status	Status
Factor 3	
Activity	Comfort
Variety	Comfort
Independence	Comfort
Coworkers	Altruism
Factor 4	
Social service	Altruism
Moral values	Altruism

Dawis and Lofquist's reworked factors could be labelled organisational working conditions (Factor I), an intrinsic developmental factor (Factor II), a task oriented working conditions factor (Factor III) and an altruism factor (Factor IV) which are similar to the higher order factors of the present study and Doering et al's Safety, Autonomy-achievement and environmental reinforcement aggrandizement factors.

Table 8.18 Factor Matrices of the Principal Axis Factoring and the Maximum Likelihood Solutions of the Factor Correlation Matrix of Table 8.14.

Principal Factors solution

	Factor 1
Factor 3	.73411
Factor 2	.62835
Factor 1	.60527
Factor 4	.13802

Maximum Likelihood solution

	Factor 1
Factor 3	.74306
Factor 2	.62013
Factor 1	.60670
Factor 4	.12847

Ach = achievement
 Cpp = company policies and practices
 Adv = advancement
 Sst = social status
 H.r = human relations
 Tech = technical

Factor Analysis of the Minnesota Satisfaction Questionnaire (MSQ) results of the present research

From the factor structure matrix shown in Table 8.19 and the factor composition or interpretation shown in Table 8.20, Factor One can be seen to mainly consist of items relating to the individual's intrinsic satisfaction whilst Factor Two mainly consists of factors outside the individual to do with extrinsic satisfaction. This is consistent with Dawis and Lofquist's division of "intrinsic" and "extrinsic" in job satisfaction as measured by the MSQ. In the light of the satisfaction factor analysis findings it might make sense to consider re-labelling the two higher order factors of the factor analyses of the present study as extrinsic (instead of work setting/management) and intrinsic (instead of needs related to individual development). Such a re-labelling would fulfil suggestions in the literature that the measurement of work needs and job satisfaction be commensurate. However, it would be important not to lose the self-development/self-actualization theme present in the intrinsic work needs.

Table 8.19 Structure Matrix of Principal Factors Solution of the MSQ Data of the Present Research Using an Oblimin Rotation

	Factor 1	Factor 2
Ability utilisation	.88093	.66111
Achievement	.86972	.76609
Responsibility	.86955	.76609
Variety	.86290	.59082
Creativity	.86071	.61011
Social status	.80808	.59709
Authority	.80770	.49458
Social service	.80315	.69461
Advancement	.74909	.67245
Activity	.71624	.63980
Independence	.61999	.60502
Technical supervision	.61822	.89607
Human relations supervision	.54117	.86407
Company policies & practice	.57574	.78392
Recognition	.73518	.76484
Coworkers	.61897	.73755
Security	.62064	.71005
Working conditions	.62729	.70036
Moral values	.51886	.69298
Compensation	.49553	.58309

The existence of a third order factor level in job satisfaction was indicated from the degree of correlation between the two second order factors. The two factors correlated .72, (18 d.f.), which is greater than a critical r of .561, $p < .01$. This indicates the existence of a higher order, general job satisfaction factor. Dawis and Lofquist may have found such a higher order factor in their analyses of job satisfaction (of MSQ scores) had they 'tested' a nonorthogonal model.

Table 8.20 Composition of Factors

Factor one	Factor two
Ability utilisation	Human relations supervision
Achievement	Company policies & practices
Responsibility	Recognition
Variety	Coworkers
Creativity	Security
Social status	Working conditions
Authority	Moral values
Social service	Compensation
Advancement	
Activity	
Independence	

8.4 Summary and conclusions of aims three and four of the study

Although there were some similarities between the factor analyses of Dawis and Lofquist's work needs data and those of the present study as discussed, there were sufficient differences to indicate their factor analysis had not been replicated. Apart from differences in the number of factors which emerged and their interpretation, the major way in which the present research differed was that it looked for and found the work need factors to be significantly correlated. Had Dawis and Lofquist checked for nonorthogonality when factor analysing their data they may have found correlated factors and considered them of sufficient size to undertake higher order factor analysis. The findings of the present research of correlated factors were also consistent with McNab and Fitzsimmons (1987) postulating correlated factors.

That two higher order factors emerged (one concerned with the work setting, management and physical needs and the other with needs related to the development of the individual) themselves correlating to produce a single third order or general work need factor, has many implications for both the theory and measurement of work adjustment in general as well as for the theory, research and measurement of work needs specifically. For measurement, for example, the first eight correspondence scores of Table 7.5 in chapter seven, those of a reasonable magnitude, were also spread across the five first order factors of achievement, working conditions, policies and practices, autonomy and altruism. This suggests that only one variable which is associated with each of the first order factors needs to correspond with

its relevant reinforcer in order for satisfaction to occur. Such a conclusion would mean that as few as five key reinforcers may need to be present for satisfaction to occur.

Therefore, it would appear to be necessary to gather correspondence scores for five needs, choosing those to represent one of the five need factors. Needs which would meet such criteria are variety, achievement (or ability utilisation, but both may not be necessary), responsibility (or creativity), human relations supervision and moral values. The latter accounted for only 8% of the variance common to need-reinforcer correspondence and satisfaction. As such it would be expected to contribute less to the relationship. Another possibility would be to obtain correspondence scores for the needs and reinforcers which share the greatest amount of variance with satisfaction scores, defining a particular cutoff point for the amount of variance considered reasonable.

The correspondence of as few as five needs and reinforcers is the likely minimum requirement for satisfaction to occur but not all of these would be expected to contribute to satisfaction equally. The relative contribution of each could be expected to vary among individuals. On average, achievement and ability utilisation were found to contribute equally, and variety and technical supervision contributed less but to a similar degree to each other. Human relations supervision, recognition, responsibility and creativity all contributed a similar amount. That the achievement need plays such a frequent and major role is consistent with the importance placed on achievement in Nach motivation theory (Murray, 1938; McClelland, 1958) discussed in chapter one.

The magnitude of the correlations between (a) the single item of satisfaction used in the present research, "All things considered, how satisfied are you with your job? Which number comes closest to how satisfied or dissatisfied you feel?" (the scale used was 1 = dissatisfied to 7 = satisfied) (Campbell, Converse and Rodgers, 1976), and work needs and (b) the multi-item measure of the M.S.Q. and work needs were similar at .61 and .64, respectively. The single-item measure could be considered the easiest and most economical to administer where specificity of needs is not required (where an overall measure of satisfaction is suitable and the individual aspects of job satisfaction are not of interest for the purpose at hand). It may also be valid to substitute the single-item measure because of the apparent existence of higher order need factors, two at a second level and one at a third (a general work need factor) level. Such a single-item measure may be an operationalisation of the general work need factor. The conceptualisation and measurement of work needs with respect to which level of factors are important raises questions of reliability of replication of factors and their operationalisation.

Lower order factors would be of particular use where there is a need to differentiate more fully among many work needs. But at all levels the reliability issues will determine which is the best model not only for different circumstances but overall.

Questioning the factor structure of work needs has implications for the use of the original six factors to represent work reinforcers. Finding a different number of factors, in this case fewer, represents an inability to replicate Dawis and Lofquist's factors in this sample at least. Some of the lack of replication of the number of factors will relate to differences in factor analytic results as computer programmes have become increasingly sophisticated. However, of more concern is the doubt cast on the overall validity of the factor structure of Dawis and Lofquist's factor findings because of their failure to consider a nonorthogonal approach. This could be particularly serious in the light of their expectation that because factors represent common components, their measurement would be more stable than that of skills and needs. Therefore, more importance might be attached to measurements which are considered to be the more stable, that is, values (the factors) in this case rather than the individual needs. However, if the values are not replicated they may be no more stable than individual needs measurements.

That five rather than six factors were found for the data of this study, tends to suggest that a more parsimonious description of the reinforcer preferences of individuals has greater validity. Doubt about the validity of instruments based upon Dawis and Lofquist's factor analyses could also result because their factors were found to be correlated.

The presence of any underlying factors has implications for the use of any of the instruments which were designed on the basis of a six first order factor model. Dawis and Lofquist's representation of work reinforcers providing a basis for the taxonomy of work environments, the Minnesota Occupational Classification System II, may not therefore be a meaningful way of differentiating among occupational groups via reinforcer characteristics. The Minnesota Satisfaction Questionnaire (M.S.Q.) was designed to measure job satisfaction dimensions that parallel dimensions of needs as measured by the Minnesota Importance Questionnaire (M.I.Q.). However, when factor analyzed two factors (extrinsic and intrinsic satisfaction) emerged for Dawis and Lofquist rather than the six of their MSQ factor analysis. In the case of the present research for the MSQ and MIQ the parallel measurement of the dimensions of need and job satisfaction is closer to being achieved because the factor structure of the data from both was very similar. The common variance might be better described by the higher

order factors, but the measuring instruments or the system for scoring them would need to reflect this.

The instruments of Dawis and Lofquist's work adjustment theory may need more than just refining, as their authors had suggested; they may need a complete redesign. The applications of querying the validity of the instruments in the counselling setting may be that their use to enhance an individual's understanding of self and the environment may be limited if either is not being described accurately. With respect to the use of the instruments in training, the development of skills to achieve and maintain work adjustment, may be different if the work valued is viewed differently. And finally, in the area of environmental design, the restructuring of the work environment to increase work adjustment may take a different form in the knowledge of a different structure of work needs.

CHAPTER NINE

CONCLUSIONS OF FINDINGS

The main conclusions to be drawn from the findings of the present research are concerned with the nature of the respondent group, the descriptive findings of the work adjustment related variables, the similarities and differences among the academic groups, and the validity of aspects of the Dawis and Lofquist model of work adjustment which were under investigation and the considerations of the expanded model.

9.1 The nature of the respondent group.

The respondent group were homogenous with respect to much of their own background data, such as age and marital status. The parents' qualifications, fathers' occupations and incomes were also very similar. Typically students were between 19 and 25 (this represents one standard deviation either side of the mean age of 22), were single, had no children, were Caucasian or classified themselves as New Zealanders, had received five years of secondary schooling and at least Higher School Certificate (a year of schooling beyond that required for entry into University). Typically parents received moderate incomes and nearly a quarter of them had attended university,

Fathers were more likely to be in professional occupations and more fathers than mothers were in administrative and managerial type of positions. Most of the sample described themselves as in excellent health, as engaging in one to two leisure activities usually in the company of one or two others. The greatest percentage lived in a flat with others. Most had been in employment at some time previously. There was an improvement in satisfaction with living circumstances by stage two of the study. The respondents would probably have a greater degree of choice about where they might live. Their salaries were similar with only the Horticulture group reporting high salaries. Veterinarians and Business Studies groups were not represented in the low salaries group. The respondents on average appeared to have a high absenteeism rate. They had been absent for about a month in the first six to nine months of employment. This rate may be similar to that found in the general population. The rate

may be similar to that of high school students taking up their first jobs. The rate may reflect adjusting to the transition from the work patterns of study to those of a job.

The differences among academic groups to do with qualifications and numbers of years schooling were as might be expected. With the intense competition associated with entry to some programmes, one group, that of Veterinary Science, was over-represented among those with higher school qualifications (such as A Bursaries and University Scholarships). Agriculture and teaching groups showed differences in level of mother's income. Differences in accommodation arrangements related to the type of degree or diploma being undertaken. Where students were to be on campus for a year only they were more likely to be living in a hostel on campus itself. The levels of salaries of the respondents were commensurate with their qualifications when they were employed in the area for which they were qualified. With respect to the salary level of friends only the Humanities group had friends from all salary groups.

9.2 Findings on work adjustment and related variables

With respect to work adjustment and related variables, correspondence between work needs and reinforcers occurred. However, this correspondence affected job satisfaction only in the case of certain needs. These needs are achievement, ability utilisation, variety and technical supervision. Social status work needs on the other hand were not met to the same extent, possibly because social status could be expected to be less for incumbents who have just taken up a position. The Social Sciences group having their social status needs met to a lesser extent may have to do with the social status of the type of job that group tended to occupy. Many of the social service and helping professions have not received top social status ratings (Montague-Brown, 1976).

Respondents were less satisfied in the areas which might be expected in the early stages of employment, areas such as authority and recognition. Respondents were more confident about having their work needs met (higher self-efficacy) once employed. Employment could be expected to allow them the opportunity to realistically appraise the extent to which the work needs that are important to them would be able to be met. Those academic groups demonstrating high self-efficacy for job/lifestyle compatibility tended to do so for all work needs and their subjective well-being was correspondingly high. The academic groups

reporting a lower subjective well-being were the Business studies, Agriculture and Social Sciences groups.

The quality of life measures showed that a degree of satisfaction was achieved in all the domains relating to satisfaction, but to a lesser extent for savings and living standards. Satisfaction was, therefore, less in those domains which could not be expected to provide satisfaction in the initial employment stage. In most cases, leisure activities were regarded by respondents as at least as important and generally more so, than their job. This finding highlights the need to consider leisure in relation to work.

9.3 Level of support for the Dawis and Lofquist model

With respect to the variables of the work adjustment model, the work needs which were not reinforced in this sample related to those reinforcers less likely to be present in the earlier stages of employment (for example, social status and authority). This was the case primarily for the Social Sciences and Science groups. However, all respondents appeared to regard their jobs as short-term and as a transition to what they hoped to be doing in the longer term. For this respondent group (and probably also for others where a number of job changes are likely) satisfaction and satisfactoriness may affect job attachment and tenure less in the early stages of employment (where lower levels of both are probably more acceptable) but more in the later stages of employment where higher levels of both might be expected.

In this sample, the results show that tenure and job attachment are separate constructs. Both the Dawis and Lofquist model and the expanded version support the involvement of job attachment. However, it would appear that changing organisational and work conditions, mean that in general, tenure expectations are minimally related to work adjustment. Job satisfaction and job attachment are now better predictors of work adjustment. In many instances, the important factor might be that individuals achieve a certain degree of satisfaction overall, not which specific work needs and reinforcers are involved. There may be certain reinforcers identifiable as more likely to exist in specific occupations but this is not revealed from the present study.

The needs of the individual and the employer with respect to the levels of satisfaction and satisfactoriness may not be the same. If each places their own needs first, this does not necessarily mean their needs are incompatible, but just that each may have different priorities. Employees could well be more interested in and motivated towards achieving and increasing satisfaction, whilst employers may treat satisfactoriness as a greater priority.

In looking at the level of support for those aspects of Dawis and Lofquist's model studied, the strongest relationships in the Dawis and Lofquist model were those of Proposition I, where satisfaction and satisfactoriness as operationalised, predicted work adjustment. Tenure was shown to be a joint function of satisfactoriness and satisfaction,¹ but the relationship was greater when the construct of job attachment was substituted for expected tenure. One of the weaker relationships of the model was satisfaction as a function of need-reinforcer correspondence. Although satisfactoriness operated as a moderator of this relationship only a small amount of the variance of the relationship was accounted for by it. Flexibility acted as a slight moderator in the same relationship. The use of adjustment modes, although inversely related to satisfaction for many of the adjustment styles, was able to account for only a small percentage of the variance.

9.4 Level of support for the expanded model

The expanded model accounted for a greater proportion of the total variance than did the original. It was especially strong in showing expected tenure to be a function of use of an active adjustment style, flexibility and perseverance. The model was strongest in the effect of job satisfaction on well-being. The relative importance of work was found to moderate the job satisfaction/well-being relationship. When work was more important, job satisfaction affected subjective well-being. Subjective well-being was found to be a function of social support, leisure satisfaction and health.

Other aspects of the expanded model able to account for small to moderate amounts of variance were the Holland personality types (the enterprising, artistic and status scales) and the Dawis and Lofquist adjustment styles (especially the reactive style) as a function of locus of control and self-efficacy.

¹ and these constructs were not relatively independent.

Self-efficacy in terms of workers' confidence to obtain work needs and to be satisfactory, was high. Those individuals who regarded themselves as efficacious reported higher levels of subjective well-being. For this sample the domains where satisfaction was lower were those which, on reflection, employees are least likely to feel will be satisfied (for example, savings and standard of living). For this sample the general importance of both savings and housework was low.

Of the variables emerging as having a role to play in job attachment the social reference group appeared as important. Those respondents viewing themselves as more satisfied in their jobs than their friends, were more attached to their jobs. The level of social support of the respondents appeared to be reasonable. Not surprisingly the sample (at a peer-oriented age) favoured their friends over relatives and workmates as confidants. Neighbours were regarded as more distant than bosses and workmates. Relationships with neighbours could alter as the respondents emerge from the transition from university to work stage. The sample was often evenly divided in their willingness to talk about their problems with others and in their fears about a loss of respect as a result. Only about 1% of individuals had nobody outside their close partner or spouse to talk to.

The inclusion of additional variables in the model was justified because the relevant correlates showed them to be as important to the model as many of those in Dawis and Lofquist's original formulation. Personal competence (locus of control), subjective well-being, job-importance, leisure satisfaction, social reference group factors, job-lifestyle compatibility and general adjustment all had roles to play in predicting work adjustment.

The findings did indicate the work need factor structure to be different from that of the original model and more like that suggested in the expanded model. Its hierarchical nature with the second order factors, reflecting extrinsic and intrinsic aspects of work needs, is commensurate with the extrinsic and intrinsic factors found in this and other research. The finding of a different factor structure has implications for the measurement of work needs and, therefore, their correspondence with work reinforcers. The work needs which load on more than one first level factor, to produce second order factors, might be considered the most important in the sense that they provide the most information about the work needs overall. However, the presence of second order needs implies that not all work needs must be reinforced for satisfaction to occur. A shorter instrument than the MIQ might measure the

importance of a smaller number of needs which can be represented by the work factors at a higher order factor level. The highest order factor (the general work need factor) may be too general for most purposes. However, it does need to be acknowledged in interpreting the two second order needs because of course its very existence indicates these are correlated.

Because the first level factors are correlated, not all may need to be individually represented. The significant correlation between the single-item satisfaction measure and the items of the MSQ, suggests that the single-item measure may be measuring needs at a higher factor level. This has implications for both the measurement of job satisfaction and of need-reinforcer correspondence, in that a single-item global measure of job satisfaction (and even a single-item measure of needs-reinforcer correspondence) may be sufficient, if specificity is not of concern. A single-item measure would have the added advantage of being more economical to administer compared with even the short versions of Dawis and Lofquist's instruments. However, when the aim of an investigation required the individual consideration of needs, the MIQ would be more appropriate.

In addressing the question of what level of generality of work need factors might be appropriate with respect to work needs, consideration of the need hierarchy and the criteria of generality and specificity would obviously need to be decided for each task at hand. However, the validity and reliability of each factor would play a role in its usefulness. Even if for many purposes the single underlying factor might be too general, the second order factors identifying a division between the physical work characteristics (an extrinsic factor) and those to do with the individual's own development (an intrinsic factor) may be the most useful with respect to need-reinforcer correspondence and its affect on job satisfaction.

9.5 Directions for future research

In general terms, the findings have implications for the applicability and operationalisation of Dawis and Lofquist's theory of work adjustment. The results increase understanding of the process of work adjustment by expanding Dawis and Lofquist's model to include other variables of importance and by illustrating the existence of a hierarchical work need factor structure. The findings have implications for the application of the theory of work adjustment (and its measurement) to the workplace. Dawis and Lofquist's instruments continue to be used widely and their theory, on the whole, continues to be accepted without criticism. Further

research seems appropriate to help further clarify constructs. A redesign of the work need instrument may be required if the work need factor structure found here is replicated elsewhere.

More specifically, the findings in relation to Dawis and Lofquist's key concepts of their paradigm, showed job satisfaction not to be dependent upon the correspondence of all work needs thus leading us to ask which work needs are likely to be involved for different individuals and occupations and how these might be best measured. The purpose to which job satisfaction measures are to be put will help determine how much detail about them is required, for example, details about which need reinforcer correspondence terms influence job satisfaction.

Questions of when and if work needs stabilise and whether satisfaction and satisfactoriness have the same effects over different stages of employment are important. The question about whether the needs of the individual and the employer with respect to the levels of satisfaction and satisfactoriness are the same could be considered. The priorities of each need in specific situations could be identified and the correspondence between them assessed. Further research could investigate the effect of any correspondence found.

In general, in order to increase our understanding of work adjustment we need to develop theories which more closely approximate what occurs in the applied setting. More complex theories are probably more likely to approximate reality, but in the interests of parsimony, need to be continually compared with simpler models and investigated carefully. The present research fits within the guidelines Holland (1987) gave for increasing the amount of variance which might be explained. In general terms, Holland (*op. cit.*) recommended using a theory of congruence with a good track record, identifying moderator variables, giving the environmental assessment its share of attention and using the more recent methods of congruence estimation. He also recommended research comparing different person-environment congruence estimation methods. He favoured the development of theoretical models which looked beyond personality theory and outside the individual subdisciplines of Industrial/Organisational Psychology, Social Psychology and Vocational Psychology.

One way of addressing these issues generally which was used in the present research and which is consistent with Hage's expectation, is to add a variable or variables from another

paradigm to raise the amount of variance explained (as discussed in chapter 5, section 5.9). The addition of further variables of a cognitive and social nature, which made up the expanded model of the present research, enabled more of the variance in work adjustment to be explained. The breaking of the 50% barrier for some of the variables may have occurred, in part, because variables from different paradigms and theoretical orientations were included. Certainly, the expanded work adjustment model and the recognition of the existence of a hierarchical structure of work needs, with multiple levels of work need factors, appeared to better represent what might be occurring in the work adjustment process.

9.6 Further implications of applying the Expanded Model

Commonly learned lessons, important here also, have been the value of applying what might be a well-accepted theory critically and considering the implications of findings for a theory's instrumentation. For the occupational practitioner the expanded model might be applied more effectively with work adjustment theory's inconsistencies reconciled, its scope extended (through the addition of important cognitive and social variables and moderators) and the work need factor structure revised. It will be important to ascertain whether those work needs identified as important and the findings concerning which work needs affect satisfaction for this sample will be replicated elsewhere. It may help alleviate the concern expressed herein and elsewhere (for example, O'Brien, 1986) that person-environment measures suffer from a lack of theory about which needs and abilities are the most important.

It would be of use to investigate whether the factor structure is replicated and if work needs can be described generally as being of an extrinsic or intrinsic nature (as represented by the second order factors of *work setting management and physical needs* and *individual development needs*, respectively). Practitioners may find it informative to factor analyse their own work needs and job satisfaction data from administering the MIQ and MSQ, in particular investigating whether the factor structure is nonorthogonal. They would need to consider whether other factors (of a social, cognitive, or economic nature, for example) influence a work adjustment model. Where factor analysis indicated that gathering information about all the work needs was redundant for certain purposes, the design of shorter, simpler questionnaires would be recommended. Using LISREL to look at factor structure and causal relationships among variables can be of assistance, not only to provide another technique for comparison purposes with factor analytic results but also as a way of addressing validity and reliability issues in instrument development.

A concern about a lack of a uniform inclusive set of variables to describe the relevant dimensions (O'Brien op. cit.) also might be met by basing measures on the higher order needs. This would further respond to the difficulty employees are believed to encounter in describing their job, abilities and needs accurately. O'Brien's solution was to first have individuals identify the degree to which jobs use their skills and match their needs and then to determine empirically what these abilities and needs are. Needs could also be inferred (in the way Dawis and Lofquist suggested) from the available reinforcers in the job given they

can be easily and accurately measured. In the case of the MIQ, when respondents are confronted with a long list of needs and are asked to rate in absolute terms whether they are important or not, the tendency might be for most, if not all, of the needs to be rated as important. However, this tells us little about which actually affect work adjustment variables. For some purposes a high degree of detail and specificity concerning work needs is necessary. However, irrespective of the amount of detail required, instruments could be developed on the basis of an extrinsic/intrinsic dichotomy in the factor structure of work needs. Computer software could be continued to be developed to assist in the administration and scoring of work needs and job satisfaction instruments (and in the identification of their underlying factor structure).

In applying work adjustment theory some other specific issues arise. There is the need to examine the stability of work needs and to look at any gender based differences while considering the implications of these for work adjustment. A relationship between satisfaction and satisfactoriness would need to be recognised, the two constructs themselves and variables such as job attachment need to be given greater credence in predicting work adjustment than the seemingly outmoded outcome variable of tenure. The search for other possible important moderators affecting key causal relationships could continue. In assessing whether important variables might still be missing, we not only need to consider other models within an individual psychological approach (such as one which includes cognitive and self-concept factors as here) but also how to broaden the focus to other paradigms. Factors more associated with groups and the environmental context (such as the social and economic context) and the relationship between contexts (like work and non-work) could be considered.

O'Brien understood the main reason advanced by Dawis and Lofquist in support of their ambitious research effort was that the field of rehabilitation had badly needed objective instruments that could measure the utility of training programmes designed to help disabled individuals re-enter the work force. Dawis and Lofquist's measures are convenient measures of vocational potential which improve upon the traditional reliance on performance data as a measure of obtaining and remaining in a job. The measures can show the changes in attitudes and behaviour which may have contributed to such outcomes. Their approach can enable the selection of more promising candidates, compare treatment effectiveness and ascertain why certain individual are more successful. However, the Minnesota data has been credited (O'Brien, 1986) with only modest success in devising such instruments with large

domains of possible error left unaccounted for. Although the present research has reduced some of this error, mental testing as an approach for assessing the vocational potential of seriously disabled people might still be regarded as limited (Neff, 1985).

Dawis and Lofquist (1964) have, in describing extensively the applications of their theory and its implications for other areas of psychology, emphasised that none of these have as yet been empirically tested. In applying the theory to non-work the relevant qualifier is substituted for work (such as social needs rather than work needs and so on). In some instances the environment portion of the model will be another individual or group of individuals. The findings of the present research could improve the application of work adjustment theory through considering cognitive, social and other-environment (such as non-work) influences in all the areas suggested. A summary of the various areas to which work adjustment theory and modified versions such as the expanded theory could be applied, follows.

Work adjustment theory provides one model for individual vocational assessment. Empirically derived scoring keys which relate biographical items to measured abilities and needs could be revised if necessary to account for a different need factor structure. The aim of basing clinical-prediction of the best possible career choices (by aiming for optimal satisfaction and satisfactoriness) on the client's subjective appraisal and the counsellor's clinical experience is made explicit in the expanded model. Dawis and Lofquist identified constraints that the real world places on the career planning of a client to make the best choices as being financial resources, availability of training, individual and family mobility and societal expectation. The expanded theory considers many of these constraints. A more subjective appraisal through constructs such as self-efficacy, subjective well-being and locus of control can be obtained.

In job adjustment problems (such as feeling "burned out") the expanded model can assist by broadening the framework in exploring the bases and extent of job adjustment problems. Where work adjustment has not occurred despite being predicted because personality and environment have corresponded, other factors (such as those of the expanded model) can be considered. In counselling for job change and searching for job environments which are more likely to be correspondent, the expanded model is likely to account for more of the influences on work adjustment. The employer can benefit from recognising when modifying the job environment will have an effect upon satisfaction and satisfactoriness and the role of previously largely ignored influences, such as those of non-work. In unemployment

counselling some of the consequences of loss of employment, such as loss of self-esteem, loss of identity and depression may be addressed through highlighting the individual's potential for re-employment and translating counselee's skills and previous work experience into appropriate job possibilities, while taking the impact of leisure activities, the self-concept and social factors such as social support into account.

In vocational rehabilitation counselling, the theory conceptualises disability in psychological terms and adds vocationally relevant information to basic medical and physical information. Looking at degree of ability remaining and client perception of it can be more informative than looking at absolute loss of ability when comparing the potential of different individuals. The theory can identify kinds of information needed for vocational assessment and can suggest procedures that might be used in counselling. Work environments can be described in psychological terms that relate to an individual's work adjustment. The theory can provide outcome criteria to evaluate the effectiveness of vocational rehabilitation counselling. The expanded model would be expected to be as helpful to the other areas of personal counselling where Dawis and Lofquist suggested their theory be applied, that is in marriage, family, stress, addiction, self-esteem, dependency and adjustment to retirement counselling.

In organisational and societal development work adjustment theory has applicability to selection and training of personnel, employee development and training, employee motivation and morale, job analysis and job design. The traditional equations which predict ability to perform and which were extended by work adjustment theory to attend to the need-satisfaction aspects of individual-environment correspondence, could be further extended to accommodate the expanded model. Extrinsic and intrinsic needs could be focused upon and the congruence of employee and employer interests, goals and priorities in this respect investigated. As well as training programmes based on knowledge of abilities and values, client's could be trained in developing better knowledge of self-concepts and social relationships. In training and practising tasks which approximate the reinforcer system of the job, other aspects like self-efficacy and subjective well-being could be enhanced through training. The choice of modes of training might alter such that group interactive techniques might be more appropriate for trainees with a strong preference for social reinforcers (Dawis and Lofquist suggest high scores on altruism and social status may indicate this). Alternatively, techniques based on individual initiative might be more suitable for trainees with strong preferences for self-reinforcers.

Job analysis might be improved by including further information important to the understanding and prediction of employee satisfaction and to the continuing process of adjustment to work. Information on adjustment styles could be included thus enhancing job analysis as an important tool in employee selection, placement, transfer, promotion, performance evaluation and compensation.

The model could be applied to social issues. Where problems resulting, for example, from lack of career planning or unemployment involve many individuals they can be viewed in the larger context as social problems, the solution of which requires information on which to base the development and implementation of public policy. National statistics on the distribution of skills/abilities and needs/values and the reinforcers available in present and future jobs (as advocated by Dawis and Lofquist) would also be of use in the New Zealand context. A computer-based system could make such information available to educational institutions and social agencies providing counselling and vocational guidance services. Similarly, a nationwide programme to facilitate the rapid assessment of ability requirements and reinforcer patterns in new or emerging jobs in order to achieve the most effective societal adaptation to technological change would also be of relevance to New Zealand.

In the area of education the model can further contribute to the goal of bringing out the latent potential of individuals and providing opportunities for the learning of behaviour and skills in a wide range of activities by sampling various combinations of abilities and providing experience with various combinations of reinforcers. Dawis and Lofquist have advocated the identification of Educational Reinforcer Patterns (ERPS) along the same lines as Occupational Reinforcer Patterns have been established. The vocational training implications are that individuals could be selected not only with respect to requisite abilities and effective reinforcer systems of occupations but also with respect to cognitive and social aspects. Skill training could make use of all the relevant facets.

The revised model, like work adjustment theory, has implications for other areas of psychology being similarly useful in the study of such topics as motivation, learning, human development, social behaviour and abnormal behaviour. An individual's position on the flexibility dimension, for example, can provide an index of motivation through their tolerance for discordance and their motivation to maintain correspondence. Flexibility might be predicted by variables such as locus of control and self-efficacy. Large changes in motivation

brought about by the onset of a disability, for example, has been identified by Dawis and Lofquist as one of the most promising areas of research. They also suggested the motivation factor in a learning experiment could be controlled by manipulating the environmental reinforcer system to produce different target levels of correspondence and the different initial levels of motivation. In human development the approach of the model provides a more precise specification of the origin and stabilisation of personality. Dawis and Lofquist (1984) have described how work adjustment theory meets Hall and Lindzey's (1970) criteria for a personality theory. The expanded model adds to their focus on a more objective reality, a perceived (subjective) reality, for example in the form of perceived satisfactoriness and measures of self-efficacy and subjective well-being. Unlike Dawis and Lofquist's theory this requires the introduction of a self-concept. The expanded or revised model in investigating similarities and differences among certain groups is not as strongly focused on uniqueness and individuality.

Social behaviour can be studied, like other non-work areas, in work adjustment theory terms by (as previously mentioned) substituting the relevant qualifier which is social in this case, for the qualifier work in the model. Personality constructs can be used as likely moderators of the social interaction between individual and environment. The model can be applied to abnormal behaviour which can be defined as remaining in a discorrespondent environment or as leaving a correspondent one. Other abnormal behaviour might be the possible distortion of self-perception and difficulties with social factors such as social reference group identification and/or social support. The task becomes one of bringing about correspondence or improving the perception of it. Not only can the prior history of the individual be used as normative behaviour but also individuals' expectations and their comparisons of self with others can be used.

One of the apparent strengths of work adjustment theory is the number of different contexts to which it can be applied, all of which could benefit from the increased validity a modified version can provide. The revised model still has the correspondence principle central to it, but is more internally consistent, is less reliant on tenure as an indicator of work adjustment, recognises the importance of social and cognitive factors and will allow the integration of other relevant constructs and paradigms. The application of the principles of work adjustment theory and modifications to it appear limited only by the skills and degree of imagination of the researcher and practitioner in various fields.

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APPENDIX A

- A.1 Request for Respondents
- A.2 Questionnaire for Preliminary Study
- A.3 Modifications to Adjustment Style Rating Form
- A.4 Modifications to Personality Style Rating Form

A.1 Request for respondents

I am asking students in their final year from the different subject areas and faculties at Massey University to take part in a longitudinal study which I am doing for a Doctorate in Psychology.

This research is looking at students in their transition from university to employment. I am interested in how people fit into their jobs. In order to do this I need to collect some background information and administer questionnaires relating to what people expect from their jobs before they are employed and then administer further questionnaires to find out how they are getting on in their work.

Some of the information is of a personal nature, for example your academic record and your parents' income, but this sort of information is needed because such factors have been shown to be important in research of this kind.

I want to emphasise that all the information from you will be kept in the strictest confidence. No one individual will be identifiable in the published results and to maintain confidentiality throughout all stages of the research only a number and not your name will appear on your questionnaire.

Because I will be making comparisons among students from different subject areas and faculties, the more who are included from each area the better the results will be in terms of their accuracy and reliability. I am therefore hoping you will agree to take part in this study so that the conclusions drawn from it are as accurate as possible.

In summary, participating in the study will involve:

1. Taking home questionnaires to complete (about an hour to an hour and a half of your time) and
2. Being followed up early next year to complete a questionnaire about various aspects of your job. Some of you may also be individually interviewed.

On the form where I have asked for your consent to take part in the study, I have asked for a name and address of both a relative and a friend. This is only to ensure I can contact you next year because you will not obviously know at this stage where you will be. All this information will be kept confidential and will be destroyed on completion of the research.

I thank you for considering taking part in my study, the results of which may be of use to you personally and to your university staff in relation to their teaching programmes.

Monica Skinner (Dept. of Psychology, Massey University).

A.2 Multiple choice questions for preliminary study

Multiple-choice questions in the preliminary questionnaire were,

"If my job did not allow me to further develop my talents and skills (important/not important)), I would...

- a. do something myself
- b. expect my employer to do something
- c. influence my employer to do something
- d. change the way I view this
- e. leave things as they are
- f. do something else (please specify)"

The a. category were designed to represent an active response which involved self only, b. represented perseverance and an environmental response, c. represented an active response involving the environment, d. represented a reactive response and therefore involved self, e. represented a response which was of a flexible style, neither active nor reactive and involving neither self nor the environment and f. provided the opportunity to make a response not allowed for or represented by any of the preceding alternatives. At the end of both forms of the questionnaire respondents were presented with a general item postulating a situation where they were not suited to their job. This was an attempt to gain an indication of their flexibility and perseverance. Dawis and Lofquist's experimental rating scales (for adjustment styles) were placed at the end of each form.

The instructions for the respondents were, "This is an exploratory study to develop categories of responses in relation to work problems. Please give some indication of what you may or may not do in response to each item, even if it is not important nor relevant to you in your job. Please 1. indicate if that particular aspect of a job is "important" or "not important". 2. complete each sentence (we are interested in what you would DO or NOT DO rather than in how you FEEL about the items).

A.3 Changes made in the Adjustment Style experimental rating form

ORIGINAL

Flexibility - tolerance of
discrepancy with the
environment before acting to
reduce the discrepancy.

Activeness - likelihood of
acting to change the
environment to reduce
discrepancy.

Reactivity - likelihood of
acting on self to change the
expression of personality
structure to reduce
discrepancy.

Perseverance - likelihood of
maintaining adjustment
behaviour under conditions of
continuing discrepancy.

MODIFICATION

I am flexible in that I can
tolerate not being
satisfied in my job and not
being considered a satisfactory
worker awhile before I would
try to make changes (scale 1
to 7 low flexibility - high
flexibility).

I actively change those
aspects of my job and my
work environment where I
think it necessary (low
activeness - high
activeness).

I make changes in myself
when I am dissatisfied with
work (low reactivity
- high reactivity).

I would persevere in trying
to improve my work
situation (low perseverance
- high perseverance).

A.4 Changes made to the Personality Style rating form

ORIGINAL

Celerity - quickness of response in interacting with the environment.

Pace - level of effort typically expended in interaction with the environment (low - high).

Rhythm - typical pattern of pace, steadiness (low - high).

Predictability (low - high).

Endurance - likelihood of maintaining interaction with the environment (low - high).

MODIFICATION

I respond to improve my work situation (slowly - quickly).

I maintain the following effort (low - high).

My typical pace could be described as (steady - not steady).

I work to a pace which is (predictable - varied).

My level of endurance is (high - low).

A.5 Reliability and validity estimates for Campbell, Converse and Rodger's (1976) measures

Happiness and life satisfaction items correlated .50. Intercorrelations of 8 items (easy vs hard, tied down vs free excluded) ranged from .40 to .61 with an average of over .50. The two odd items showed an average correlation with the other eight of about .27. Principle Components Analysis of the correlation among the 10 adjective pairs showed the first principal component explained about 48.7% of the total variance of the 10 items and the first two explained 59.4%. For Varimax rotation, 8 of the pairs gave loadings on one factor in the range .65 to .79, the hard vs easy loaded .07 and tied down vs free loaded .24. The latter two items had loadings of .85 and .71 on the second rotated factor and loadings on other items ranged from .00 - .39. For the global measures, multiple regression showed all 10 scales explained 33% of the variance in the life satisfaction item (equivalent to a multiple correlation of .57) and 29% of the variance in the happiness item (equivalent to a multiple correlation of .54).

The Index of General Affect (eight items averaged) correlated .55 with the overall satisfaction item which was almost as large as the .57 multiple correlation between all ten items and the overall satisfaction scale and .52 with the happiness measure (as compared to the multiple correlation of .54 for the ten items). The reliability of the index (Cronbach's alpha and omega) was estimated at .89 as based on correlations among 8 items. Using the reliability measure as an estimate of validity, validity was placed at .94 but thought to be an overestimate because of a possible method factor. The similar format to questions might result in respondents choosing particular points on the scale regardless of the question content.

The test-retest measures (the interview repeated eight months later) were really stability measures. The longer than usual interval permitted real change to occur in respondents. The Index of General Affect had a stability index of .56 for the same period but was believed to be an underestimate. The stability measure for life satisfaction was .43 (but true change may have been involved also). For the Happiness item the stability figure was .38. The Composite Index of Well-being (the Index of General Affect plus the single satisfaction item) had a stability coefficient of .53. The Index of Personal Competence correlated .35 with the Index of Well-being. For the Domain Satisfaction Measures, stability estimates (correlations at 8 months) varied from .42 for neighbours and friendships to .67 for health. Nearly half the single-item measures showed greater stability than the Index of Well-being and were more stable than the satisfaction and happiness global measures.

APPENDIX B

- B.1 Questionnaire One
- B.2 Questionnaire Two

TRANSITION TO EMPLOYMENT

MONICA J SKINNER
DEPARTMENT OF PSYCHOLOGY
MASSEY UNIVERSITY

TRANSITION TO EMPLOYMENT STUDY

This questionnaire has been designed for final year University students. We are interested in gathering information from different groups of students in order to look at the transition from university to work. The questions in Section A, for example, ask about things such as your parents' qualifications and income because previous studies in this area have shown these to be important factors.

No person other than the researcher will ever see your completed questionnaire (as you can see your name does not appear anywhere on it) to ensure that absolute confidentiality can be maintained at all times. No individual will be identifiable in any published results.

PLEASE NOTE:

This questionnaire must be returned even if uncompleted as it contains psychological instruments which for ethical and copyright reasons must not be generally available. We would appreciate your cooperation in this.

After we have contacted you next year, you will be sent a summary of the results of the study. I can be contacted through the Psychology Department if you wish to discuss your individual results at any time.

Thank you for taking part in this study.

Monica J. Skinner

1

SECTION A:

SUBJECT NO. _____

1. Age at last birthday _____

2. Sex (please tick appropriate box)

M ☐ ¹F ☐ ²

3. Marital status

Married ☐ ³Single ☐ ⁴

Other _____

4. Do you have any children?

YES ☐ ¹ NO ☐ ²

If yes, how many? _____

5. Ethnic Origin _____

6. Are you a New Zealand citizen?

YES ☐ ¹ NO ☐ ²

7. If not a New Zealand citizen, what is your Nationality?

—

Do you have permanent residence status? YES ☐ ¹ NO ☐ ²Do you have a current work permit? YES ☐ ¹ NO ☐ ²

8. Number of years of Secondary Education? _____

9. Supplementary Education: (Evening classes etc. other than university study).

These next two questions are being asked to obtain results for exams that university students might have in common.

10. What were your marks for School Certificate English?

(or equivalent exam) _____

11. What were your marks for School Certificate Mathematics?

(or equivalent exam) _____

12. What was your highest School Qualification?

- School Certificate ☐ 1
Sixth Form Certificate ☐ 2
University Entrance ☐ 3
Higher School Certificate ☐ 4
A Level Bursary ☐ 5
B Level Bursary ☐ 6
Scholarship ☐ 7

13. Father's occupation? _____

14. Father's income? (N.Z. dollars), please tick appropriate box.

- \$1 - \$5,999 ☐ 1
\$6 - \$14,999 ☐ 2
\$15 - \$24,999 ☐ 3
\$25 - \$29,999 ☐ 4
\$30 - \$37,999 ☐ 5
\$38 - \$49,999 ☐ 6
\$50,000 and over ☐ 7

15. Father's highest qualification? _____

16. Mother's occupation? _____

17. Mother's income? (N.Z. dollars), please tick appropriate box.

- \$1 - \$5,999 ☐ 1
\$6 - \$14,999 ☐ 2
\$15 - \$24,999 ☐ 3
\$25 - \$29,999 ☐ 4
\$30 - \$37,999 ☐ 5
\$38 - \$49,999 ☐ 6
\$50,000 and over ☐ 7

18. Mother's highest qualification? _____

Name of employer	Position (specify if vacation work)	Length of employment	Part- time or full- time	Reason for leaving

21. Which of your jobs did you like the least? _____

22. Describe your general state of health (include details of any disabilities or major ailments likely to affect employment)

23. What kind of organisations or clubs have you been a member of in the last five years? (state any offices held)

24. How do you spend your free time? (please tick ☒ appropriate box)

1. mostly alone ☐ 1
 2. mostly with one or two others ☐ 2
 3. mostly in groups of three or more ☐ 3

25. List the activities you do, other than university study:

a. At university

b. outside university

26. Do you live (please tick appropriate box)

- a. in a Hostel? ☐ 1
 b. with your family? ☐ 2
 c. in a house/flat with others? ☐ 3
 d. on your own? ☐ 4

27. On the whole how satisfied are you with your above living circumstances? (please circle the number which comes closest to how you feel about your present living circumstances).

completely 1 2 3 4 5 6 7 completely
 satisfied dissatisfied

SECTION B:

The following questions are to do with your future work plans.

1. What have you thought about doing next year?

List the plan you would most prefer as plan A, the plan you prefer second most as plan B, and so on. One of your plans could be to return to University.

How good are your chances of actually carrying out each of these plans. Tick the statement which best applies.

Plan A	Plan A ☐ Very good (1) ☐ Good (2) ☐ Average (3) ☐ Poor (4) ☐ Very Poor (5)
Plan B	Plan B ☐ Very good (1) ☐ Good (2) ☐ Average (3) ☐ Poor (4) ☐ Very Poor (5)
Plan C	Plan C ☐ Very good (1) ☐ Good (2) ☐ Average (3) ☐ Poor (4) ☐ Very Poor (5)
Plan D	Plan D ☐ Very Good (1) ☐ Good (2) ☐ Average (3) ☐ Poor (4) ☐ Very poor (5)

2. What qualifications do you expect to have gained by next year?
(specify your university major(s) or degree option).

3. Roughly, what salary would you expect to earn next year?
(in New Zealand dollars):

N.Z.\$ _____

4. Roughly, what salary would you expect most of your friends
to earn next year? (in New Zealand dollars):

N.Z.\$ _____

5. What job or jobs are you most likely to be doing in the long term?

6. If you were free to choose any job(s), regardless of the
qualifications required, what would you like to be doing?

7. What sorts of qualifications are your friends likely to have by next
year?

8. What types of jobs do you expect your friends to have next
year?

9. Please respond to the following by rating how confident you are about each statement. Circle one of the numbers on the scale from 0 to 8 (Circle 0 if you have no confidence at all about a statement, circle 8 if you have complete confidence about it, otherwise circle the appropriate number in between).

	No confidence at all complete confidence								
In my job next year, I am confident I can:									
-use and develop my skills and abilities to my satisfaction.....	0	1	2	3	4	5	6	7	8
-get a feeling of accomplishment.....	0	1	2	3	4	5	6	7	8
-tell people what to do, if needed.....	0	1	2	3	4	5	6	7	8
-make decisions on my own, if necessary.	0	1	2	3	4	5	6	7	8
-actively change aspects of my job and the work environment, if needed....	0	1	2	3	4	5	6	7	8
-keep myself busy.....	0	1	2	3	4	5	6	7	8
-follow standard work rules and procedures to my employer's satisfaction.	0	1	2	3	4	5	6	7	8
-receive satisfactory pay.....	0	1	2	3	4	5	6	7	8
-change my views and attitudes, if required.....	0	1	2	3	4	5	6	7	8
-perform repetitive tasks when necessary.....	0	1	2	3	4	5	6	7	8
-be promotable.....	0	1	2	3	4	5	6	7	8
-be secure in my employment.....	0	1	2	3	4	5	6	7	8
-tolerate dissatisfaction with my job for sometime before acting.....	0	1	2	3	4	5	6	7	8
-work alone, if necessary.....	0	1	2	3	4	5	6	7	8
-perform tasks requiring variety in procedures and methods.....	0	1	2	3	4	5	6	7	8
-be well thought of in the community because of it.....	0	1	2	3	4	5	6	7	8
-try to improve my work situation rather than leaving	0	1	2	3	4	5	6	7	8

No confidence
at all

complete
confidence

-obtain recognition for my work.....	0	1	2	3	4	5	6	7	8
-make friends with others at work.....	0	1	2	3	4	5	6	7	8
-produce work to a good standard.....	0	1	2	3	4	5	6	7	8
-get good support through supervision and training.....	0	1	2	3	4	5	6	7	8
-maintain a low rate of absenteeism.....	0	1	2	3	4	5	6	7	8
-adapt to changes in procedures and methods.....	0	1	2	3	4	5	6	7	8
-work as a member of a team.....	0	1	2	3	4	5	6	7	8
-get along with supervisors.....	0	1	2	3	4	5	6	7	8
-try out some of my own ideas.....	0	1	2	3	4	5	6	7	8
-fit my job in with my lifestyle.....	0	1	2	3	4	5	6	7	8

-adjust to joining a new club or organisation.....	0	1	2	3	4	5	6	7	8
-adjust easily to moving to a new city or town.....	0	1	2	3	4	5	6	7	8

SECTION C:

This next section deals with your feelings about life generally.

1. Please rate the following, circling the number which best applies to you.

I have usually been pretty sure my life would work out the way I wanted it to	1	2	3	4	5	6	7	there have been times when I haven't been sure my life would work out the way I wanted it to

I think it is better to plan my life a good way ahead	1	2	3	4	5	6	7	I think life is too much a matter of luck to plan ahead very far

When I make plans ahead, I usually get to carry things out the way I expected	1	2	3	4	5	6	7	When I make plans ahead, things usually come up to make me change my plans

I feel I can run my life pretty much the way I want	1	2	3	4	5	6	7	I feel the problems of life are sometimes too big for me

2. Taking all things together, how would you say things are these days? Would you say you are (tick appropriate box).

1. very happy	☐	1
2. pretty happy	☐	2
3. not too happy	☐	3

3. Here are some words and phrases which we would like you to use to describe how you feel about your present life. For example, if you think your present life is very "boring," circle 1 next to the word "boring". If you think it is very "interesting," circle the 7 next to the word "interesting,". If you think it is somewhere in between, circle the number which best applies. Please make sure you have circled one number on each line.

BORING	1	2	3	4	5	6	7	INTERESTING
ENJOYABLE	1	2	3	4	5	6	7	MISERABLE
EASY	1	2	3	4	5	6	7	HARD
USELESS	1	2	3	4	5	6	7	WORTHWHILE
FRIENDLY	1	2	3	4	5	6	7	LONELY
FULL	1	2	3	4	5	6	7	EMPTY
DISCOURAGING	1	2	3	4	5	6	7	HOPEFUL
TIED DOWN	1	2	3	4	5	6	7	FREE
DISAPPOINTING	1	2	3	4	5	6	7	REWARDING
BRINGS OUT THE BEST IN ME	1	2	3	4	5	6	7	DOESN'T GIVE ME MUCH CHANCE

4. How satisfied are you with your life as a whole these days?
(which number comes closest to how satisfied you are with your
life as a whole?).

completely	1	2	3	4	5	6	7	completely
satisfied								dissatisfied

Please continue..

TRANSITION TO EMPLOYMENT

THIS IS YOUR SECOND QUESTIONNAIRE.
THANK YOU VERY MUCH FOR RETURNING THE FIRST ONE.
TO MAKE ALL YOUR EFFORTS WORTHWHILE
COULD YOU PLEASE COMPLETE AND RETURN THIS PART.

MONICA J SKINNER
DEPARTMENT OF PSYCHOLOGY
MASSEY UNIVERSITY

TRANSITION TO EMPLOYMENT STUDY

PART TWO

Remember me from last year? - Monica. You completed a questionnaire for my transition from university to work study. Here is the second part of that study.

THE IMPORTANCE OF COMPLETING THIS QUESTIONNAIRE

Your completing this questionnaire is crucial to the success of the study. The results should be of benefit to yourself and future students in relation to occupational choice and employment. If you did not return this second questionnaire it would be a pity to see your efforts involved in completing and returning the first one wasted and your chance to personally add to our knowledge in this area lost.

One of the practical outcomes of this study will be a booklet for students aimed at providing information and assistance for the transition from university and for early employment. Also the staff and Departments at Massey whose students took part in the study will receive a summary of the overall findings. Hopefully this will be of some use to them in whatever role they might play in preparing students for employment.

PREVIOUS QUESTIONNAIRES RETURNED

I wish to thank you for agreeing to take part in the study. Last year more returned their questionnaires than can usually be expected. This will help improve the usefulness of the results for yourself, for students in the future, and for my research which is of course so dependent upon the return of your questionnaires.

CONFIDENTIALITY OF YOUR ANSWERS

Remember that only myself and others directly involved in analysing the findings will see your questionnaire. Its confidentiality will be

maintained by your name not appearing on the questionnaire. No one individual will be recognisable or identifiable through any published results.

THIS QUESTIONNAIRE

Parts of this questionnaire are the same as the previous one. I ask you to please have patience in this regard as it will be helpful to make comparisons between this and last year.

According to what you are doing this year (whether you are employed or otherwise, or have returned to university, for example) different sections of the questionnaire will be applicable to you. The questionnaire is lengthy if you need to complete all the sections. I once again ask that you be patient with this. You may answer the questionnaire in sections. You don't have to do it in one sitting.

AFTER YOUR QUESTIONNAIRE IS RETURNED

You may be asked along with others to agree to be interviewed. Then all the results will be analysed. After this you will receive a summary of the overall findings as promised. Those of you who have asked for your individual results will receive them at this stage.

Even if you do not complete this questionnaire please return it as it contains psychological instruments which for both ethical and copyright reasons must not be generally available. Your cooperation in this would once again be appreciated.

I look forward to your completed questionnaire. A prepaid envelope for its return is enclosed.

I can be contacted at the Psychology Department (Private Bag, Massey University or telephoned there) should you have any comments or queries about the study, or if you wish to discuss your individual results. Thank you,

Monica J. Skinner

NUMBER

[1/1]

SECTION A

1. At the conclusion of your university studies in 1985 which of the following applied to you (please write the number of the statement which applies to you in the box to the right)

1. Commenced vacation employment_____	[1/6]
2. Commenced part-time employment_____	
3. Commenced full-time employment_____	
4. continued with term-time employment_____	
5. received an unemployment benefit_____	
6. holidayed_____	
7. travelled out of New Zealand_____	
8. returned to university_____	
9. other (please specify)_____	
	[1/7]

If you indicated statement number 8 (returned to university) and you did not apply for any positions, please go to SECTION B, otherwise continue.

2. Please enter in the table below the positions you applied for along with the other information requested.

Positions applied for	Employer and Employing Organisation	* P/T or F/T	Starting Income
			[1/8]
			[1/21]
			[1/34]
			[1/47]
			[1/60]
			[2/6]
			[2/19]
			[2/32]
			[2/45]
			[2/58]
			[3/6]
			[3/19]
			[3/32]
			[3/45]
			[3/58]
			[4/6]
			[4/19]
			[4/32]
			[4/45]
			[4/50]
			[4/63]

* P/T = Part-time
F/T = Full-time

3. Please complete the table below.

Positions offered	Employer and Employing Organisation	* P/T or F/T	Starting Income
			[4/66]
			[4/79]
			[5/6]
			[5/19]
			[5/32]
			[5/45]
			[5/58]
			[5/61]
			[6/74]
			[6/6]
			[6/19]
			[6/32]
			[6/45]
			[6/58]
			[6/61]
			[6/74]
			[7/6]
			[7/19]
			[7/32]
			[7/45]
			[7/58]

* P/T = Part-time
F/T = Full-time

4. Did you accept any of the above positions?

[7/61]

Please write 1 in the box opposite if YES ☐
 or 2 if NO ☐

5. If you did not accept any of the above positions, what are you doing currently ?

[7/62]

[7/66]

6. Position accepted (Employer & Organisation)	starting date	starting income
		[8/67]
		[8/70]
		[8/75]

7. If you have had more than one job since completing university in 1985, please list these in CHRONOLOGICAL order (indicating e.g. if they were part-time or full-time) finishing with your current position. Please note if a particular position was vacation employment.

Positions (job titles)	Employer and Employing Organisation	* P/T or F/T	length of employ- ment	reason/s for leaving	
					[8/6]
					[8/20]
					[8/34]
					[8/48]
					[8/62]
					[8/76]
					[9/6]
					[9/20]
					[9/34]
					[9/48]
					[9/62]
					[9/76]
					[10/6]
					[10/20]
					[10/34]
					[10/48]
					[10/62]
					[10/76]
					[11/6]
					[11/20]
					[11/34]

* P/T = Part-time
F/T = Full-time

If you are currently not in employment please go to SECTION B,
if you are in employment, please continue.

8. Please list the major reasons for taking up your job or jobs.

[11/37]

9. Please give a brief description of the tasks and responsibilities
of your job.

[11/39]

10. Did you receive a written description of what your job entails?

[11/70]

Please write 1 in the box opposite if YES

or 2 if NO

		[]

11. Please respond to the following by rating how confident you are about each statement. Circle one of the numbers on the scale from 0 to 8 (Circle 0 if you have no confidence at all about a statement, circle 8 if you have complete confidence about it, otherwise circle the appropriate number in between).

In my job I am confident I :

	No confidence at all									Complete Confidence								
-use and develop my skills and abilities to my satisfaction.....	0	1	2	3	4	5	6	7	8	[13/6]								
-get a feeling of accomplishment.....	0	1	2	3	4	5	6	7	8									
-tell people what to do if needed.....	0	1	2	3	4	5	6	7	8									
-make decisions on my own, if necessary..	0	1	2	3	4	5	6	7	8									
-actively change aspects of my job and the work environment, if needed....	0	1	2	3	4	5	6	7	8									
-keep myself busy.....	0	1	2	3	4	5	6	7	8									
-follow standard work rules and procedures to my employer's satisfaction.....	0	1	2	3	4	5	6	7	8									
-receive satisfactory pay.....	0	1	2	3	4	5	6	7	8									
-change my views and attitudes, if required.....	0	1	2	3	4	5	6	7	8									
-perform repetitive tasks when necessary.....	0	1	2	3	4	5	6	7	8									
-am promotable.....	0	1	2	3	4	5	6	7	8									
-am secure in my employment.....	0	1	2	3	4	5	6	7	8									
-tolerate dissatisfaction with my job for sometime before acting.....	0	1	2	3	4	5	6	7	8									
-work alone, if necessary.....	0	1	2	3	4	5	6	7	8	[13/19]								

8

No confidence
at all

Complete
Confidence

-perform tasks requiring variety in procedures and methods.....	0	1	2	3	4	5	6	7	8	[13/20]
-am well thought of in the community because of my job.....	0	1	2	3	4	5	6	7	8	
-try to improve my work situation rather than leaving.....	0	1	2	3	4	5	6	7	8	
-obtain recognition for my work.....	0	1	2	3	4	5	6	7	8	
-make friends with others at work.....	0	1	2	3	4	5	6	7	8	
-produce work to a good standard.....	0	1	2	3	4	5	6	7	8	
-get good support through supervision and training.....	0	1	2	3	4	5	6	7	8	
-maintain a low rate of absenteeism.....	0	1	2	3	4	5	6	7	8	
-adapt to changes in procedures and methods.....	0	1	2	3	4	5	6	7	8	
-can work as a member of a team.....	0	1	2	3	4	5	6	7	8	
-get along with supervisors.....	0	1	2	3	4	5	6	7	8	
-try out some of my own ideas.....	0	1	2	3	4	5	6	7	8	
-fit my job in with my lifestyle.....	0	1	2	3	4	5	6	7	8	[13/32]

12. In my life generally, I am confident I

[13/34]

-adjust to joining a new club or organisation.....	0	1	2	3	4	5	6	7	8

[13/35]

-adjust easily to moving to a new city or town.....	0	1	2	3	4	5	6	7	8

13. Please consider each of the following statements individually and decide whether or not it describes your job.

-If you think that the statement does describe your job, tick YES ☒

-If you think that the statement does not describe your job, tick NO ☒

Workers in my job...

		[13/37]	
1. make use of their abilities.....	YES	NO	
2. get a feeling of accomplishment.....	YES	NO	
3. are busy all the time.....	YES	NO	
4. have opportunities for advancement.....	YES	NO	
5. tell other workers what to do.	YES	NO	
6. have an organisation which administers its policies fairly.....	YES	NO	
7. are paid well in comparison with other workers.....	YES	NO	
8. have co-workers who are easy to make friends with.....	YES	NO	
9. try out their own ideas.....	YES	NO	
10. do their work alone.....	YES	NO	
11. do work without feeling it is morally wrong.....	YES	NO	
12. receive recognition for the work they do.....	YES	NO	
13. make decisions on their own.....	YES	NO	
14. have steady employment.....	YES	NO	
15. have work where they do things for other people.....	YES	NO	
16. are well thought of in the community for the job.....	YES	NO	
17. have bosses who back up their staff.....	YES	NO	
18. have bosses who train their workers well.....	YES	NO	
19. have something different to do every day.....	YES	NO	
20. have good working conditions.....	YES	NO	
21. plan their work with little supervision.....	YES	NO	

[13/57]

14. Please consider the following statements and decide how well they apply to you by circling one of the numbers from 1 to 7.

1). I am flexible in that I can tolerate not being satisfied in my job and not being considered a satisfactory worker for awhile before I would try to make changes.

[13/58]

Low flexibility 1 2 3 4 5 6 7 high flexibility

2). I actively change those aspects of my job and my work environment where I think it necessary.

[13/59]

Low activeness 1 2 3 4 5 6 7 high activeness

3). I make changes in myself when I am dissatisfied with work.

[13/60]

Low reactivity 1 2 3 4 5 6 7 high reactivity

4). I would persevere in trying to improve my work situation.

[13/61]

Low perseverance 1 2 3 4 5 6 7 high perseverance

5). I respond to improve my work situation

[13/62]

slowly 1 2 3 4 5 6 7 quickly

6). I maintain the following effort

[13/63]

low 1 2 3 4 5 6 7 high

7). My typical pace could be described as

[13/64]

steady 1 2 3 4 5 6 7 not steady

8). I work to a pace which is

[13/65]

predictable 1 2 3 4 5 6 7 varied

9). My level of endurance is

[13/66]

high 1 2 3 4 5 6 7 low

15. How attached to your job would you rate yourself on a scale of 1 to 7? (please write the appropriate number in the box to the right).

Completely 1 2 3 4 5 6 7 not at all
attached attached

[13/67]

16. How long to you think people in your job should remain in your job?
(please write the number of years in the box to the right).

[13/68]

17. How long do you expect to remain in your current job?

[13/69]

18. Approximately how many days have you been absent from your present job? (please write number in the box to the right).

[13/70]

Please complete SECTION B only if you have returned to university full-time, otherwise please continue from SECTION C.

SECTION B

1. What Degree or Diploma course you have enrolled in for 1986?

[15/34]

2. What were your reasons for returning to university?

[15/38]

3. List the occupations you expect to be interested in upon completing your studies.

[15/40]

[15/44]

[15/48]

[15/52]

[15/56]

PLEASE CONTINUE (to section C).....

SECTION D:

This next section is concerned with various aspects of your life and the extent to which you are satisfied with them.

Instructions:

If you are completely satisfied, you would write a number 7 in the box to the right. If you are neither completely satisfied nor completely dissatisfied, you would choose a number from 2 to 6, while a 4 would mean that you are just as satisfied as you are dissatisfied.

1. How satisfied are you with the city/town/country area as a place to live?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/6]

2. All things considered, how satisfied are you with your neighbourhood as a place to live? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/7]

3. All things considered, how satisfied are you with your living accommodation? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/8]

4. All things considered, how satisfied are you with life in New Zealand today? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/9]

5. How satisfied are you with the amount of education you received? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/10]

29

6. All things considered, how useful do you think your education was for you personally? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/11]

7. All things considered, how satisfied are you with your job? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/12]

8. Overall, how satisfied are you with the ways you spend your free time? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/13]

9. Of course most people get sick now and then, but overall how satisfied are you with your own health? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/14]

10. The things people have -- housing, car furniture, recreation and the like -- make up their standard of living. Some people are satisfied with their standard of living while others feel it is not as high as they would like. How satisfied are you with your standard of living? Which number comes closest to how you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/15]

11. How satisfied are you with your situation as far as savings and/or investments are concerned? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/16]

12. All things considered, how satisfied are you with your friendships -- with the time you spend with friends, the things you do together, the number of friends you have, as well as the particular people who are your friends?
Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/17]

31

13. All things considered how satisfied are you with your marriage (if you are married) or your intimate relationship/s (if you are living in a defacto relationship or are single)? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/18]

14. All things considered, how satisfied are you with your family life - the time you spend and the things you do with members of your family? Which number comes closest to how you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/19]

15. Overall, how satisfied are you with your homemaking activities?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/20]

16. Compared with your friends, overall do you regard yourself as more satisfied or less satisfied with your job than they are? Which number comes closest to how satisfied or dissatisfied you feel?

dissatisfied 1 2 3 4 5 6 7 satisfied

[19/21]

17. Please consider how important each of the following aspects of your life are to you, giving them a number from 1 to 7 with 1 meaning very important and 7 meaning not at all important.
(please write the number you choose in the box to the right)

1. The kind of city/town/ or country area you live in

Extremely important	1	2	3	4	5	6	7	not at all important

[19/22]

2. The kind of neighbourhood you live in

Extremely important	1	2	3	4	5	6	7	not at all important

[19/23]

3. Your living accommodation

Extremely important	1	2	3	4	5	6	7	not at all important

[19/24]

4. The quality of life in New Zealand

Extremely important	1	2	3	4	5	6	7	not at all important

[19/25]

5. The amount of education you receive

Extremely important	1	2	3	4	5	6	7	not at all important

[19/26]

Extremely important	1	2	3	4	5	6	7	not at all important

[19/27]

Extremely important	1	2	3	4	5	6	7	not at all important

[19/28]

Extremely important	1	2	3	4	5	6	7	not at all important

[19/29]

Extremely important	1	2	3	4	5	6	7	not at all important

[19/30]

Extremely important	1	2	3	4	5	6	7	not at all important

[19/31]

Extremely important	1	2	3	4	5	6	7	not at all important

[19/32]

12. having friends

Extremely important	1	2	3	4	5	6	7	not at all important

[19/33]

13. personal intimate relationships

Extremely important	1	2	3	4	5	6	7	not at all important

[19/34]

14. family life

Extremely important	1	2	3	4	5	6	7	not at all important

[19/35]

15. housework

Extremely important	1	2	3	4	5	6	7	not at all important

[19/36]

SECTION E:

This next section deals with your feelings about life generally.

1. Please rate the following, circling the number which best applies to you.

I have usually been pretty sure my life would work out the way I wanted it to	1	2	3	4	5	6	7	there have been times when I haven't been sure my life would work out the way I wanted it to	[19/37]

I think it is better to plan my life a good way ahead	1	2	3	4	5	6	7	I think life is too much a matter of luck to plan ahead very far	[19/38]

When I make plans ahead, I usually get to carry things out the way I expected	1	2	3	4	5	6	7	When I make plans ahead, things usually come up to make me change my plans	[19/39]

I feel I can run my life pretty much the way I want	1	2	3	4	5	6	7	I feel the problems of life are sometimes too big for me	[19/40]

2. Taking all things together, how would you say things are these days? Would you say you are (tick appropriate box).

[19/41]

1. very happy	☐	1
2. pretty happy	☐	2
3. not too happy	☐	3

3. Here are some words and phrases which we would like you to use to describe how you feel about your present life. For example, if you think your present life is very "boring", circle 1 next to the word "boring". If you think it is very "interesting", circle the 7 next to the word "interesting". If you think it is somewhere in between, circle the number which best applies. Please make sure you have circled one number on each line.

BORING	1	2	3	4	5	6	7	INTERESTING	[19/42]
ENJOYABLE	1	2	3	4	5	6	7	MISERABLE	[19/43]
EASY	1	2	3	4	5	6	7	HARD	[19/44]
USELESS	1	2	3	4	5	6	7	WORTHWHILE	[19/45]
FRIENDLY	1	2	3	4	5	6	7	LONELY	[19/46]
FULL	1	2	3	4	5	6	7	EMPTY	[19/47]
DISCOURAGING	1	2	3	4	5	6	7	HOPEFUL	[19/48]
TIED DOWN	1	2	3	4	5	6	7	FREE	[19/49]
DISAPPOINTING	1	2	3	4	5	6	7	REWARDING	[19/50]
BRINGS OUT THE BEST IN ME	1	2	3	4	5	6	7	DOESN'T GIVE ME MUCH CHANCE	[19/51]

4. How satisfied are you with your life as a whole these days?
(circle the number which comes closest to how satisfied you are
with your life as a whole?).

completely satisfied	1	2	3	4	5	6	7	completely dissatisfied	[19/52]

please continue..

On this page consider each statement and decide whether or not it is important to have in your ideal job.

- If you think that the statement is IMPORTANT for your IDEAL JOB, place a tick in the "YES" box beside it.
- If you think that the statement is NOT IMPORTANT for your IDEAL JOB, place a tick in the "NO" box beside it.

On my IDEAL job it is important that...

	[19/53]	
1. I could do something that makes use of my abilities.	YES ☐	NO ☐
2. The job could give me a feeling of accomplishment.	YES ☐	NO ☐
3. I could be busy all the time.	YES ☐	NO ☐
4. The job would provide an opportunity for advancement.	YES ☐	NO ☐
5. I could tell people what to do.	YES ☐	NO ☐
6. The company would administer its policies fairly.	YES ☐	NO ☐
7. My pay would compare well with that of others.	YES ☐	NO ☐
8. My co-workers would be easy to make friends with.	YES ☐	NO ☐
9. I could try out some of my own ideas.	YES ☐	NO ☐
10. I could work alone on the job.	YES ☐	NO ☐
11. I could do the work without feeling it is morally wrong..	YES ☐	NO ☐
12. I could get recognition for the work I do.	YES ☐	NO ☐
13. I could make decisions on my own.	YES ☐	NO ☐
14. The job would provide for steady employment.	YES ☐	NO ☐
15. I could do things for other people.	YES ☐	NO ☐
16. I could be "somebody" in the community.	YES ☐	NO ☐
17. My boss would back up the staff.	YES ☐	NO ☐
18. My boss would train the staff well.	YES ☐	NO ☐
19. I could do something different every day.	YES ☐	NO ☐
20. The job would have good working conditions.	YES ☐	NO ☐
21. I could plan my work with little supervision.	YES ☐	NO ☐

[19/73]

Please check your answers to see that you have marked only one choice for each of the 21 statements.

Please rate how true the following statements are for you: (if a statement does not apply to you please tick N.A. = not applicable).

For each of the people listed below (wife/husband; friends etc.) and for each statement, please tick the column which best indicates how true the statement is for you.

1. My wife/husband, girlfriend etc... really cares about how things are going for me.

[20/6]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/12]

2. My wife/husband, girlfriend etc... goes out of his/ her/ their way to be helpful when I am down.

[20/13]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/19]

3. I ask for help from my wife/husband, girlfriend etc...when I am down.

[20/20]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/26]

4. I talk about my personal concerns and difficulties with my
wife/husband, girlfriend etc.

[20/27]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/33]

5. I talk to my wife/husband, girlfriend etc.... about pressures and strains in my life.

[20/34]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/40]

6. I can rely on my wife/husband, girlfriend etc... for help when things get tough.

[20/41]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/47]

41

7. My relationship with my wife/husband, girlfriend etc... is pretty superficial.

[20/48]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/54]

8. I do not talk to my wife/husband, girlfriend etc... about my problems because I'm afraid he/ she/ they will lose his/her/ their respect for me.

[20/55]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/61]

9. I do not talk to my wife/husband, girlfriend etc... about my problems or difficulties because I don't want to burden him/ her/ them.

[20/62]

	very true	somewhat true	a little true	not too true	not at all true	N.A.
wife/husband						
girl/boyfriend						
friends						
neighbours						
relatives						
boss						
workmate						

[20/68]

10. I have friends who would be willing to give me a hand with household tasks and projects:

[20/69]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

11. I have friends who would lend me money if I needed it:

[20/70]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

12. I have someone to talk to about any personal problems:

[20/71]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

13. I usually talk personal problems through with at least one other person:

[20/72]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

14. I have someone other than my wife/ husband/ girlfriend/ boyfriend with whom I can talk about things that bother or trouble me.

[20/73]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

15. I have friends I can visit when I am down in the dumps.

[20/74]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

16. I have a number of close friends in the community where I live.

[20/75]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

17. I prefer to keep my worries and problems to myself.

[20/76]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

18. I keep all my personal worries and problems to myself.

[20/77]

Please write 1 in the box opposite if YES _____
or 2 if NO _____

19. Would you consider your job more important than, as important as,
or less important than your activities outside work?
(please tick the appropriate box).

In relation to my activities outside work my job is

[20/78]

more important	☐	1
as important	☐	2
less important	☐	3

45

THANK YOU FOR THE TIME AND EFFORT INVOLVED IN COMPLETING THIS
QUESTIONNAIRE.

PLEASE DO NOT FORGET TO INCLUDE THE STRONG VOCATIONAL INTEREST BLANK
AND ITS ANSWER SHEET.

AS A CHECK OF WHAT YOU SHOULD HAVE COMPLETED, PLEASE NOTE:

All but SECTION B - if you are employed

SECTION A page 1

SECTIONS B, C, D, & E. - if returned to University and did not apply
for any positions.

SECTION A to page 6

SECTIONS B, C, D, & E. - if returned to university but applied for
positions or worked first.

Everybody should have completed the STRONG VOCATIONAL INVENTORY BLANK

THANK YOU

APPENDIX C

- C.1 Modifications to the Vocational Preference Inventory
- C.2 Modifications to the Minnesota Importance Questionnaire

C.1 Modification of Vocational Preference Inventory

Table C.1 Modification of the Vocational Preference Inventory

ORIGINAL	REPLACEMENT
2. Private Investigator	Medical Laboratory Technician
5. Post Office Clerk	Salesperson
6. Route Salesman	Commercial salesperson
10. Interplanetary Scientist	Space Scientist
11. Airplane Mechanic	Aircraft Engine Mechanic
15. Speculator	Radio or T.V. Announcer
19. Nursery School Teacher	Kindergarten Teacher
29. Elementary School Teacher	Primary School Teacher
33. Juvenile Delinquency Expert	Social Worker (youth activities)
35. Stock and Bonds Salesman	Stockbroker
37. Prize Fighter	Boxer
44. Traffic Manager	Commercial Teacher
46. Author	Author/Authoress
47. Fireman	Fire Fighter
48. Army General	General in Army
51. Power Shovel Operator	Excavating Machine Operator
60. Automobile Mechanic	Motor Mechanic
67. Stunt Man (Motion Picture)	Stunt Person
72. Chemist	Research Chemist
73. Playground Director	Playground Supervisor
84. Tax Expert	Tax Consultant
85. Restaurant Manager	Restaurant Manager/ess
88. Police Judge	District Court Judge
89. Referee (Sporting Events)	Referee
90. Truck Gardener	Market Gardener
91. Filling Station Attendant	Petrol Station Attendant
92. Writer of Scientific or technical articles	Writer - Scientific/Technical
94. Inventory Controller	Stock Controller (clerical)
95. Master of Ceremonies	Personnel Manager/ess
100. Sales Manager	Sales Manager/ess
102. Editor of a Scientific Journal	Editor - Scientific Journal
104. IBM Equipment Operator	Business Machine Operator
105. Travelling Salesman	Travelling Salesperson
107. F.B.I. Agent	C.I.D. Investigator
108. Prosecuting Attorney	Prosecuting Lawyer
109. Factory Foreman	Factory Foreperson
110. College Professor	University Professor
111. Tool Designer	Tool Designer/Pattern Maker
113. Asst. City School Superintendent	Education Board Member

(Continued)

ORIGINAL	REPLACEMENT
114. Financial Analyst	Cost Accountant
115. Real Estate Salesman	Real Estate Agent
118. Congressional Investigator	Investigator - complaints about Government Departments
121. Locomotive Engineer	Railway Engine Driver
123. Personal Counselor	School Counsellor
124. Cost Estimator	Accountant
128. Supreme Court Judge	High Court Judge
129. Draftsman	Draughtsman/woman
130. Judge	Family Court Judge
133. Psychiatric Case Worker	Psychiatric Social Worker
134. Payroll Clerk	Wages and Salaries Clerk
140. Truck Driver	Long Distance Bus Driver
144. Bank Examiner	Credit Investigator
145. Political Campaign Manager	Publicity (Public relations Manager/ess)
152. Counter-Intelligence Man	S.I.S. Investigator
154. Shipping and Receiving Clerk	Bank Clerk
155. Criminal Psychologist	Advertising Executive
158. Bill Collector	Debt Collector
159. Ward Attendant	Hospital Aid
160. Masseur	Masseur/Masseuse

C.2 Modification of The Minnesota Importance Questionnaire

There were minor changes made to the instructions. The instruction "No ties allowed" was included in the list under the heading of DIRECTIONS rather than just being implied. What no ties meant was described and it was explained that if two statements were really of equal ranking then this would show up in the averaging of results later. These changes were made in an attempt to lessen any frustration on the part of a respondent resulting from not being permitted to rank statements equally.

Similarly in anticipation of any impatience resulting from the repetitiveness of statements a sentence was included explaining that to enable comparisons among statements they would appear in more than one group but that each statement would be grouped with each other statement only once.

The words which appeared in the original in bold type were underlined for emphasis because when in bold type they did not stand out as much as in the original.

Only two changes were made in the wording of statements to retain consistency of meaning between cultures. These involved statements 17, and 18, as below.

17. My boss would back up the workers (with top management). was changed to:

17. My boss would back up the staff.

18. My boss would train the workers well. was changed to:

18. My boss would train the staff well.

These changes involved substituting the words staff for workers, while extending the support to all level of workers. The word workers did not seem to fit as well into the New Zealand culture in that it has been associated with non-management level. The students studied in the present research once employed did not always fit into such specific categories.

APPENDIX D

D.1 Informal statement of Dawis and Lofquist's Theory (1984)

D.1 Informal Statement of Dawis and Lofquist's Theory of Work Adjustment

" Work is an interaction between an individual and a work environment in which each has requirements of the other.

The work environment requires certain tasks to be performed and the individual brings skills to perform the tasks.

The individual, in exchange, requires compensation for work performance and additional conditions of work such as a safe environment, a comfortable place to work, congenial co-workers, a competent supervisor, and an opportunity to achieve.

As long as the environment and the individual continue to meet each other's requirements, their interaction is maintained.

When the requirements are not met, the individual or the environment moves to change or terminate the interaction.

The mutual responsiveness of the individual and the work environment to each other's requirements is a continuing process called *work adjustment*. The degree to which the requirements of either or both are met is described on a dimension called *correspondence*.

The basic motive of work behaviour is seeking to achieve and maintain correspondence.

Two primary indicators of work adjustment are the satisfaction of the individual with the work environment and the satisfaction of the work environment with the individual, or the individual's satisfactoriness.

Both satisfaction and satisfactoriness are required for the individual to remain and be retained on the job. Tenure is the outcome of work adjustment.

The principal characteristics of the individual in relation to work adjustment may be collectively called the individual's work personality.

The work personality consists of at least two sets of characteristics: status characteristics (personality structure) and process characteristics (personality style).

Personality structure may be described in terms of the individual's skills and needs or in terms of the reference dimensions for skills (abilities) and the reference dimensions for need (values).

Personality style describes the individual's typical ways of interacting with the environment (given a particular personality structure) on such dimensions as celerity (quickness or slowness in interacting with the environment), pace (level of activity typically exhibited in interaction with the environment), rhythm (typical pattern of pace in interaction with the environment), and endurance (duration of interaction with the environment).

The work environment may be described in terms commensurate with the description of work personality. Work environment structure may be described in terms of skill requirements and need reinforcers (classes of stimulus conditions the presence or absence of which is associated with the satisfaction of needs). Work environment structure may also be described in terms of reference dimensions for skill requirements (ability requirements) and reference dimensions for need reinforcers (reinforcer factors). The characteristic patterns of ability requirements and of reinforcer factors for the work environment of an occupation may be respectively referred to as an occupational ability pattern and an occupational reinforcer pattern.

The style of the work environment may be described in terms of its requirements for celerity (speed of response), pace (level of activity), rhythm (typical pattern of pace) and endurance (duration of response).

Work adjustment can be predicted from the correspondence of the work personality and the work environment" (Dawis and Lofquist, 1984. pp. 56-57).

APPENDIX E

E.1 Respondent Consent Form

E.1 Respondent Consent form

Subject Number:

CONSENT FORM - For participation in a longitudinal study of final year university students, Monica Skinner, (Department of Psychology, Massey University).

NAME: _____**LOCAL ADDRESS:** _____ **PERMANENT ADDRESS:** _____

LOCAL PHONE NUMBER: _____ **PERMANENT PHONE NUMBER:** _____

1. I agree to participate in this study.
2. I agree to the researcher having access to my university academic records for the purposes of this study.
3. I understand that all the information obtained will be kept confidential and that published reports will not contain data that could identify any individuals personally.

Name of relative: _____**address:** _____

Name of friend: _____**address:** _____

These names and addresses will be used only to ensure contact for follow-up.

SIGNATURE: _____

APPENDIX F

F.1 Scale Interpretation for the Vocational Preference Inventory (Holland, 1965)

F.1 Scale Interpretation for the Vocational Preference Inventory (Holland, 1965)

The Realistic scale

The *realistic* orientation is characterised by aggressive behaviour, active interests, the use of physical skills, a preference for acting out problems and an avoidance of interpersonal and verbal activities. Thinking is said to be more concrete than abstract, problems tend to be approached by the objective manipulations of things, animals, tools and machines, and stress is reduced by avoiding tasks requiring subjectivity, intellectualism, artistic expression, and social sensitivity. The values involved are thought to be of a conventional nature while aesthetic ones are of little importance.

Typical realistic occupations include, the skilled trades, technical jobs, factory work, some service and outdoor work and engineering vocations. The usual types of activities involve the use of motor skills. This orientation means the avoidance of being the centre of attention and involves a self-concept which is mature, practical, persistent, unsociable, shows a narrow range of interest, is rugged and robust, practical and mechanical.

Achievements are made in technical rather than social, artistic, or academic areas but they are not made in a creative way. Aptitudes tend to be more mechanical than verbal but psychomotor skills are good.

The *investigative* type (known as the intellectual type in the Vocational Preference Inventory of 1965). The orientation described as investigative is characterised by thinking organising, and understanding rather than by acting or persuading. Problems are solved through the use of intelligence and the manipulation of ideas, words and symbols. Stress is reduced by avoiding physical activities and those which are repetitive. It involves theoretical values and to a lesser degree aesthetic problems are valued. The occupations tend to be scientific in nature. The worker tends to be independent (neither giving or receiving support) and to be task oriented. Other people and repetitive tasks tend to be avoided. The concept of self is one of being unsociable, persistent, self-controlled, analytical, independent, scholarly, introverted, original and achieving. Characterised by knowledge and intellectual achievement with indirect control over others. The distinctive aptitudes are said to be in the verbal and mathematical areas.

The *artistic* orientation is represented by self-expression, expression of emotion and a dislike of structure. Problems are usually solved through the use of feelings, intuition and imagination to create art forms or products. Stress is reduced by avoiding matters of a political and economic nature and by avoiding direct relationships with others. Values tend to be, musical, artistic, literary and aesthetic. The occupations involved tend to be artistic, musical or to do with writing or the arts. The activities are usually creative and athletic activities are avoided. The typical self-concept is complex, original, independent, sociable, sensitive, impulsive, flexible, achieving, unpopular but friendly. Achievement occurs in the artistic fields and verbal aptitude exceeds mathematical ability while perceptual and fine motor skills are well developed.

The *social* orientation is characterised by a desire for close interpersonal situations. Interpersonal interactions are skilled, but situations involving intellectual problem-solving and the use of physical skills are avoided. Problems are solved by relying on emotions rather than intellect, and roles which require motor skills are avoided. Typical values held are of a social, ethical and/or religious character. The typical occupations described as falling within this orientation are of an educational (teaching), therapeutic (social work and other service jobs for example) and/or religious disposition. The activities undertaken would include, social service ones which involve training, imparting information, tend to be enlightening, or involve curing or developing others. Physical danger is avoided as is the use of tools or machinery. The self-concept would typically be described as humanistic, having social presence, dominant, sociable, achieving, popular and friendly. Achievement would be in the area of leadership and scholarship. Aptitudes would include, verbal skills (for example those suited to selling) but mathematical skills would not be expected to be high.

Enterprising as an orientation is said to be represented by the use of verbal skills to manipulate and to dominate others and to have power and status as a primary concern. Problems are usually solved through the use of wit, humour and persuasion. The reduction of stress would occur through displaying oral aggression and self-aggrandizement. The common values would be of a political and economic nature with a low value placed on aesthetics and a high emphasis placed on values which are status oriented. Typical occupations include sales, supervisory and leadership vocations. Activities generally involve, persuasive, powerful roles with a drive to attain organisational goals or personal economic success. Areas involved include all things scientific, non-social activities, confining activities and activities

involving extended concentration. The typical self-concept would centre upon being dominant, cheerful, adventurous, conservative, desirous of high status power and money, ambition, extraversion and persuasion. Achievement would occur in the area of speaking, leadership and athletics. The main aptitude would be leadership skills.

The *conventional* orientation would be typified by a concern for rules and regulations, self control, and an identification with power and status as distinct from personally seeking power. Structured work and interpersonal situations would be preferred. Problems would usually be solved by conforming to cultural norms and values. Stress would be reduced by avoiding persuasive and expressive activities. Economic values would be seen as pre-eminent. Occupations high in this orientation would be those involving clerical and computational tasks and those which are rule-oriented (office, clerical and accountancy work for example). The activities preferred would be of a passive, systematic and structured type. Aggressive or spontaneous activities would be avoided along with ambiguous tasks. The self-concept would usually involve making a good impression, being well controlled, persevering, being inflexible, conservative, conscientious, stable, sociable, a perfectionist and concerned about prestige. In the area of achievement there would be little potential for creativity and speaking skills would not be a strength. Aptitudes would include precision and attention to detail with a mathematical rather than a verbal orientation.

APPENDIX G

G.1 Operationalisation of constructs

G.1 Summary of operationalisation of constructs

The following list of the operationalisation of the constructs includes those represented by the research propositions and hypotheses and those relating to background data with the time they were measured noted. All of the variables measured by the questionnaires are included in the list whether or not they were reported upon, focused upon, or were part of the research hypotheses and analyses.

The time when the measurement of each variable occurred in the longitudinal study is indicated by stage one of the research being referred to as time 1 and stage two, as time 2.

The operationalisations below are of those constructs which were examined within Dawis and Lofquist's original model and the expanded model. Not all of Dawis and Lofquist's propositions were researched in the present study. However the way in which Dawis and Lofquist suggested they be operationalised is included here.

In relation to the operationalisation of the constructs or latent variables where they are seen as underlying factors, Figure 3.8 indicates the way operationalisation was recommended by Dawis and Lofquist. The present study at times adopted in full Dawis and Lofquist operationalisation and at others alternative methods were used, methods which were more practicable within the research design and setting. Justification for the way in which the constructs were operationalised can be found within the discussion concerning the design of the research. Below is a list of the ways in which constructs were operationalised. As can be observed multiple indicators were used wherever practicable in preparation in particular for any analyses involving models concerned with linear structural relationships.

Table G.1 Operationalisation of constructs and variables measured in the questionnaires plus the time measured in the longitudinal study

Abilities

1. School certificate mathematics mark requested at time 1.
2. English school certificate mark, requested at time 1.
3. University average grade by time 2.
4. Average grade in majoring subject/s by time 2.

Ability requirements of work environment (Not measured in the study)

Way Dawis and Lofquist measured these:-

1. Can be inferred.
2. Dawis and Lofquist's measure - Minnesota Occupational Classification System II (MOCSII, Dawis, Lofquist, Henly, and Rounds, 1979/82), ability requirement axis.

Ability-ability requirement correspondence

1. Correlation between Mathematics mark and perceived satisfactoriness scores.
2. Correlation between English mark and perceived satisfactoriness scores.
3. Correlation between university average grade and satisfactoriness scores.
(1. 2. and 3. were all undertaken at time 2).

Satisfactoriness

1. Subject perceived satisfactoriness at time 2 from self-efficacy items as in 2 to 7 below.
2. Produce work to a good standard (item in self-efficacy scale) at time 2.
3. Obtain recognition for my work (self-efficacy scale item) at time 2.
4. Confident of promotability at time 2.
5. Confident can follow rules, at time 2.
6. Confident absenteeism will be low, at time 2.
7. Confident can achieve, at time 2.

Work needs

1. Minnesota Importance questionnaire (scores for importance of 20 needs belonging to six underlying factors) administered at time 1.
2. 20 need statements - subscale of the MIQ - at time 2.

Reinforcer pattern

1. Can be inferred.
2. Reinforcer pattern of the 20 work needs of workers in the same job as judged by subject at time 2 and reinforcer pattern for workers in

the same job.

3. Dawis and Lofquist's measure - The Minnesota Occupational Classification System II, occupational reinforcer clusters. (Not used in the study).

Value-reinforcer correspondence

1. Multiple correlation between MIQ scores and MSS scores, (not used in present study).
2. Canonical correlation between job satisfaction scores on the 20 work aspects and the difference scores for vocational values and job rewards (20 item scale of reinforcer patterns of workers in same job - as judged by subject), (not used in this study).
3. The square of the differences between work importance scores on the MIQ and reinforcers judged by respondents to be available at time 2. (Used in present study).

Satisfaction

1. Minnesota Satisfaction Questionnaire (satisfaction scores for the 20 values belonging to six underlying factors or dimensions).
2. Composite score from MSQ of 21 selected statements, known as general satisfaction.
3. Score on single item measure of job satisfaction.

Tenure

1. Self-predicted tenure (Expected tenure).
2. Single item measure of job attachment.
3. Subject estimate of usual tenure of workers in the same job.

Personality

1. Holland's Vocational Personality Inventory

Self-efficacy

1. Developed a multiple item scale of self-efficacy in the 20 work aspects and additional aspects, for administration at time 1.
2. Self-efficacy scale administered at time 2.
3. Self-efficacy ratings for use of the four adjustment styles at time 1.
4. Self-efficacy ratings for the use of the four adjustment styles at time 2.

Use of adjustment styles

1. Self-efficacy for use of adjustment styles of flexibility, activeness, reactivity and perseverance at time 1.
2. Self-efficacy for the use of the four styles at time 2.
3. Single item measures of way in which the adjustment styles are used i.e. the typical celerity, effort, pace and endurance used as judged by the subject at time 2. (Based on Dawis and Lofquist's experimental rating form.)

Locus of control

1. Four-item Personal Competence Scale (Campbell, Converse and Rodgers, 1976), at time 1.
2. The same four-item locus of control scale at time 2.

Vocational preference

1. Holland's Vocational Preference Inventory at time 1.
2. Stated preference at time 1.
3. Job expect to do in the long term - at time 1.
4. Alternative future work plans -at time 1.
5. Vocational Preference Inventory at time 2.
6. Vocational interests at conclusion of study for students -at time 2.

Vocational training

1. University and other qualifications and training.

Vocational preference / vocational training correspondence

1. Match between vocational preference and training.

Relative importance of work

1. A rating of the importance of work relative to activities outside work (single item measure) at time 2.

Subjective well-being

1. Single item measure of life satisfaction.
2. Index of well-being (Campbell, Converse and Rodgers, 1976).
3. Single-item measure of happiness (Bradburn Happiness Scale).
4. Single-item measurement of satisfaction with living circumstances. (1. to 4. measures at both time 1 and 2.)
5. Quality of life measures in relation to the importance of and the

Satisfaction

with the domains of: country live in, neighbourhood, accommodation, education, employment, free time, health, standard of living, savings and investments, friendships, personal relationships, family life and housework at time 2 Campbell, Converse and Rodgers (1976).

Number of leisure activities

1. Actual number of activities at university and outside university at time 1.
2. Type of leisure activities (as categorised using the Revised Classification of Types of Recreation Activity of The Department of Internal Affairs, New Zealand, 1977) at time 1.
3. Number and type of activities outside work at time 2.

Leisure Company

1. How many people spend free time with usually at time 1.
2. Number of people spend time with at time 2.

Accommodation

1. Where live (hostel, family, flat/house with others, or alone) at time 1.
2. Where live at time 2.

Social reference group

1. Qualifications friends attaining at time 1.
2. Friends' jobs expected to do at time 1.
3. Friends' expected salaries at time 1.

Health

1. General state of health at time 1.
2. Importance of health at time 2.
3. Satisfied with health at time 2.

Reasons for choice of job

1. Major reasons listed at time 2.

Self-efficacy for adjustment

1. Self-efficacy for adjustment at time 1 to work (over all index/composite measure of self-efficacy scale).
2. Self-efficacy for adjustment to leisure activities at time 1.
3. Self-efficacy for adjusting to a new location at time 1.
4. The above three self-efficacy measures at time 2.

Absenteeism

1. Self-stated absenteeism at time 2.

Reasons for return to university (where appropriate)

1. Reasons given for returning to study.

Qualification seeking at time 2

1. Qualifications sought at time 2.

Social support

1. Number of people in company with usually at time 1.
2. People know through work at time 2.
3. Social support measures in relation to wife/husband, girlfriend/boyfriend, partner, friends, neighbours, relatives and work mates at time 2.

APPENDIX H

- H.1 The 20 psychological needs of Dawis and Lofquist (1984)
- H.2 The work needs from the Minnesota Satisfaction Scale (MSS) used in the self-efficacy scale

H.1. The Psychological needs

Ability utilization
 Achievement
 Activity
 Advancement
 Authority
 Company policies and practices
 Compensation
 Co-workers
 Creativity
 Independence
 Moral values
 Recognition
 Responsibility
 Security
 Social service
 Social status
 Supervision (human relations)
 Supervision (technical)
 Variety
 Working conditions

H.2. The work needs from the MSS used in the self-efficacy scale

Following company policies and practices
 Accepting direction from a supervisor
 Following standard work rules and procedures
 Accepting the responsibility associated with the job
 Adapting to changes in procedures
 Respecting the authority of a supervisor
 Working as a member of a team
 Getting along with supervisors
 Performing repetitive tasks
 Getting along with co-workers
 Performing tasks requiring variety and change in methods
 Other items of the MSS
 The quality and quantity of the work
 Rate of absenteeism
 Worthy of a pay rise
 Worthy of transfer to a job at a higher level
 Worthy of promotion to a position of more responsibility
 Late for work?
 Becomes overexcited?
 Becomes upset and unhappy?
 Needs disciplinary action?
 Stays absent from work?
 Seems bothered about something?
 Complains about physical ailments?
 Says 'odd' things?
 Seems to tire easily?
 Acts as if not listening when spoken to?
 Wanders from subject to subject when talking?

APPENDIX I

I.1 Items used in employee satisfactoriness ratings

I.1 Factors used in employee satisfactoriness ratings in the MSS

Lateness for work

Becoming overexcited

Becoming upset or unhappy

Needing disciplinary action

Absenteeism

Seeming bothered about something

Complaining about physical ailments

Saying 'odd' things

Seeming to tire easily

Acting as if not listening when spoken to

Wandering from subject to subject when talking

APPENDIX J

PRELIMINARY STUDY OF RANGE AND MEASUREMENT OF WORK ADJUSTMENT STYLES

- J.1 Introduction
- J.2 Aims
- J.3 Subjects
- J.4 Measurement Instruments
- J.5 Procedure
- J.6 Results
- J.7 Discussion
- J.8 Conclusion

J.1 Introduction

It was because that part of Dawis and Lofquist's theory relating to adjustment styles was the more recent and that they regarded their adjustment styles and the measurement of them in particular as experimental that a small study was undertaken prior to measuring adjustment styles in the present research. The focus of this exercise was to assess what adjustment styles there might be and how they might be best measured. Dawis and Lofquist's exploratory instruments were compared with other ways of measuring adjustment styles devised for this preliminary study.

Within Dawis and Lofquist's Work Adjustment Theory, work adjustment is viewed as a process where there are personality style differences in an individual's level of tolerance for discordance. Personality style is believed to affect the degree of flexibility and the extent to which discordance is reduced. The methods of reducing discordance proposed by the theory involved changing need structure, that is using a reactive mode of adjustment, or changing the environment, using an active mode. These are the adjustment modes which belong to Dawis and Lofquist's specific set of personality style variables which also include flexibility and perseverance. This is distinct from their generic set of personality style variables derived from the terminology of behavioural psychology and consisting of celerity (latency), pace (intensity), rhythm (pattern) and endurance (duration). The sets of personality style variables are the process characteristics of Dawis and Lofquist's work personality in contrast to the status characteristics described by their personality structure variables of skills or needs and their respective reference dimensions of abilities and values.

J.2 Aims

In preparation for designing the questionnaires for the main study the aims of the pilot study were to:

1. See if the full range of Dawis and Lofquist's adjustment styles could be identified.

Dawis and Lofquist (1984) defined these styles on their Adjustment Style Rating Form in the following way: "*Flexibility* - tolerance for discordance with the environment before acting to reduce the discordance. *Activeness* - likelihood of acting to change the environment to reduce discordance. *Reactiveness* - likelihood of acting to change the

expression of personality structure to reduce discorrespondence. *Perseverance* - likelihood of maintaining adjustment behavior under conditions of continuing discorrespondence." (p.216)

2. Examine adjustment styles evident in responses to hypothetical work problems Dawis and Lofquist's theory would predict such as unfulfilled work needs, mismatched abilities and job requirements.
3. Examine use of adjustment styles made to hypothetical problems based upon other sources of conflict and frustration suggested in the literature.
4. Estimate the importance to individuals of the different work problems generated.
5. Assess the appropriateness of Dawis and Lofquist's experimental rating forms, their Adjustment Style Rating (Experimental form) and their Personality Style Rating (Experimental form), in particular the ease with which items were understood and answered.
6. On the basis of findings choose an appropriate form for the adjustment style items for the questionnaires.

J.3 Subjects

A convenience sample of part-time extramural or distance learning university students in full-time employment and undertaking postgraduate study in vocational psychology was used. All of the twenty students taking the course volunteered to take part in the preliminary study while at the university for the on campus part of their study.

J.4 Measurement instruments

The measurement instruments consisted of a 45 item Questionnaire in two forms, multiple choice and open-ended, see Appendix A. A counterbalanced design was used in the order of presentation of the form and content of questionnaire items, multiple-choice or open-ended and their content, were reversed for half the subjects. Form A had half of the items in a closed (multiple choice) format first and the other half in an open-ended format. For form B

items were reversed in both format and order such that the content of the multiple choice items of form A became the open-ended questions of form B and vice versa.

The items were concerned with potential work problems relating to each of the work needs and how an individual would probably respond if faced with such a problem. The instruments included Dawis and Lofquist's experimental form rating individual use of adjustment styles. Their two rating forms, for the generic and specific adjustment variables, defined the adjustment variables and asked individuals to rate themselves on a scale of 1 to 5 for each.

A measure of the importance of the work problems was obtained in order to establish which problems were potentially the object of work adjustment attempts and to use in the interpretation of responses. For example, not making an adjustment response to a work problem could be interpreted as the result of an indifference to that problem, if it lacked importance, rather than as a failure to respond or response delay which might be the case with a problem rated important. On the other hand, a response to a problem rated unimportant was considered an example of whatever adjustment style it represented because of the fact a response was at least being made. When a respondent did nothing in response to a problem rated as important this type of, lack of, response was counted because the work problem was regarded as a problem to that individual, therefore some adjustment to it might be required. In this case an adjustment response of doing nothing, initially could be indicative of perseverance and later regarded as a failure to respond. Noting that a problem was of no importance to the respondent was used to help understand any other uncharacteristic responses.

Potential work adjustment problems were generated by considering the needs of workers in relation to themselves and their environment and other sources of conflict and frustration. The assumption made was that if the needs of workers are thwarted in any way this may pose a problem for them, some adjustment may be required in order to reduce discordance. Some of the generated problems were based upon differences between the abilities and the ability requirements of the environment in order to reflect this aspect of Dawis and Lofquist's theory. Others were based upon other potential problems, such as lack of communication among workers within an organisation and the potential influence of an individual's social reference group.

With respect to the needs of workers, items were drawn from those variables or needs represented in the MIQ (Gay, Weiss, Hendel, Dawis and Lofquist 1971; Rounds, Henly, Dawis and Lofquist, 1981; Dawis and Lofquist, 1984); the Work Importance Study (1980); and Nicholson's Work characteristics and preferences measure (Glowinkowski and Nicholson, 1984). All needs included in each of these scales were used. Table 5.1 summarises the needs and their scale origin, thus also demonstrating which of the scales had needs in common.

Table J.1 Summary of Work Needs Represented in Different Instruments

ORIGINS OF THE NEEDS					
MIQ & WIS	MIQ & WIS	MIQ & Nicholson	MIQ	WIS	Nicholson
Altruism	Authority	Security	Ability utilisation	Lifestyle	Role definition
Creativity	Working conditions		Supervision	Risk	Challenging work
Financial rewards	Status		Recognition	Cultural identity	
Advancement	Variety		Responsibility		
Personal development	Social relations		Company policies & practices		
Good co- workers	Activity				

Other sources of potential conflict and frustration included were, conflict of aims (Robbins, 1939), failure of management to delegate (Brinker, 1955), communication difficulties in the area of listening to and talking to others and individuals comparing their job unfavourably with those of others in their social reference group.

The response alternatives were chosen in such a way as to control for social desirability. The alternatives incorporated the locus of the response, whether the individual acted upon self or

the environment and Dawis and Lofquist's proposed adjustment styles of active, reactive, flexibility and perseverance. Provision was made for respondents to nominate responses not predicted by Dawis and Lofquist's theory.

The Multiple-choice questions in the preliminary adjustment styles questionnaire were,

"If my job did not allow me to further develop my talents and skills (important/not important)), I would...

- a. do something myself
- b. expect my employer to do something
- c. influence my employer to do something
- d. change the way I view this
- e. leave things as they are
- f. do something else (please specify)"

The a. category were designed to represent an active response which involved self only, b. represented perseverance and an environmental response, c. represented an active response involving the environment, d. represented a reactive response and therefore involved self, e. represented a response which was of a flexible style, neither active nor reactive and involving neither self nor the environment and f. the final alternative provided the opportunity to make a response not allowed for or represented by any of the preceding alternatives. At the end of both forms of the questionnaire respondents were presented with a general item postulating a situation where they were not suited to their job. This was an attempt to gain an indication of their flexibility and perseverance. Dawis and Lofquist's experimental rating scales (for adjustment styles) were placed at the end of each form.

The instructions for the respondents were, "This is an exploratory study to develop categories of responses in relation to work problems. Please give some indication of what you may or may not do in response to each item, even if it is not important nor relevant to you in your job. Please 1. indicate if that particular aspect of a job is "important" or "not important". 2. complete each sentence (we are interested in what you would DO or NOT DO rather than in how you FEEL about the items).

The wording of Dawis and Lofquist's Experimental Rating Forms was altered as below in order to put the items into questionnaire form by changing their definition type of statements

to statements about individuals' behaviour. The changes made to the Adjustment Style Rating Form, Experimental were:

The original

Flexibility - tolerance of discorrespondence with the environment before acting to reduce the discorrespondence.

Activeness - likelihood of acting to change the environment to reduce discorrespondence
(low activeness - high activeness)

Reactiveness - likelihood of acting on self to change the expression of personality structure to reduce discorrespondence

Perseverance - likelihood of maintaining adjustment behaviour under conditions of continuing discorrespondence

The modifications

I am flexible in that I can tolerate not being satisfied in my job and not being considered a satisfactory worker awhile before I would try to make changes (scale 1 to 7 low flexibility - high flexibility)

I actively change those aspects of my job and my work environment where I think it necessary

I make changes in myself when I am dissatisfied with work (low reactiveness - high reactiveness)

I would persevere in trying to improve my work situation (low perseverance - high perseverance)

The changes made to the Personality Style rating form, Experimental were:

The original

Celerity - quickness of response in interacting with the environment

Pace - level of effort typically expended in interaction with the environment (low - high)

Rhythm - typical pattern of pace, steadiness (low - high)

The modifications

I respond to improve my work situation (slowly - quickly)

I maintain the following effort (low - high)

My typical pace could be described as (steady - not steady)

Predictability (low - high)	I work to a pace which is (predictable - varied)
Endurance - likelihood of maintaining interaction with the environment (low - high)	My level of endurance is (high - low)

J.5 Procedure

The questionnaires were completed by subjects during class time. The respondents were placed in one of two groups. Both received the same questions but in a different order and format, either form A or B. In this way half the participants were given the questionnaire beginning with the open-ended items and the other half were given the questionnaire beginning with the multiple-choice questions. The participants were asked for written and verbal feedback about the format of the questionnaires and the ease of answering questions.

J.6 Results

The questionnaire was able to be scored for 19 of the sample's 20 distance learning university students who were on campus for a vacation course. Feedback from the subjects showed that some found the open-ended questions time-consuming to complete. Some also found the double negatives in some statements confusing. One of the respondents answered entirely on the basis of feelings about the problems posed rather than what they may or may not do in response to them, despite the instruction to avoid responding in this way.

The multiple-choice statements were found to discriminate less well between the active and reactive modes of adjustment than the open-ended questions. This seemed to arise mainly because of the response choice of "do something myself", as this could be interpreted to mean change own behaviour or change the environment, a reactive or active response, respectively. There were other categories which allowed the active mode, for example, influencing employer, and the reactive mode, "changing the way I view this", to be chosen. But some of these responses may not have been chosen if the respondent had believed the choice of "do something myself" also covered either one or both of these. But respondents had been asked to choose as many of the response alternatives as were appropriate for them so on this basis could have responded to all the statements, thus giving the same responses to the statements they perceived as similar.

The open-ended statements seemed to distinguish more easily between the active and reactive modes, although a smaller range of responses were made under this format. However, this may not be a limitation of this format but a strength. The open-ended format response range may more accurately reflect the responses perceived to be available in the actual work situation, that is a smaller range than represented by the multiple choice alternatives. Whereas the multiple-choice format, by providing most of the available alternative responses, may increase the range of responses but bias them towards the researcher's listed response alternatives.

The open-ended responses were grouped into the responses of activeness, reactivity, flexibility, leaving work, and doing something outside work instead. Sometimes respondents said they would leave their job if another alternative did not work. Such a response could also be interpreted as an example of persevering, at least initially.

The only responses in the f. category "do something else" which could not be categorised according to work adjustment theory adjustment styles were those which involved doing something outside work, unless this could be categorised as doing nothing about the problem at work. This could be interpreted either as leaving the situation as it is at work, that is being flexible and tolerating discordance with the environment, or as an active response external to the job.

In relation to the multiple-choice statements responses were categorised as in Table J.2. However, a response was categorised as flexible only if it was rated as an important item to that particular respondent. Because if it was not of importance and no response occurred, it could be reinterpreted simply as no response due to indifference, rather than a delayed response or a flexible reaction.

The frequency with which the adjustment styles were used differed. A predominant adjustment style was able to be identified for each of the respondents. Table J.3 orders each subject's adjustment style according to its frequency of use, frequency represented as a proportion of their total responses.

Table J.2 Categorisation of the Multiple-choice Items

Response option	Response style or Category
a. do something myself	only categorised if clear whether an active or reactive response
b. expect my employer to do something	flexibility
c. influence my employer to do something	active
d. change my view of this	reactive
e. leave things as they are	flexibility
f. do something else	for example, "leave" - persevering initially then an active but compensatory response, e.g. outside work

As can be seen from Table J.3, on average the most predominant adjustment style for respondents made up 54% of their total responses, while the second most predominant to the least common response style made up 24%, 12%, 7% and 5% of the total responses, respectively. Predominant adjustment styles were identifiable and accounted for over half of the responses to work adjustment problems.

Table J.3 shows that each subject tended to have a second response style that accounted for about a quarter to a third, mean = .24, of their adjustment responses, the proportions in the second column of the table ranging from .17 to .41, while the other adjustment styles they might use, together (sum of 3rd to 5th favoured) accounted for only about another .22 of their responses on average, the mean of the total proportion of the final three columns of Table J.3. It is noteworthy that even although some responses were more favoured by all respondents, most employed all the identified response alternatives at some stage.

Table J.3 The Proportion and Type of Adjustment Response Preferred (in order of Frequency of Choice, the most = 1st, the least = 5th frequently chosen), Respondents = 20, valid N = 19.

	1st	2nd	3rd	4th	5th
1	leave (.52)	activeness (.20)	flexibility (.12)	non-work (.04)	reactiveness (.12)
2	activeness (.27)	reactiveness (.23)	flexibility (.13)	non-work (.10)	leave (.27)
3	leave (.56)	activeness (.20)	reactiveness (.12)	flexibility (.09)	non-work (.03)
4	leave (.46)	activeness (.35)	reactiveness (.11)	flexibility (.08)	non-work (0)
5	leave (.50)	non-work (.18)	reactiveness (.14)	flexibility (0)	activeness (.18)
6	activeness (.50)	leave (.22)	reactiveness (.13)	non-work (.06)	flexibility (.09)
7	activeness (.59)	leave (.23)	non-work (.14)	reactiveness (.04)	flexibility (0)
8	activeness (.49)	leave (.36)	flexibility (.14)	reactiveness (.12)	non-work (0)
9	activeness (.52)	reactiveness (.17)	flexibility (.14)	non-work (.12)	leave (.05)
10	activeness (.46)	reactiveness (.25)	leave (.22)	non-work (.07)	flexibility (0)
11	activeness (.61)	reactiveness (.21)	leave (.11)	flexibility (.07)	non-work (0)
12	activeness (.69)	reactiveness (.15)	leave (.12)	flexibility (.04)	non-work (0)
13	activeness (.59)	leave (.22)	reactiveness (.11)	flexibility (.08)	non-work (0)
14	activeness (.53)	leave (.21)	reactiveness (.16)	flexibility (.10)	non-work (0)
15	activeness (.59)	reactiveness (.26)	leave (.11)	non-work (.04)	flexibility (0)
16	activeness (.58)	reactiveness (.24)	leave (.09)	non-work (.06)	flexibility (.03)
17	activeness (.79)	leave (.13)	reactiveness (.04)	non-work (0)	flexibility (.04)
18	activeness (.43)	leave (.24)	reactiveness (.16)	flexibility (.14)	non-work (.03)
19	leave (.47)	activeness (.41)	reactiveness (.06)	non-work (0)	flexibility (.06)
Mean	.54	.24	.12	.07	.05
S.D.	.11	.07	.04	.04	.07

The favoured type of responses, and the only two to occur in the most predominant adjustment styles for the 19 subjects, were "activeness" ($N = 14$) and "leave work" ($N = 5$). These occurred in the second most frequently chosen responses also. A response that would take place outside the work environment was the least chosen alternative overall. Flexibility was the next least popular adjustment style response, while reactivity was among the responses likely to be the second or third most predominant style in use.

The range of proportions of use of the most to the least predominant style for respondents indicated the greatest range to exist in relation to the most predominant style. The ranges for the most to the least predominant style were, .36, .28, .21, .10, and .06, respectively. The standard deviations of the mean proportions for each of the adjustment styles were below or close to 0.1, showing a tendency for the proportion of use of a respondent's most predominant style to least predominant style to vary little across respondents.

A comparison was made between the proportion of responses indicating flexibility and the self-ratings of flexibility, obtained from Dawis and Lofquist's Experimental Adjustment Style Rating scales, and between the "leave" responses and the self-rating of perseverance, as in Table J.4. Most of the perseverance scores were clustered around the centre of the five-point scale, with a mean of 3.63 and a standard deviation of .87, without the removal of an outlier score of 1, the S.D. is 1.1, with the result that the level of perseverance may assist little in the explanation of differences in other variables in relation to it. This is further supported by a nonsignificant Pearson's r of .18 between perseverance and leave responses.

It was difficult to compare the flexibility of the responses with the flexibility rating scores with any degree of confidence because there was only a small number of responses which could be categorised as flexible. But there seemed to be no apparent relationship between work adjustment theory's measure of flexibility and the number of self-rated flexible responses, the non-significant $r = -.34$. It was expected that where leave responses were high, the frequency of flexible responses, on the work adjustment theory scale, would be low but again a non-significant of $r = -.13$ was found.

Table J.4 The Proportion of Respondents' Responses to Dawis and Lofquist's Scale and the Items of the Preliminary Study Classified as Representing Flexibility and Perseverance

Mean ratings on Dawis and Lofquist's Adjustment Style Rating Form (1984) (1 = low, 5 = high)			Proportion of responses in each category for multiple choice and open-ended questions of the preliminary study		
Mean rating			Proportion		
S ^a	Flexibility	Perseverance	Flexibility	Leave	
1	2.0	3.5	.12	.52	
2	4.5	3.9	.13	.27	
3	1.0	4.0	.09	.56	
4	3.9	4.2	.08	.46	
5	3.9	3.9	0	.50	
6	2.9	4.6	.09	.22	
7	4.0	3.2	0	.23	
8	3.0	3.0	.14	.36	
9	3.5	2.3	.14	.05	
10	3.0	2.0	0	.22	
11	1.0	4.0	.07	.11	
12	4.0	2.9	.04	.12	
13	3.0	4.0	.08	.22	
14	4.0	5.0	.10	.21	
15	4.0	4.0	0	.11	
16	5.0	5.0	.03	.09	
17	2.5	3.5	.04	.13	
18	1.2	1.0	.14	.24	
19	5.0	5.0	.06	.47	
	3.2	3.6	.07	.27	Mean
	1.2	1.1	.05	.16	S.D.

Note. a. S = Subjects

The relationship between Dawis and Lofquist's flexibility and their perseverance ratings, in first two columns of table J.4, were not significant. High flexibility on the work adjustment theory measure did not seem to be associated with perseverance as measured on the same rating form. When perseverance was correlated with the work problem questionnaire measure of flexibility it was also not significant. On the work problem questionnaire the proportion of flexibility responses correlated with the leave work responses only .14.

No response bias on the 5-point scale was found. Some subjects found the definitions of the adjustment styles on Dawis and Lofquist's rating form too difficult to understand.

J.7 Discussion

Dawis and Lofquist's modes were all able to be identified as in use but another category to include an outside work response seemed to be required. Although adjustment responses made out of the work context might be able to be categorised in the same way as those occurring in the work setting (as active or reactive etc.) they might be better regarded as compensatory adjustment responses. To adopt Dawis and Lofquist's categorisation such responses would have to be regarded as examples of flexibility (not acting to reduce discorrespondence).

That neither types of measures of flexibility and perseverance correlated significantly within or between the two instruments, Dawis and Lofquist's rating forms and the pilot study work problem questionnaire, may be related to construct rather than measurement validity issues. The flexibility and perseverance constructs may not be as independent as they appear at first sight. One could be flexible, that is, tolerate discorrespondence with the environment before acting but not necessarily maintain adjustment behaviour (persevere) under conditions of *continuing* discorrespondence. Alternatively one could demonstrate low flexibility by acting quickly to reduce discorrespondence and also demonstrate perseverance by maintaining such adjustment behaviour under continuing discorrespondence.

J.8 Conclusions

Any implications the results may have for the construct validity of the adjustment styles may need to be treated with caution because of the small number in this preliminary study. But in relation to its aims, all the subjects appear to expect to use a variety of adjustment styles. The styles were able to be categorised using Dawis and Lofquist's classification system. Non-work compensatory adjustment also occurred and such responses are not covered explicitly in Dawis and Lofquist's work unless they are regarded as the same type of adjustment responses but ones which are simply made in a different context. In this way they could be either active, or reactive compensatory adjustment responses.

The Experimental Adjustment Style Rating form may be of use when compared with data from sentence completion tasks for work adjustment problems, and/or with data from other sources such as supervisor ratings. Similarly, the Experimental Personality Style Rating form may be of use when compared with results from sources such as a personality inventory. However, the wording as it stands would be better simplified because subjects criticised Dawis and Lofquist's Rating Forms for their complexity.

For use in the present study it was concluded that, the questionnaire could be shortened by generating work problems not from the 20 separate work needs but from the six underlying values (or reference dimensions) of Gay, Weiss, Hendel, Dawis and Lofquist's (1971) factor analyses. However, this would have validity only if these factors were replicated in the present study. Although a multiple-choice format would enable quicker administration of a questionnaire it would need to discriminate better among the different adjustment styles.

Needs other than those of Dawis and Lofquist could be included. A measure of the likelihood of a respondent using a particular style would be useful. This information could be obtained through questions such as the degree to which each style is used. But in order to use the multiple-choice format the degree to which questions were able to discriminate among adjustment styles would need to be determined empirically.

An investigation of adjustment styles formed only a small part of the present research, consequently the development of an empirically determined adjustment style instrument was not attempted. It seemed that a questionnaire similar to that of Dawis and Lofquist's experimental rating forms but with different more simple definitions could be used.

It was decided that the locus of a response could be identified in advance with a statement preceding the rating task. This would indicate that the statements and rating task apply to the work setting. Rather than creating specific work problems, the rating forms could just assess in general the degree to which each of the rating styles are favoured by the respondent.

Definitions or descriptions of the adjustment styles were arrived at and their ease of understanding assessed by asking a small number of individuals to rate their own degree of flexibility, activeness, reactiveness, and perseverance, as well as their celerity, effort, pace and endurance according to these definitions. No difficulty was expressed in understanding

the definitions or in completing the rating task itself. It was concluded such an instrument would be appropriate for the main study.

APPENDIX K

- K.1 The General LISREL Model
- K.2 Work need factor analysis matrices
- K.3 LISREL confirmatory factor analysis of the correlated factor (oblique) model of work needs
- K.4 The LISREL modelling history

K.1 The general LISREL model

A useful formulation of the LISREL model has been that of Jöreskog and his associates (Jöreskog, 1973; Jöreskog and Sorbom, 1984). The model specification consists of two parts: the measurement model and the structural equation model. A summary of the LISREL model appears in Figure K.1. The relationships among the latent variables are given by the LISREL structural equation model which is of the form:

$$\eta = \Gamma \xi + \mathbf{B} \eta + \zeta \quad (1)$$

where ξ , η are defined by the measurement model equations, Γ is a $m \times n$ parameter matrix of regression coefficients which describe the relationships between the latent constructs ξ and η , $\mathbf{B}$ is a $m \times m$ matrix of regression coefficients used to describe the relationships between the latent constructs η . The elements of $\mathbf{B}$ represent direct causal effects of the η -variables on the other η -variables and the elements of Γ represent direct causal effects of ξ -variables on η -variables. The last term of the equation, ζ is a vector (order m) of disturbance terms which reflect the component of the latent variables η not explained by the systematic portion of the model. The variance/covariance matrix of independent variables ξ is the $n \times n$ matrix ϕ . The variance/covariance matrix of the disturbance terms ζ is the $m \times m$ matrix Ψ .

The LISREL model uses the variance/covariance matrix Σ of a set of observable variables assumed to be measured on an interval level scale and scaled in deviations from the mean resulting in all variables having an expectation of zero. Two types of observable variables are distinguished, variables which are indicators of latent independent or exogenous variables, denoted by a vector $\mathbf{x} = (x_1, x_2 \dots x_q)$, and variables which are indicators of latent dependent or endogenous variables. These are denoted by a vector $\mathbf{y} = (y_1, y_2 \dots y_p)$. The variance/covariance matrix, Σ , used by LISREL to examine the relationship between the variances and covariances or correlations and the parameters of a model is a $(p + q) \times (p + q)$ matrix of the form:

$$\Sigma = \begin{bmatrix} \Sigma_{yy} & \Sigma_{yx} \\ \Sigma_{xy} & \Sigma_{xx} \end{bmatrix}$$

where Σ_{yy} is the variance/covariance matrix of the endogenous variables y , Σ_{xx} is the variance/covariance matrix of the exogenous variables x , and $\Sigma_{xy} = \Sigma_{yx}$ is the covariance matrix of the x and y variables.

In the general LISREL model the x , and y , variables are assumed to be indicators of latent constructs which are less in number. The latent constructs which correspond to the x variables are denoted by the vector $\xi = (\xi_1 \dots \xi_n)$ and the latent constructs which correspond to the y variables are denoted by the vector $\eta = (\eta_1 \dots \eta_m)$. A set of linear equations (equations 2 and 3) which define the LISREL measurement model link the observed variables x , y , to the theoretical constructs.

The measurement model for the x variables is:

$$x = \Lambda_x \xi + \delta \quad (2)$$

where Λ_x is a $q \times n$ parameter matrix of regressions coefficients describing the relationship between the observed variables x and the latent constructs ξ and δ is a vector (order q) of disturbance terms. These disturbance terms reflect the x variables' errors of measurement. These are derived by estimating the percentage of the variance terms estimated to be due to measurement error. The variance/covariance matrix of the disturbance δ is the $(q \times q)$ matrix Θ_δ . The disturbances δ are assumed to be uncorrelated with the latent constructs ξ .

The y variables measurement model is:

$$y = \Lambda_y \eta + \epsilon \quad (3)$$

where Λ_y is a $p \times m$ parameter matrix of regression coefficients which describes the relationship between the observed variables y and their corresponding latent constructs η , and ϵ is a vector of the order p of the disturbance terms representing the errors of measurement in the y variables. The variance/covariance matrix of the terms ϵ is the $(p \times p)$ matrix Θ_ϵ . The disturbance terms ϵ are assumed to be uncorrelated with latent variables η .

A summary of the LISREL model appears in Figure K.1. where each of the three equations in the General model are given also in matrix form and notation.

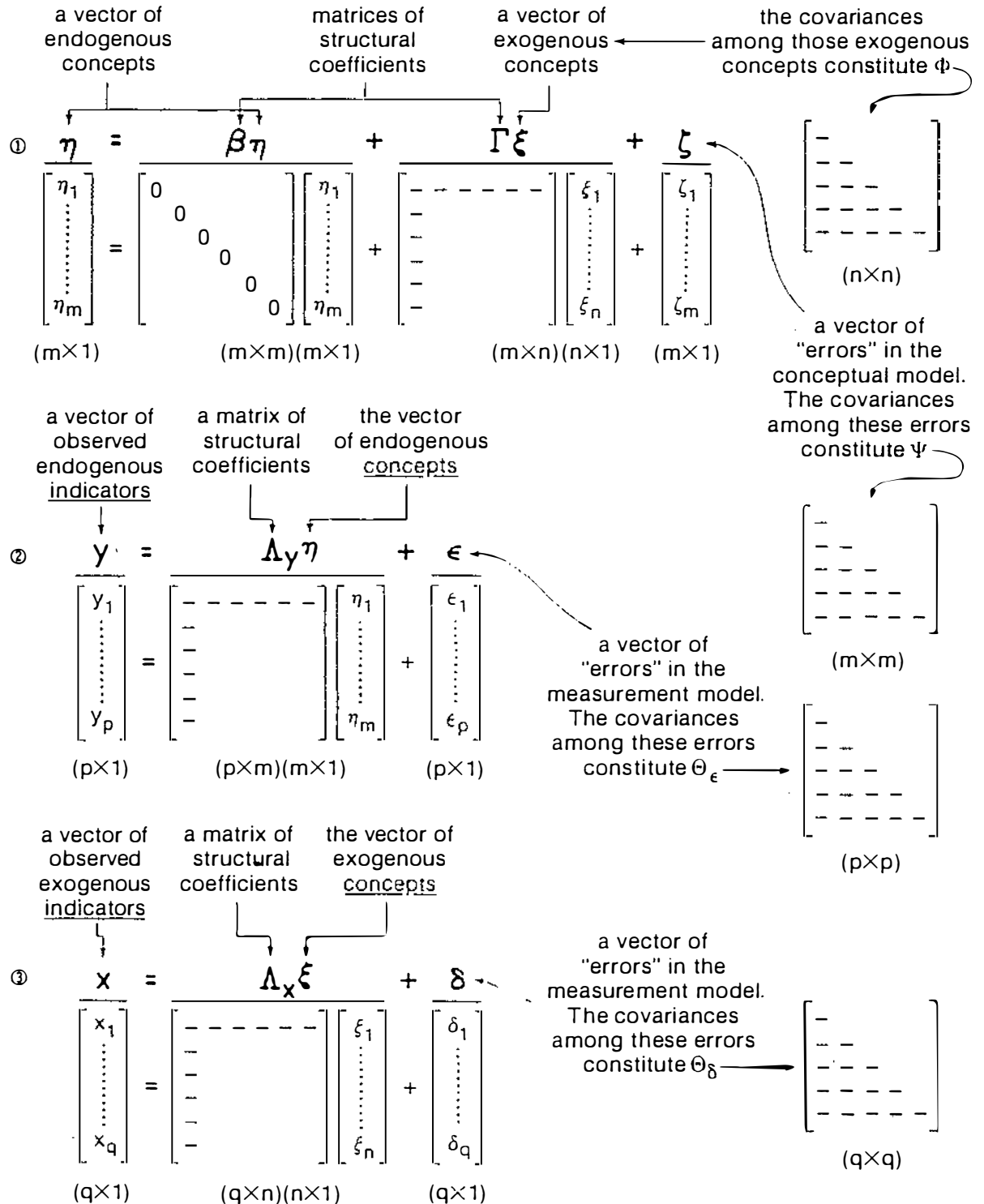


Figure K.1 Summary of the General Structural Model (Hayduk, 1987)

The structural equation model for the Dawis and Lofquist's basic theoretical model was:

$$\eta_1 = \gamma_{11} \xi_1 + \beta_{31} \eta_2 + \zeta_1$$

$$\eta_2 = \gamma_{22} \xi_2 + \beta_{32} \eta_2 + \zeta_2$$

$$\eta_3 = \beta_{31} \eta_1 + \beta_{32} \eta_2 + \zeta_3$$

In LISREL notation the structural equation model for Dawis and Lofquist's basic model can be written:

$$\eta = \Gamma * \xi + \beta * \eta + \zeta$$

$$\begin{array}{ccccccc} \eta_1 = & \gamma_{11} & 0 & \xi_1 & 0 & 0 & 0 & \eta_1 & & \zeta_1 \\ & 0 & \gamma_{22} & \xi_2 & 0 & 0 & 0 & \eta_2 & + & \zeta_2 \\ & 0 & 0 & & \beta_{31} & \beta_{32} & 0 & \eta_3 & & \zeta_3 \end{array}$$

K.2 Work needs factor analysis matrices

Table K.2 Principal Axis Factoring Rotated to a Varimax Criteria for MIQ data

Advancement	.71570	.21136	.21320	.04714	-.19671
Recognition	.69590	.26269	.10573	.09495	-.04885
Social status	.60226	.16327	-.01680	.20931	.11427
Compensation	.49298	.02565	.31130	.36230	-.23323
Achievement	.48546	.44836	.21152	.17900	.25675
Authority	.43391	.41488	.16355	.19836	-.11935
Security	.41828	-.03671	.33046	.35237	.06158
Responsibility	.26191	.80523	.14046	.12258	-.02075
Creativity	.22316	.74603	.05259	.06125	.21186
Ability utilisation	.40637	.53627	.17204	.13606	.22115
Independence	-.01145	.43062	.10915	.30261	.01350
Supervision (human)	.10173	.23602	.72568	.12125	.16760
Company policies	.06805	.06806	.70757	.08076	.26738
Supervision (technical)	.22383	.09772	.69301	.15014	.02573
Coworkers	.24007	.07898	.28750	.60404	.20337
Variety	.13390	.42460	-.02782	.59292	.07937
Working conditions	.25278	.12359	.37891	.47277	.08681
Activity	.20064	.31609	.07513	.44420	.14455
Social service	-.01928	.23884	.15442	.31599	.63301
Moral values	-.06279	.02598	.16769	.02845	.49422

Table K.3 Pattern Matrix for ML Extraction and Oblimin Rotation of MIQ Data

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Achievement	.80858	.05504	.11019	.10883	-.03637
Ability utilisation	.67152	.06136	.07414	.01231	.16328
Recognition	.51172	.03512	-.36490	.11824	-.01356
Supervision (human)	.02345	.76020	.06344	-.01443	.14053
Company policies	-.01432	.75103	.12982	-.00952	.01055
Supervision (technical)	.01702	.71433	-.10921	.05437	-.00107
Advancement	.35580	.18224	-.55976	.041193	.04939
Social service	.08599	.18224	-.55976	.04193	.04939
Compensation	.08565	.19834	-.41177	.38772	-.07402
Moral values	.10404	.18163	.40323	.05663	-.03816
Coworkers	-.05638	.14208	.06136	.71404	.02631
Variety	.11551	-.19094	.08094	.52665	.31483
Working conditions	.09963	.23572	.01699	.48144	-.02123
Security	.12018	.22994	-.17282	.42321	-.15986
Activity	.15902	-.04327	.06546	.42171	.18248
Social status	.27665	-.07057	-.27580	.30823	.06151
Responsibility	.34420	.10366	-.11685	-.11257	.64422
Creativity	.44282	.01444	.09198	-.11129	.55772
Independence	-.08154	.07404	.02854	.16681	.48670
Authority	.04236	.16441	-.42370	.12350	.46893

K.3 LISREL confirmatory factor analysis of the correlated factor (oblique) model of work needs

The work needs model is described by the following LISREL specifications. A general account of the model is given in Jöreskog and Sorbom (1984).

(a) Notation

Observed variables

Let: y_1 denote the score on the MIQ ability utilisation need items

y_2 denote the score on the MIQ achievement need items

y_3 denote the score on the MIQ responsibility need items

y_4 denote the score on the MIQ creativity need items

y_5 denote the score on the MIQ human relations supervision need items

y_6 denote the score on the MIQ company policies and practices need items

y_7 denote the score on the MIQ variety need items

y_8 denote the score on the MIQ working conditions need items

y_9 denote the score on the MIQ social service need items

y_{10} denote the score on the MIQ moral values need items

with the assumptions:

ζ is uncorrelated with ξ

ϵ is uncorrelated with η

and ζ , ϵ are mutually uncorrelated

Latent variables

Let: η_1 denote the first order achievement need factor

η_2 denote the first order autonomy need factor

η_3 denote the first order safety need factor

η_4 denote the first order working conditions need factor

η_5 denote the first order altruism need factor

ξ_1 denote the higher order work need factor

$$\begin{aligned} y_1 &= \lambda_{11} \eta_1 + \epsilon_1 \\ y_2 &= \eta_1 + \epsilon_2 \\ y_3 &= \lambda_{32} \eta_2 + \epsilon_3 \\ y_4 &= \eta_2 + \epsilon_4 \\ y_5 &= \lambda_{53} + \eta_3 + \epsilon_5 \\ y_6 &= \eta_3 + \epsilon_6 \\ y_7 &= \lambda_{74} + \eta_4 + \epsilon_7 \\ y_8 &= \eta_4 + \epsilon_8 \\ y_9 &= \lambda_{95} + \eta_5 + \epsilon_9 \\ y_{10} &= \eta_5 + \epsilon_{10} \end{aligned}$$

$\mathbf{y}$	$=$	Λ_y				$*$	η	$+$	ϵ
y_1		λ_{11}	0	0	0	0	η_1	$+$	ϵ_1
y_2		1	0	0	0	0	η_2		ϵ_2
y_3		0	λ_{32}	0	0	0	η_3		ϵ_3
y_4		0	1	0	0	0	η_4		ϵ_4
y_5		0	0	λ_{53}	0	0	η_5		ϵ_5
y_6		0	0	1	0	0			ϵ_6
y_7		0	0	0	λ_{74}	0			ϵ_7
y_8		0	0	0	1	0			ϵ_8
y_9		0	0	0	0	λ_{95}			ϵ_9
y_{10}		0	0	0	0	1			ϵ_{11}

$$\begin{aligned}\eta_1 &= \gamma_{11} \xi_1 + \zeta_1 \\ \eta_2 &= \gamma_{21} \xi_1 + \zeta_2 \\ \eta_3 &= \gamma_{31} \xi_1 + \zeta_3 \\ \eta_4 &= \gamma_{41} \xi_1 + \zeta_4 \\ \eta_5 &= \gamma_{51} \xi_1 + \zeta_5\end{aligned}$$

In LISREL notation these equations may be written as:

$$\eta = \Gamma \xi + \zeta$$

η_1	γ_{11}	ξ_1	ζ_1
η_2	γ_{21}		ζ_2
η_3	γ_{31}		ζ_3
η_4	γ_{41}		ζ_4
η_5	γ_{51}		ζ_5

c) Identification

The model is over-identified. This can be seen from the fact there are 55 variances and covariances (distinct equations) of the 10 observed variables and these variances and covariances are reproduced from 30 model parameters, leaving a model with 25 degrees of freedom ($55-30 = 25$). These 30 parameters are:

- 1) 5 coefficients γ_i
- 2) 5 coefficients λ_i
- 3) 5 variances of the disturbances ζ_i
- 4) 2 covariances $\zeta_1 \zeta_2$ and $\zeta_3 \zeta_5$
- 5) 10 variances of the error terms ϵ_i
- 6) 3 covariances of the error terms $\epsilon_3 \epsilon_{10}$, $\epsilon_4 \epsilon_9$ and $\epsilon_6 \epsilon_8$

d) Estimation

The model was solved by using maximum likelihood estimation from the 10 x 10 correlation matrix of the observed variables. The likelihood-ratio chi-square calculated by LISREL is defined in detail in Hayduk (1987).

e) Significance tests

Tests of significance of the model parameters were from t statistics based upon the ratio of the estimated parameter to the estimated asymptotic standard error. Tests of significance are in Table K.4.3.

K.4 Modelling History of the Work Need Factors with LISREL

Figure K.2 provides the conventions used in LISREL in denoting the type of relationships among the variables.

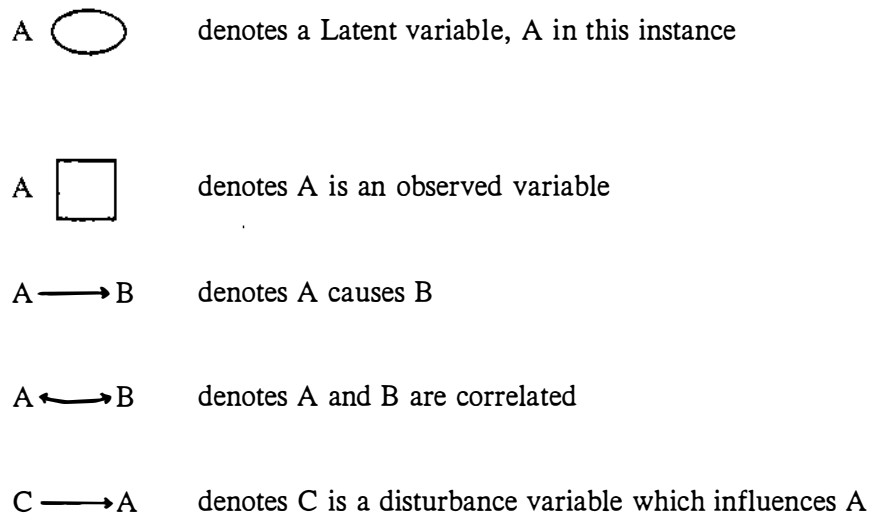
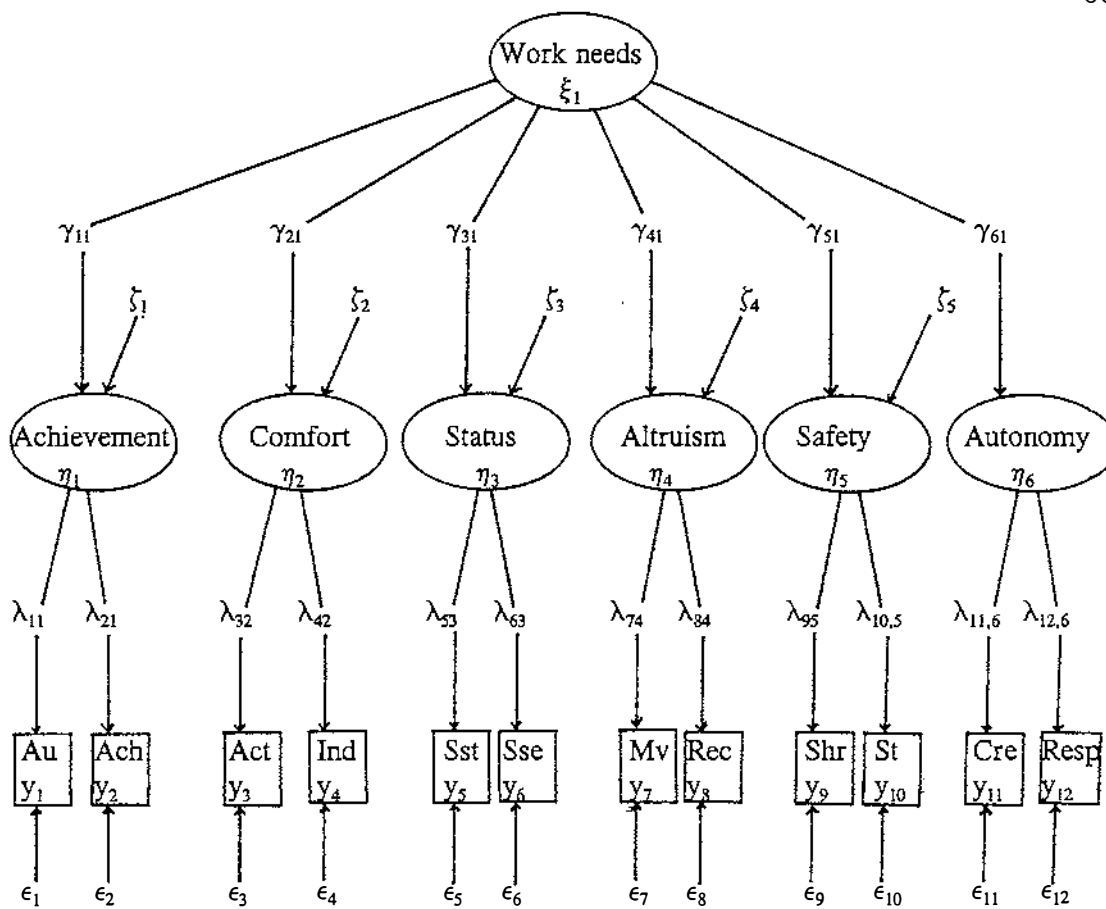


Figure K.2 Path Diagram Conventions for LISREL

K.4.1 Dawis and Lofquist's Six Factor Model and a General Work Need Factor

Dawis and Lofquist's six factor model with the addition of a single higher order factor is represented in LISREL terms in Figure K.3. Identification problems emerged in the LISREL analysis with respect to hypothesising six factors. The warning was given that the gamma coefficient linking the safety or management factor with the second order need factor, "may not be identified" or in other words be uniquely determined. The number of indicators used had been 12 rather than the 20 work need items, with the aim of using fewer but better indicators early in the modelling process. The chi square which resulted was large at 877.81 and significant ($p < .001$), thus there was a significant difference between the model specified and the model as represented by the data. Some of the standardised residuals were as large as 12, not all of the effect coefficients were able to be calculated and the modification indices so large and numerous that many model changes would be needed for a fit to occur. That one of the coefficients may not have been identified means that the whole model cannot be treated as identified and a unique solution is unlikely. The conclusion has to be that Dawis and Lofquist's six factor model with the addition of a higher order factor did not provide a fit for the present data.



Note.

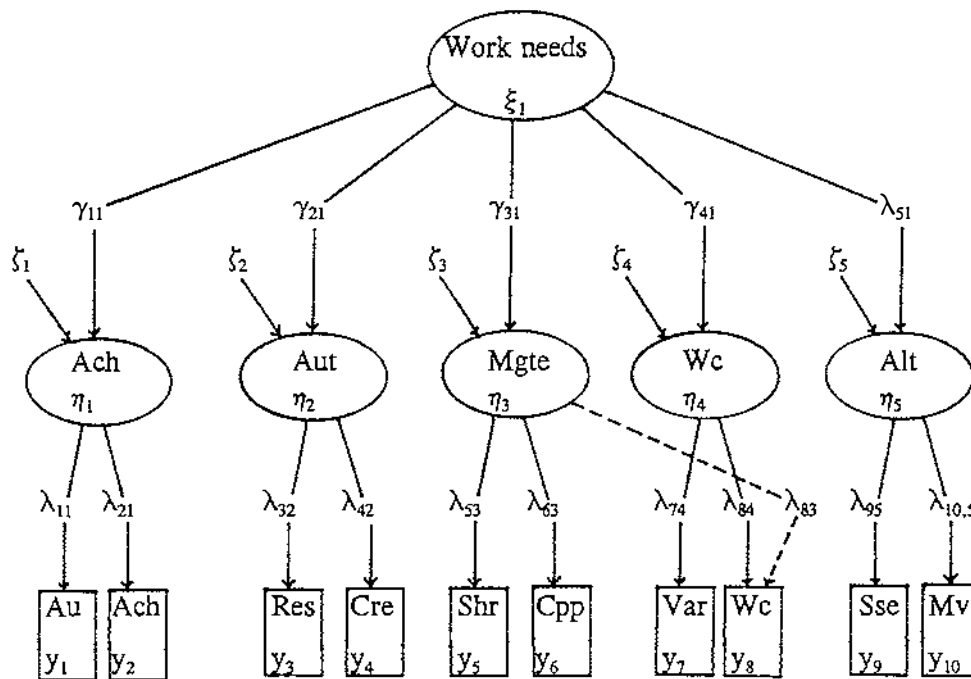
Au	=	Ability utilisation
Ach	=	Achievement
Act	=	Activity
Ind	=	Independence
Sst	=	Social status
Sse	=	Social service
Mv	=	Moral values
Rec	=	Recognition
Shr	=	Supervision (human relations)
St	=	Supervision (technical)
Cre	=	Creativity
Res	=	Responsibility
ξ_1	=	A general work need factor
$\gamma_{11} \dots \gamma_{61}$	=	Gamma coefficients
$\eta_1 \dots \eta_6$	=	First order factors or etas (endogenous variables)
$\zeta_1 \dots \zeta_5$	=	Eta disturbance terms
$\lambda_{11} \dots \lambda_{12,6}$	=	Lambda coefficients
$y_1 \dots y_{12}$	=	Observed variables
$\epsilon_1 \dots \epsilon_{12}$	=	Error terms of observed variables

Figure K.3 Dawis and Lofquist's six factor model using twelve of the MIQ work needs as indicators

K.4.2 Five Factor Model with No Observed Error

A five factor, plus one higher order factor, model with no observed variable error terms as depicted in Figure K.4, produced a χ^2 of 139.5 ($p < .001$). The suggested modification of that model which would produce the greatest change in the fit was to link the observed variable or indicator of working conditions to the management factor (introduce a $\lambda_{8,3}$). This could be justified substantively, because supervision and company policies (the items which make up the management factor) could also be considered to be working conditions. Because the observed variables were measured by items of the same instrument, the MIQ, some correlation among them could be expected. At the very least the items of the MIQ would have common method variance. However, one would expect the method variance to affect all MIQ items equally. Some of the items may have been more interrelated than others conceptually. The working condition statement in the MIQ "The job would have good working conditions" in particular could be regarded as being related to and subsuming many of the other items. It is not surprising that a better fit of the model is attained by treating it as an indicator of another latent factor. That the factors are correlated, suggesting the presence of a higher factor or factors leads to the expectation that some indicators will influence more than one work need factor.

In examining the modelling history to this point, the differences between the χ^2 s, itself distributed as χ^2 , for the different models were themselves significant, demonstrating an improvement in fit for each model. Introducing a link between the working conditions indicator and the management factor for the five factor model with no specification of error terms produced a significant difference in χ^2 (139.50-109.94) of 29.56, with $(30-29) = 1$ d.f. $> \chi^2$ crit = 10.827, $p < .001$. Factor analysis showed working conditions and management factors to be significantly correlated (see Figures 8.4 and 8.5.). Without freeing the coefficient linking working conditions to the management factor but introducing the large sample size correction of specifying an N of 200, χ^2 was reduced by a similar amount, the difference was $(139.50 - 105.00) = 34.67$ with 1. d.f. $p, < .001$, (d.f. = d.f. ₂ - d.f. ₁, i.e. $30 - 29 = 1$). Both changes to the model produced similar chi-squares. The working conditions indicator and management factor link was suspected to be one of many such links, the exploration of which was better pursued using the full set of work needs through the factor analyses and higher order factor analyses reported in chapter eight. Therefore, the effect of modelling just a single higher order work need and correlated error terms were focused upon in the remaining LISREL analyses.



Note.

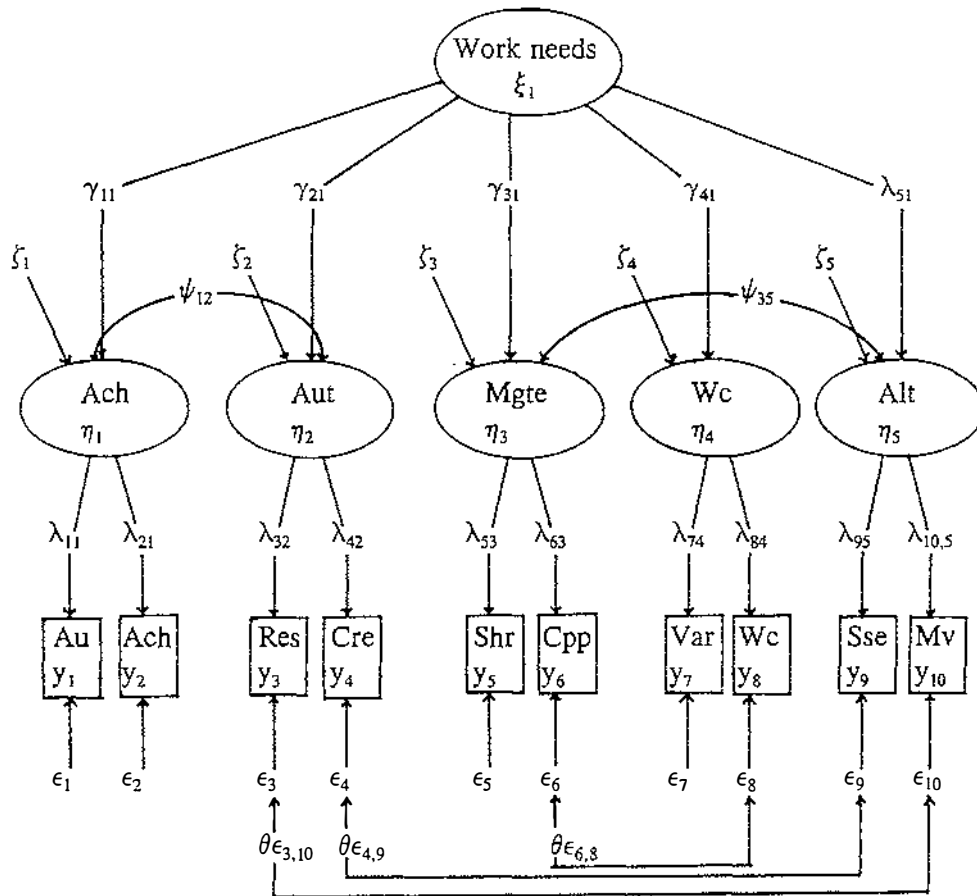
Ach	=	Achievement
Aut	=	Autonomy
Mgte	=	Management
Wc	=	Working conditions
Alt	=	Altruism
Au	=	Ability utilisation
Ach	=	Achievement
Res	=	Responsibility
Cre	=	Creativity
Shr	=	Supervision (human relations)
Cpp	=	Company policies and practices
Var	=	Variety
Wc	=	Working conditions
Sse	=	Social service
Mv	=	Moral values
ξ₁	=	A general work need factor
γ₁₁.... γ₅₁	=	Gamma coefficients
η₁.... η₅	=	First order factors (endogenous variables)
ζ₁.... ζ₅	=	Eta disturbance terms
λ₁₁.... λ₁₀,₅	=	Lambda coefficients
y₁.... y₁₀	=	Observed variables

Figure K.4 Five factor model with no observed variable error

K.4.3 Higher Order Factor Model with Correlated Errors

The next model (see Figure K.5) included some correlated error and correlated disturbance terms (with the $\lambda_{8,3}$ link removed). The correlated error terms proposed, those of the observed variables, were the working conditions need with the company policies and practices need, the moral values need with the responsibility need, and the creativity with the social service need. The correlated disturbance terms of the latent variables involved achievement with autonomy and management with altruism. This 30 parameter model, using five first order factors plus a higher order factor with some correlated error terms, was found to produce a closer approximation to the observed variance/covariance matrix with a much smaller χ^2 of 44.39 ($p < .01$). But the significant χ^2 , still appeared to indicate differences between the model and the observed variance/covariance matrix. However, this is closer to Hayduk's (1987) recommended significance level of .10 and its associated critical chi-square value (with 25 d.f.) of 34.382. The previous models had chi-squares significant well beyond the .001 level. The individual coefficients of the model were significant. This became the best fitting model (reported in chapter eight) because the subsequent one did not appear to be identified.

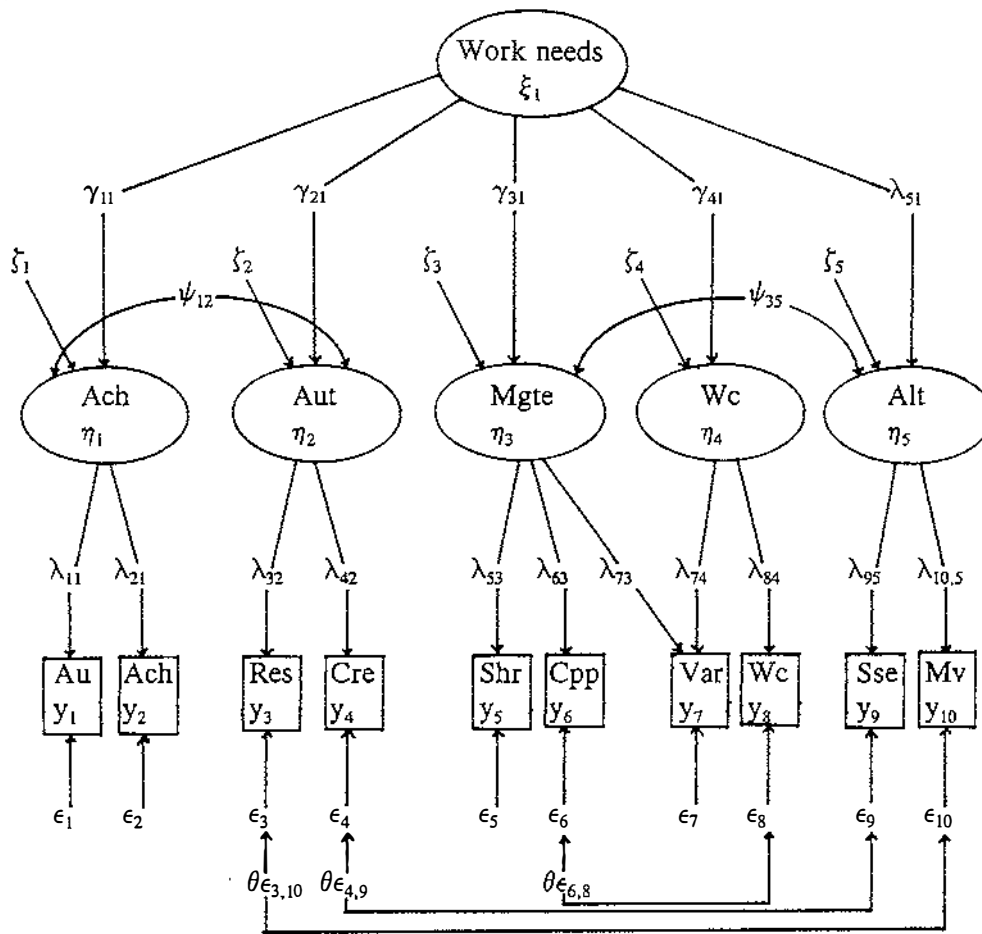
A further parameter was freed for estimation as one of those suggested by the modification indices which would alter chi square by the largest amount. This parameter was $\lambda_{7,3}$ which is a coefficient linking the variety need with the management factor. This model is shown in Figure K.6. A non-significant χ^2 , now with 24 d.f, of 30.26 ($p = .176$) resulted indicating a model (see Figure K.4) which approximated the observed variance/covariance matrix. Both the chi squares of 44.39 and 30.26 were calculated using a corrective strategy for a sample size ($N=377$) greater than the critical 200, of entering $N=200$ in the LISREL analysis. In the case of the latter model (χ^2 of 30.26) however, the psi matrix was not 'positive definite' (where one or more of the coefficients were completely dependent upon each other). Correlation of the errors in the first order factors may in part be due to the need variables being measured by the one instrument. Because one of the coefficients was not identified this results in the whole model lacking identification and as such cannot be used as the standardised solution. The tests of significance of the model parameters are still presented in Table K.4.3 for comparison purposes and they show the parameters to be often less significant than in the previous model. The proportion of variance accounted for by this model is less also (as shown in Tables K.4.5 and K.4.6).



Note.

Ach	=	Achievement
Aut	=	Autonomy
Mgte	=	Management
Wc	=	Working conditions
Alt	=	Altruism
Au	=	Ability utilisation
Ach	=	Achievement
Res	=	Responsibility
Cre	=	Creativity
Shr	=	Supervision (human relations)
Cpp	=	Company policies and practices
Var	=	Variety
Wc	=	Working conditions
Sse	=	Social service
Mv	=	Moral values
ξ_1	=	A general work need factor
$\gamma_{11} \dots \gamma_{51}$	=	Gamma coefficients
$\eta_1 \dots \eta_5$	=	First order factors (endogenous variables)
$\zeta_1 \dots \zeta_5$	=	Eta disturbance terms (ψ = covariances among these errors)
$\lambda_{11} \dots \lambda_{10,5}$	=	Lambda coefficients
$y_1 \dots y_{10}$	=	Observed variables
$\epsilon_1 \dots \epsilon_{12}$	=	Error terms of observed variables
$\theta_{\epsilon_1} \dots \theta_{\epsilon_3}$	=	Covariances among error terms of observed variables

Figure K.5 Higher order factor model with correlated errors

**Note.**

Ach	=	Achievement
Aut	=	Autonomy
Mgte	=	Management
Wc	=	Working conditions
Alt	=	Altruism
Au	=	Ability utilisation
Ach	=	Achievement
Res	=	Responsibility
Cre	=	Creativity
Shr	=	Supervision (human relations)
Cpp	=	Company policies and practices
Var	=	Variety
Wc	=	Working conditions
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ξ_1	=	A general work need factor
$\gamma_{11} \dots \gamma_{51}$	=	Gamma coefficients
$\eta_1 \dots \eta_5$	=	First order factors (endogenous variables)
$\zeta_1 \dots \zeta_5$	=	Eta disturbance terms (ψ = covariances among these errors)
$\lambda_{11} \dots \lambda_{10,5}$	=	Lambda coefficients
$y_1 \dots y_{10}$	=	Observed variables
$\epsilon_1 \dots \epsilon_{12}$	=	Error terms of observed variables
$\theta_{\epsilon_1} \dots \theta_{\epsilon_3}$	=	Covariances among error terms of observed variables

Figure K.6 The addition of a variety work need/management factor link

The modification of the model was guided more by psychological theory than the modification indices themselves. There is little theoretical impetus to have variety as an indicator of the safety/management factor. Other modification indices suggested by LISREL involved the variety need in relation to achievement and autonomy, and the working conditions need in relation to achievement and safety. Freeing any of these parameters may also achieve a non-significant chi square, but the choice among them as to which may be the more appropriate may have no clear theoretical rationale (although achievement and safety might be expected to be more related to working conditions than variety is to achievement and autonomy).

Sections K.4.1 to K.4.3 (inclusive) have described the series of models run in order to arrive at the one which approximated the data best by modifying the model according to the LISREL programme's modification indices. Having completed this modelling process the various models are compared overall in section K.4.4.

K.4.4 Comparing LISREL Models

The resulting χ^2 indicated that modelling correlation among error and disturbance terms was moving in a direction which improved the fit of the model, a difference between the resulting χ^2 and that of the previous model being $(105.00 - 44.39) 60.6$ with $30 - 25 = 5$ d.f. $>$ crit $\chi^2 20.5$ ($p < .001$). The difference between the χ^2 s of the last two models estimated where the working conditions indicator was linked to the management factor, was $(44.39 - 30.6) = 13.79$ with $(25 - 24) = 1$ d.f. $>$ crit $\chi^2 10.83$ ($p < .001$).

In comparing the LISREL models in accordance with Hayduk's (1987) preference for the use of several indicators of the quality of model fit, the significance of individual coefficients (T-values) to test the null hypothesis that the true parameter is zero, the residuals, and the partial derivatives were also examined. In the case of the latter, large or negative partial derivatives show that increasing or decreasing a particular coefficient's value is likely to improve the model fit and decrease the model χ^2 . The partial derivatives, reported as "first-order derivatives", are the partial derivatives of the fit function taking into account all of the coefficients estimated in the model whether fixed or free. The partial derivatives provide the slope of the fit function at the current coefficients values and indicate the rate at which the fit would alter if the coefficients were permitted to take on slightly larger values. It is because large or negative partial derivatives show that increasing or decreasing a certain coefficient

is likely to greatly improve the fit of the model and the model χ^2 , that they are a source of useful diagnostic information for improving models. However because partial derivatives reflect the real metrics of the relevant variables, such that a unit change on a scale with many scale points is likely to produce little change in the fit and therefore a small partial derivative, judgements about what a large or small partial derivative is, must consider the variables' real metrics. Also because a partial derivative gives the slope at the current value of a coefficient, the slope of the fit function could change if the coefficient increases or decreases slightly. A coefficient with a small partial derivative is capable of radically altering the fit if that slope persisted over a large change in the coefficient's value. On the other hand a small change in the fit would result when there is a large partial derivative but the slope flattens out after a minor change in the coefficient's value.

The LISREL programme's modification indices are produced in response to the problems associated with partial derivatives. The way in which these "modification indices" are defined has altered from time to time. Hayduk (1987) describes them as being based on the partial derivatives, and as being designed to adjust for both scales on which the variables are measured and the rates of change of the partial derivatives. The modification index in LISREL VI, the version used in the present analyses, for any given coefficient is $N/2$ times the ratio of the squared first-order partial derivative to the second-order partial derivative (Jöreskog and Sorbom, 1984: 1-42). The dependence of the indices on N is said to parallel that of χ^2 on N , (Hayduk, 1987).

In the case of the successive models, beginning with the five factor hierarchical model with no error terms, the individual coefficients or factor loadings were all significant ($p < .001$). These T- values ranged from 19.09 ($p < .001$) for the relationship between the achievement indicator or observed variable and the achievement latent variable or factor, down to 4.71 ($p < .001$) for the link between the observed variable of moral values and the altruism factor.

There were six residuals > 2 in the matrix of normalized residuals (estimates of the number of standard deviations observed residuals are away from zero that would be provided by a perfect model). The normalised residual matrix revealed that overall it did not meet the criteria that the errors were likely to be random, that is that almost all but 5% of the residuals fall within two standard deviations. In this case $6/45 = .13$ or 13% were $>$ two standard deviations. Four of these were around two and involved discrepancies between the observed

covariances and the model-implied covariances for human relations supervision with working conditions, with social service, and with moral values, and for company policies/practices with social service. Two of the residuals were greater than 4, for the company policies/variety covariance and the company policies/moral values covariance residuals. This means that the covariances among these observed variables were greater than the zero implied by the proposed model.

This model also produced significant gamma T - values, that is the coefficients linking the five work factors with the higher order need factor were all significant at the .001 level. The T - values for the factors were, 17.08 for achievement, 15 for autonomy, 9 for management, 10.5 for working conditions and 8.7 for altruism. The correlation matrix for the five work need factors, Table K.4.2, reflected the need for higher order factor analysis. All but one were above .40, the point at which the correlations are of a sufficient size to warrant looking for another factor level.

By examining PSI shown in Table K.4.1, the variance for each factor, and $1 - \psi$ (the proportion of variance in the factors explained by the model) it was found that the model was less able to explain the variance in the management and altruism factors with $1 - \psi$ of .31 and .32, respectively.

Table K.4.1 Proportion of Variance (using $1 - \psi$) in the Factors Explained by the Five-Factor Hierarchical Model with No Error Terms

Factor	Proportion of Variance $1 - \psi$
Achievement	.89
Working conditions	.77
Autonomy	.76
Altruism	.32
Management	.31

Table K.4.2 Correlation among the Five Work Need Factors ($p > .001$)

	Achievement	Autonomy	Management	Conditions	Altruism
Achievement	1.000				
Autonomy	0.819	1.000			
Management	0.521	0.482	1.000		
Conditions	0.824	0.762	0.485	1.000	
Altruism	0.530	0.491	0.312	0.494	1.000

The next model estimated consisted of five first order factors, a sixth higher order work need factor, and a link between working conditions and the management factor. The improvement in the quality of fit of this model over the previous one was reflected in the lowered normalised residual between the company policies and practices/working conditions covariance. This was reduced from 4.05 to 0.35 and the supervision (human relations)/working conditions covariance residual changed from 2.29 to 0.69. These first models produced significant error terms, indicating that the true parameter value for these error terms was not zero, which is consistent with the expectation of at least some error in the measurement of observed variables. The T - values of the error terms ranged from .2577 for social service to 11.451 ($p < .001$) for moral values and the error was more than random in terms of the criteria of only 5% of the terms being greater than 2 S.D.s. The highest T - value at 11.451 was also the variable which exhibited the greatest standard deviation, that is, moral values. The standard deviations for the work needs measured by the MIQ, with the exception of moral values, were between .610 and .930. The mean standard deviation of the needs values was .778 while the standard deviation for the moral values need was 1.063.

Using criteria of goodness of fit other than just χ^2 , the 30 parameter five-factor hierarchical model with correlated error terms and residuals, emerged as fitting the data reasonably well. The tests of significance for the model parameters were as in Table K.4.3. for the last two models. With reference to this Table, all gamma and lambda coefficients were significant at the .001 level for all but ψ_{55} which was significant at the .01 level. The covariances among the disturbance terms (Psi) which were significantly different from zero were the autonomy, management and altruism variances and the covariance between the management and altruism disturbance terms. Only random error remained in the normalised residuals matrix as evidenced by all the standardised residuals being within 2 standard deviations. The

standardised solution (presenting the structural relations of the model) is that of Figure K.4. All the coefficients in the model have been expressed in standardised form and may therefore be read in a way analogous to standardised path coefficients. The standard errors are given in Table K.4.7 and the 95% confidence intervals for effect parameters are in Table K.4.8.

Table K.4.3 Tests of Significance of Model Parameters for the Last Two Models

Parameter	Penultimate Model		Ultimate Model	
	T	P	T	P
γ_1	9.08	< .001	8.155	< .001
γ_2	7.388	< .001	7.160	< .001
γ_3	6.551	< .001	7.444	< .001
γ_4	6.118	< .001	4.006	< .001
γ_5	4.853	< .001	5.941	< .001
ψ_{11}	1.354		3.877	< .001
ψ_{21}	1.583		3.989	< .001
ψ_{22}	3.648	< .001	5.355	< .001
ψ_{33}	4.418	< .001	3.543	< .001
ψ_{53}	3.453	< .001	2.482	< .01
ψ_{44}	1.127		-0.077	
ψ_{55}	2.385	< .01	2.099	< .05
λ_{21}	13.202	< .001	13.151	< .001
λ_{42}	12.092	< .001	12.302	< .001
λ_{63}	7.543	< .001	7.801	< .001
λ_{73}	not estimated		-2.426	< .05
λ_{84}	5.600	< .001	3.903	< .001
$\lambda_{10,5}$	4.245	< .001	4.042	< .001
ϵ_{11}	6.18	< .001	6.079	< .001
ϵ_{22}	6.41	< .001	6.441	< .001
ϵ_{33}	4.22	< .001	4.295	< .001
$\epsilon_{3,10}$	-3.65	< .001	-3.603	< .001
ϵ_{44}	6.84	< .001	6.864	< .001
ϵ_{49}	3.32	< .001	3.374	< .001
ϵ_{55}	4.24	< .001	3.921	< .001
ϵ_{66}	6.33	< .001	6.206	< .001
ϵ_{68}	3.61	< .001	2.516	< .001
ϵ_{77}	7.98	< .001	3.870	< .001
ϵ_{88}	6.56	< .001	8.428	< .001
ϵ_{99}	5.75	< .001	4.999	< .001
$\epsilon_{10,10}$	8.42	< .001	8.682	< .001

The structural coefficients in Γ can be interpreted as direct effects on the endogenous variables, for example, for a standardised solution a standard deviation change in ξ_j results in a γ_{ij} standard deviation change in η_i , with all other variables *left untouched at their original values* (Hayduk, 1987, abandons the term "held constant" for models containing multiple equations). The sum of the direct and indirect effects give the total effect of a variable and the overall effect of different variables on each other.

The correlation matrix for the work need first order factors, see Table K.4.4, is similar to that produced from analyses of the earlier model already reported in Table K.4.2 (except that the management and altruism factors correlate more highly in Table K.4.4). If Dawis and Lofquist had undertaken an oblique rotation they would have found similar correlations among factors for their data. None of the first order derivatives are large. The modification indices were small with the exception of the covariance between the variety and working conditions needs and the first order factors of achievement, autonomy, management and altruism.

Table K.4.4 Correlation Matrix for Eta (Correlation Among First Order Factors)

	Achievement	Autonomy	Management	Conditions	Altruism
Achievement	1.000				
Autonomy	0.840	1.000			
Management	0.557	0.451	1.000		
Conditions	0.808	0.654	0.550	1.000	
Altruism	0.545	0.441	0.758	0.537	1.000

Using the standard errors and $1 - \psi$ to assess the proportion of variance in each first factor explained by the model, the proportion of variance in each of the factors was as shown in Table K.4.5.

Table K.4.5 Proportion of Variance in Each First Factor Explained by the Penultimate Model (the Model Fit Adopted)

	Achievement	Autonomy	Management	Conditions	Altruism
Achievement	.819				
Autonomy		.537			
Management			.379		
Conditions				.797	
Altruism					.363

Table K.4.6 Proportion of Variance in each First Factor Explained by the Final (Ultimate) Model

	Achievement	Autonomy	Management	Conditions	Altruism
Achievement	.565				
Autonomy		.398			
Management			.519		
Conditions				.884	
Altruism					.463

Table K.4.7 Standard Errors of the Observed variables ($\epsilon_1 \dots \epsilon_{10}$) and the Coefficients of the Fitted Model

Observed variables					
Ability utilisation					.046
Achievement					.046
Responsibility					.051
Creativity					.052
Supervision (human relations)					.081
Company policies and practices					.074
Variety					.087
Working conditions					.092
Social service					.109
Moral values					.094
Lambdas			Psi		
λ_{21}	.075		ψ_{12}	.084	
λ_{42}	.075		ψ_{33}	.056	
λ_{63}	.116				
λ_{84}	.205				
$\lambda_{10,5}$	.175				
Gammas			Eta disturbance terms		
Achievement/recognition	.084		Achievement	.096	
Autonomy	.088		Autonomy	.100	
Management	.076		Management	.092	
Working conditions	.081		Working conditions	.055	
Altruism	.076		Altruism	.102	

The hypothesis that the population parameters are zero can be rejected because all of the estimates were more than two standard deviations away from zero and none of the confidence limits (see Table K.4.8) incorporated zero.

Table K.4.8 Confidence Intervals (95%) for the Effect Parameters

Parameter	Estimate	Standard error	Confidence Interval	
γ_1	.91	.084	0.081	1.075
γ_2	.73	.088	0.558	0.902
γ_3	.62	.076	0.475	0.765
γ_4	.89	.081	0.731	1.049
γ_5	.60	.076	0.455	0.745
λ_{21}	.85	.075	0.693	0.987
λ_{42}	.81	.075	0.663	0.957
λ_{63}	.71	.116	0.483	0.937
λ_{84}	.64	.205	0.238	1.042
$\lambda_{10,5}$	.46	.175	0.117	0.635

On a more general note, the conceptual model and that reflected by the data became similar (the criterion of similarity being the likelihood of S, the observed covariances, arising as a sampling fluctuation around, the model-implied covariances), however, at least two independent changes were able to achieve this. These changes were made separately to examine their different effects. The working conditions need/management factor link did not decrease the gap between the models sufficiently on its own. Allowing for correlated errors and ignoring the extra sensitivity (which can be erroneous by capitalising on chance fluctuations) provided by more than 200 cases also brought the models closer. Different combinations of the various changes could have been analysed (one example being the correlated errors model using the true sample size). However, keeping in mind these analyses were all being performed on a reduced data set (not the full twenty work needs) such an exercise could not be conclusive. It was also preferable to use exploratory factor analysis at that point to locate the factor structure of work needs.

Despite the limitations of using the LISREL model, important lessons were learned from its application. The different methods of achieving increased model fit all pointed to the factors being more related to each other than Dawis and Lofquist's model predicted and to difficulties with their measurement model. This supported the expectation of the present research that a nonorthogonal work needs model would be more appropriate, such that the work need factors would be correlated perhaps even to the extent of producing more than one level of higher order factors. That some of the disturbance terms were larger than others suggested that one or more of the Saris and Stronkhorst (1984) notions¹ about what disturbances can represent were more in operation for certain factors.

¹ "(1) the effect of unknown variables, (2) the effect of known but omitted variables, (3) the randomness of human behaviour, and (4) measurement error" (Saris and Stronkhorst, 1984, p 34).

APPENDIX L

- L.1 Higher order factor analysis of work needs: Principal Axis Factoring, varimax rotation
- L.2 Higher order factor analysis of work needs: Principal Axis factoring, oblimin rotation
- L.3 Higher Order Factor analysis: Maximum Likelihood extraction, oblimin rotation.

L.1 Higher order factor analysis of work needs: Principal Axis Factoring, varimax rotation

Factor matrix:

	Factor 1	Factor 2
Achievement	.77172	-.26157
Management	.62872	.49231
Moral Values	-.10440	.09685
Comfort	.65298	.05016
Autonomy	.47718	-.27308

Final statistics:

Variable	Communality *	Factor	Eigenvalue	% of Variance	Cum Variance
Achievement	.66396 *	1	1.65581	33.1	33.1
Management	.63766 *	2	.39726	7.9	41.1
Moral Values	.02028 *				
Comfort	.42889 *				
Autonomy	.30227 *				

Varimax rotated factor matrix:

	Factor 1	Factor 2
Achievement	.37585	.72298
Management	.79452	.07994
Moral Values	-.00830	-.14217
Comfort	.50595	.41582
Autonomy	.15533	.52739

L.2 Higher Order Factor Analysis: Principal Axis Factoring, oblimin rotation

Pattern Matrix:

	Factor 1	Factor 2
Achievement	.71031	.20905
Management	-.05121	.81710
Moral Values	-.15098	.02808
Comfort	.35860	.42580
Autonomy	.53863	.02718

Structure Matrix:

	Factor 1	Factor 2
Achievement	.79177	.48583
Management	.26718	.79714
Moral Values	-.14004	-.03075
Comfort	.52452	.56553
Autonomy	.54922	.23706

Factor Correlation matrix:

	Factor 1	Factor 2
Factor 1	1.00000	
Factor 2	.38966	1.00000

L.3. Higher Order Factor Analysis: Maximum Likelihood Analysis Extraction of Factors, Oblimin Rotation. Factor Matrix, Oblique rotation.

Factor Matrix:

	Factor 1	Factor 2
Factor 1	.37576	.72360
Factor 2	.99950	-.00123
Factor 3	.00969	-.18668
Factor 4	.44235	.42698
Factor 5	.14503	.53839

Final statistics:

Variable	Communality *	Factor	Eigenvalue	% of variance	Cum pct
Factor 1	.66478 *	1	1.35699	27.1	27.1
Factor 2	.99900 *	2	1.03062	20.6	47.8
Factor 3	.03494 *				
Factor 4	.37798 *				
Factor 5	.31090 *				

Pattern matrix:

	Factor 1	Factor 2
Factor 1	.20395	.73800
Factor 2	.00719	-.03119
Factor 3	.05481	-.19358
Factor 4	.34260	.42887
Factor 5	.01620	.55314

Structure matrix:

	Factor 1	Factor 2
Factor 1	.39651	.79122
Factor 2	.99905	.23161
Factor 3	.00430	-.17928
Factor 4	.45450	.51827
Factor 5	.16053	.55737

Factor Correlation matrix:

	Factor 1	Factor 2
Factor 1	1.00000	
Factor 2	.26093	1.00000

L.4 Dawis and Lofquist's MIQ Interrelations Re-analyzed

L.4.1 Pattern matrix for Maximum Likelihood extraction and oblimin rotation of Dawis and Lofquist's MIQ interrelations

Pattern matrix:

	Factor 1	Factor 2	Factor 3	Factor 4
Act	.74802	.06096	-.04069	.10716
Sec	.59147	.15309	-.24946	-.20412
Ind	.55576	-.14959	.09962	-.03619
Var	.53259	-.27718	.12987	.09521
Wc	.52074	.07328	-.34877	-.15063
Cow	.51161	.02417	-.17974	.18458
Sst	.38384	-.24344	-.01472	-.13098
Res	-.03063	-.90130	.01733	.03641
Cre	-.13575	-.88555	-.04291	.13184
Auth	.08162	-.59269	-.06717	-.16576
Au	.23244	-.43905	-.12034	.20546
Adv	.13409	-.42034	-.25649	-.24581
Rec	.28246	-.34932	-.19246	-.19728
Ach	.28431	-.34545	-.17252	.22557
Shr	-.02707	-.11928	-.76800	-.09161
Cpp	.00223	-.05841	-.75304	.04271
St	.14877	-.02780	-.66767	-.04873
Mv	-.04906	-.03018	-.41188	.30304
Sse	.35800	-.12803	-.07230	.51645
Com	.25954	-.11707	-.34830	-.37686

Note.

Cpp	= Company policies and practices
Shr	= Human relations supervision
St	= Technical supervision
Com	= Compensation
Wc	= Working conditions
Res	= Responsibility
Cre	= Creativity
Auth	= Authority
Adv	= Advancement
Au	= Ability utilisation
Rec	= Recognition
Ach	= Achievement
Sst	= Social status
Act	= Activity
Ind	= Independence
Var	= Variety
Sec	= Security
Cow	= Friendly co-workers
Sse	= Social service
Mv	= Moral values

L.4.2 Pattern matrix for Principal Factors extraction and oblimin rotation of Dawis and Lofquist's MIQ intercorrelations

	Factor 1	Factor 2	Factor 3	Factor 4
Cpp	.73506	.06608	-.05356	.22272
Shr	.72108	.11565	-.02634	.06701
St	.63794	.04627	.12915	.07375
Com	.51757	.13761	.15427	-.27664
Wc	.47993	-.06195	.43433	-.08081
Res	-.07843	.87191	.01132	.04484
Cre	-.05897	.84938	-.08325	.14839
Auth	.09083	.59601	.07858	-.14225
Adv	.37576	.49920	-.00817	-.18815
Au	.09912	.49644	.14958	.22758
Rec	.30128	.42388	.16331	-.15623
Ach	.16359	.41147	.18063	.26942
Sst	.11855	.30658	.28500	-.11389
Act	.07316	-.06119	.74881	.09035
Ind	-.04722	.12339	.57636	-.07252
Var	-.13801	.26375	.57414	.04909
Sec	.42674	-.12849	.47008	-.14413
Cow	.19588	-.00506	.46234	.22330
Sse	-.04861	.15499	.34878	.51622
Mv	.30607	.03385	-.05340	.39924

Note.

Cpp	= Company policies and practices
Shr	= Human relations supervision
St	= Technical supervision
Com	= Compensation
Wc	= Working conditions
Res	= Responsibility
Cre	= Creativity
Auth	= Authority
Adv	= Advancement
Au	= Ability utilisation
Rec	= Recognition
Ach	= Achievement
Sst	= Social status
Act	= Activity
Ind	= Independence
Var	= Variety
Sec	= Security
Cow	= Friendly co-workers
Sse	= Social service
Mv	= Moral values

APPENDIX M

- M.1 Statistics for the key variables
- M.2 Frequency distribution for expected tenure

M.1 Statistics for key variables

Table M.1 Number of Cases, Minimum and Maximum Values, Measures of Central Tendency Standard deviations for each of the Variables Studied

Variable	Cases	Scale /range	Mean	Median	Mode	S.D.
Average final year grade	284	E - A+	B-	B-	C+	1.7996
Average overall grade	282	E - A	C+	B-	C+	1.6489
School C grade	325	12 - 99	69.65	73	80	18.0163
Expected tenure (years)	150	.01 - 60	3.498	2.0	2.0	7.9708
Job attachment	159	1 - 7	3.5031	3.0	3.0	1.7997
Flexibility	157	1 - 7	4.0318	4.0	5.0	1.6849
Perseverance	158	2 - 7	5.1139	5.0	6.0	1.4231
Active adjustment mode	156	1 - 7	4.6026	5.0	6.0	1.4753
Reactive adjustment mode	157	1 - 7	4.8408	5.0	5.0	1.2786
Speed	158	1 - 7	4.8544	5.0	5.0	1.2811
Pace	157	1 - 7	2.4013	2.0	2.0	1.2953
Rhythm	157	1 - 7	3.8089	4.0	2.0	1.7908
Endurance	157	1 - 7	2.3758	2.0	2.0	1.1002
Personal Competence 1	362	4 - 28	14.044	14	13	4.3957
Personal Competence 2	193	4 - 32	14.560	14	14	4.5664
Index of well-being time 1	365	4 - 15	10.862	11.13	12.73	2.0682
Index of well-being time 2	194	4 - 14.7	10.516	10.75	10.63	2.1664
Leisure activities (N)	199	0 - 16	5.7186	5	5	7.1351
Life Satisfaction time 1	366	1 - 7	5.0628	5	5	1.1815
Life satisfaction time 2	194	1 - 7	4.8711	5	5	1.2791
Satisfaction with living	367	1 - 7	2.7384	2	2	1.4625
Satisfaction with living	197	1 - 7	4.8629	5	6	1.7369
Leisure satisfaction	195	1 - 7	4.6872	5	6	1.5530
Leisure importance	195	1 - 6	1.8410	2	1	1.0256
Health	365	1 - 3	1.1507	1	1	.3658
Health satisfaction	195	2 - 7	5.8154	6	6	1.2505
Job importance	191	1 - 4	2.0838	2	2	.6596

job more important = 17%

job of equal importance = 24.6%

Need reinforcer correspondence

Variable	Cases	Range	Mean	Median	Mode	S.D.
Ability utilisation	193	0 - 6.76	.6958	.36	.25	1.0031
Achievement	193	0 - 6.25	.7821	.36	.25	1.0460
Activity	193	0 - 14.4	2.349	1.21	.64	2.7676
Advancement	193	0 - 10.24	1.3164	.64	1.0	1.8197
Authority	193	0 - 16.81	5.2304	4.41	2.25	3.8367
Company policies/practices	193	0 - 13.69	1.7731	1.0	.49	2.0374

Compensation	193	0 - 15.21	2.2847	1.44	1.0	2.5783
Coworkers	193	0 - 7.29	.8503	.49	.04	1.1641
Creativity	193	0 - 13.69	1.2367	.64	.25	1.7221
Independence	193	0 - 16.81	2.9203	.96	4.0	2.9686
Moral values	193	0 - 12.96	1.4904	.80	.49	2.0081
Recognition	193	0 - 9.00	1.3848	.49	1.0	1.8649
Responsibility	193	0 - 9.61	1.0067	.36	.04	1.5438
Security	193	0 - 8.41	1.4579	.64	.04	1.7819
Social services	193	0 - 13.69	1.8423	1.0	.25	2.2165
Social status	193	0 - 17.64	4.6055	4.0	1.0	3.9707
Supervision (human)	193	0 - 10.24	1.6378	1.0	.04	1.8727
Supervision (technical)	193	0 - 10.24	1.8624	1.21	.49	1.9144
Variety	193	0 - 12.25	2.1801	1.44	4.0	2.3402
Working conditions	193	0 - 9.61	1.1105	4.9	16.4	1.5053

Work needs (MIQ)

	Cases	Range	Mean	Median	Mode	S.D.
Ability utilisation	355	-.7 to 3.5	1.5068	1.5	1.5	.6349
Achievement	355	-.5 to 3.5	1.6837	1.7	1.5	.6105
Activity	355	-.19 to 3.0	.3527	.3	0	.8910
Advancement	355	-1.2 to 3.5	.9997	1.0	.6	.8718
Authority	355	-2.1 to 2.5	-.4831	-.6	-.8	.8225
Company policies	355	-2.1 to 2.3	.4366	.5	0	.6954
Compensation	355	-1.9 to 2.3	.3763	.4	0	.7819
Coworkers	355	-1.4 to 3.2	.9487	.9	.8	.7312
Creativity	355	-1.7 to 3.0	.9020	.9	.6	.7122
Independence	355	-2.1 to 2.3	.1028	0	0	.8010
Moral values	355	-1.8 to 3.5	.9076	1.0	2.0	1.0627
Recognition	355	-1.0 to 3.0	.9239	1.0	1.1	.7924
Responsibility	355	-1.1 to 3.0	.9687	1.0	1.1	.7074
Security	355	-1.6 to 3.0	.5141	.5	.3	.8078
Social service	355	-2.4 to 3.0	.5310	.83	0	.9108
Social status	355	-2.2 to 2.2	-.3811	-.5	-.8	.9302
Supervision (human)	355	-1.8 to 2.1	.3924	.4	0	.6324
Supervision (technical)	355	-1.2 to 2.5	.4096	.4	0	.6318
Variety	355	-1.5 to 3.0	.5727	.5	0	.7895
Working conditions	355	-1.1 to 2.8	.8501	.9	.9	.6906

Workers in the same job

	Cases	Mean	Mode	Percentages		S.D.
				Yes	No	
Ability utilisation	199	1.3618	yes	63.8	36.2	.4817
Achievement	199	1.3668	yes	63.3	36.7	.4832
Activity	199	1.4623	yes	53.8	46.2	.4998

Promotability	199	1.4472	yes	55.3	44.7	.4985
Authority	199	1.5075	no	49.2	50.8	.5012
Company policies/practices	199	1.3719	yes	62.8	33.2	.4845
Compensation	199	1.5377	no	46.2	53.8	.4998
Friendly workers	199	1.2613	yes	73.9	26.1	.4405
Creativity	199	1.4623	yes	53.8	46.2	.4998
Independence	199	1.4623	yes	53.8	46.2	.4998
Moral values	199	1.3166	yes	68.3	31.7	.4663
Recognition	199	1.3869	yes	61.3	38.7	.4883
Responsibility	199	1.3970	yes	60.3	39.7	.4905
Security	199	1.2814	yes	71.9	28.1	.4508
Social service	199	1.3417	yes	65.8	34.2	.4755
Social status	199	1.4121	yes	58.8	41.2	.4934
Supervision (human relations)	199	1.3166	yes	68.3	31.7	.4663
Supervision (technical)	199	1.4673	yes	53.3	46.7	.5002
Variety	199	1.5779	no	42.2	57.8	.4951
Working conditions	199	1.3668	yes	63.3	36.7	.4832
Autonomy	158	1.1899	yes	82.3	17.1	.4393

Satisfaction (MSQ)

	Cases	Range	Mean	Median	Mode	S.D.
Ability utilisation	162	0 - 25	14.5185	15	11	5.1284
Achievement	162	0 - 25	16.1235	16	15	4.7270
Activity	162	0 - 25	16.4198	16	15	4.8310
Advancement	163	0 - 25	14.6687	15	15	5.6820
Authority	162	0 - 30	14.0432	15	15	4.2926
Company policies/practices	162	0 - 25	14.2840	15	15	4.8792
Compensation	162	0 - 25	14.5309	15	15	4.9144
Coworkers	162	1 - 25	17.2654	18	19	4.5133
Creativity	162	0 - 25	14.5247	15	15	4.8802
Independence	162	0 - 25	16.7469	17	15	4.1915
Moral values	162	0 - 26	17.5741	17.5	15	4.3750
Recognition	162	0 - 25	14.5000	15	15	4.7786
Responsibility	162	0 - 25	5.7222	16	15	4.5441
Security	162	0 - 25	16.4691	16	15	4.6628
Social service	162	0 - 25	15.2840	15	15	4.6244
Social status	162	0 - 25	14.3333	15	15	4.3639
Supervision (human relations)	162	0 - 30	16.3827	17	15	5.0735
Supervision (technical)	162	0 - 30	16.4074	17	20	4.8564
Variety	162	0 - 25	15.3765	16	15	4.9670
Working conditions	162	0 - 25	15.6975	16	15	5.4054

General (Composite) satisfaction score (MSQ)

General job satisfaction	162	0 - 94	62.4568	63	69	15.0164
Job satisfaction compared with friends	190	1 - 7	4.5947	5	6	1.5933

Self-efficacy - for use of adjustment styles

Active mode	316	0 - 8	4.8101	5	6	1.6277
Reactive mode	322	0 - 8	4.6615	5	6	1.7312
Flexibility	325	0 - 8	4.7908	5	6	1.6328
Perseverance	323	0 - 8	5.4180	6	6	1.3725

Using Adjustment styles at work

Flexibility	157	1 - 7	4.032	4.0	5.0	1.685
Perseverance	158	2 - 7	5.114	5.0	6.0	1.423
Active	156	1 - 7	4.603	5.0	5.0	1.475
Reactive	157	1 - 7	4.841	5.0	5.0	1.279

Confidence - in using adjustment styles at work

Active mode	161	0 - 8	5.0311	5	6	2.0537
Reactive mode	160	0 - 8	4.9438	7	8	2.0960
Flexibility	161	0 - 8	5.0062	5	6	1.9922
Perseverance	161	0 - 8	5.7081	6	7	1.7911

Confidence - in meeting specific work needs

Variable	Cases	Range	Mean	Median	Mode	S.D
Ability utilisation	161	0 - 8	5.2360	6.0	6.0	2.1463
Achievement	160	0 - 8	5.6813	6.0	7.0	2.0354
Authority	161	0 - 8	5.7702	6.0	6.0	1.9502
Autonomy	161	0 - 8	6.4596	7.0	7.0	1.5207
Activity	161	0 - 8	6.5280	5.0	6.0	1.8407
Compensation	161	0 - 8	5.4472	7.0	8.0	2.1734
Security	161	0 - 8	6.3168	6.0	7.0	2.0719
Independence	161	1 - 8	7.2484	8.0	8.0	1.2451
Variety	160	0 - 8	6.3688	7.0	8.0	1.8001
Social Status	156	0 - 8	5.0128	5.0	6.0	2.0128
Recognition	160	0 - 8	5.6063	6.0	6.0	1.8053
Friendly workers	160	0 - 8	6.6938	7.0	7.0	1.5701
Good training	161	0 - 8	5.4410	6.0	8.0	2.3153
Creativity	161	0 - 8	6.2609	7.0	7.0	1.6452

Confidence - in being satisfactory

	Cases	Range	Mean	Median	Mode	S.D.
Performance	161	2 - 8	6.8944	7.0	8.0	1.1046
Obey rules	160	0 - 8	6.7563	7.0	8.0	1.4308
Repetitive tasks	160	0 - 8	6.1813	7.0	8.0	1.7799
Promotability	159	0 - 8	6.2579	8.0	8.0	2.0538
Absenteeism	161	0 - 8	7.3106	7.0	7.0	1.2759
Adaptability	160	0 - 8	6.7563	7.0	8.0	1.3115
Team work	161	0 - 8	6.8447	7.0	8.0	1.4211
Supervisor relations	161	0 - 8	6.8509	7.0	8.0	1.4672

Confidence - adjusting generally

	Cases	Range	Mean	Median	Mode	S.D.
Lifestyle compatability	161	0 - 8	6.0373	6.0	8.0	1.9167
Adjust to clubs	161	0 - 8	5.8944	6.0	6.0	1.6606
Adjust to location	160	0 - 8	5.3688	6.0	6.0	1.9703

Social Support Variables

	Cases	Median	Mode	YES	NO	N.A.
Support outside wife	193	yes	yes	83.9%	16.1%	
Close friends	193	yes	yes	71.5%	28.5%	
Friends to help in the house	193	yes	yes	86.0%	14.0%	
Friends would lend money	192	yes	yes	91.7%	8.3%	

	Cases	Mean	Median	Percentage
Don't burden wife	189	N.A.	N.A.	88%
Don't burden girlfriend	189	N.A.	N.A.	55%
Don't burden friends	188	4	4	
Social support	193	YES/NO	YES = 91.7%	NO = 8.3%
Keep worries to self	192	YES/NO	YES = 55.7%	NO = 44.3%

Satisfaction with Quality of Life Measures

	Cases	Mean	Median	Mode	Std Dev	Range
Location	194	4.79	5	5	1.71	1 - 7
Neighbourhood	194	4.933	5	6	1.67	1 - 7
Accommodation	195	5.154	6	6	1.546	1 - 7
Education amount	195	5.585	6	6	1.409	1 - 7
Education usefulness	195	5.441	6	6	1.272	1 - 7
Health	195	5.815	6	6	1.250	2 - 7
Savings	195	3.964	4	2	1.873	1 - 7
Friendship	194	4.876	5	6	1.741	1 - 7
Intimate relationship	188	4.830	5	7	1.963	1 - 7
Family life	195	4.990	5	6	1.492	1 - 7
Homemaking	190	5.042	5	5	1.194	1 - 7

Importance of Quality of Life measures (1 = Extremely important, 7 = Not at all important)

	Cases	Mean	Median	Mode	Std Dev	Range
Location	195	2.626	2	2	1.388	1 - 7
Accommodation	195	2.482	2	2	1.352	1 - 7
New Zealand way of life	193	2.238	2	2	1.179	1 - 7

Education amount	194	2.294	2	2	1.188	1 - 7
Health	195	1.544	1	1	.845	1 - 6
Savings	195	2.887	3	2	1.515	1 - 7
Friends	195	1.703	1	1	1.052	1 - 6
Intimate relationship	195	2.005	2	1	1.254	1 - 7
Family life	195	2.062	2	1	1.182	1 - 6
Housework	195	4.036	4	4	1.473	1 - 6

M.2 Frequency distribution for expected tenure

Years Value	Frequency	Percent	Valid Percent	Cum Percent
.0	1	.3	.7	.7
.1	3	.8	2.0	2.7
.3	2	.5	1.3	4.0
.3	7	1.8	4.7	8.7
.3	1	.3	.7	9.3
.4	1	.3	.7	10.0
.5	13	3.4	8.7	18.7
.7	1	.3	.7	19.3
.8	2	.5	1.3	20.7
1.0	33	8.7	22.0	42.7
1.3	1	.3	.7	43.3
1.5	5	1.3	3.3	46.7
2.0	38	10.0	25.3	72.0
2.5	1	.3	.7	72.7
3.0	21	5.5	14.0	86.7
4.0	4	1.1	2.7	89.3
5.0	4	1.1	2.7	92.0
8.0	1	.3	.7	92.7
10.0	4	1.1	2.7	95.3
15.0	1	.3	.7	96.0
20.0	2	.5	1.3	97.3
40.0	1	.3	.7	98.0
45.0	2	.5	1.3	99.3
60.0	1	.3	.7	100.0
	180	47.5	Missing	
	49	12.9	Missing	
Total	379	100.0	100.0	
Mean	3.498	Std err .651	Median	2.000
Mode	2.000	Std dev 7.971	Variance	63.533
Range	59.990	Minimum .010	Maximum	60.000
Valid cases	150	Missing cases	229	

APPENDIX N

CORRELATES OF KEY VARIABLES

- N.1 Need-reinforcer correspondence correlates
- N.2 Job satisfaction correlates
- N.3 Intercorrelations of job satisfaction terms
- N.4 Dawis and Lofquist's intercorrelations of MIQ adjusted scale scores
- N.5 Correlates of the general job satisfaction scale (MSQ composite measure)
- N.6 Correlates of perceived job satisfactoriness
- N.7 Correlates of job attachment
- N.8 Correlates of adjusting to a new location and organisation

N.1 Need-reinforcer correspondence**1. Ability utilisation correspondence**

Achievement correspondence	.6073**
Responsibility correspondence	.3022**

2. Achievement correspondence

Authority work need	.3064**
Company policies and practices work needs	.3114**

3. Activity correspondence

Activity work need	.7380**
Achievement need	.3183**
Responsibility work need	.3190**
Variety work need	.3757**
Activity work need	.4482**
Technical supervision correspondence	.3149**

4. Advancement correspondence

Advancement work need	.5111**
Promotability	.3685**
Authority correspondence	.3393**
Compensation correspondence	.3966**
Recognition correspondence	.4492**
Social status correspondence	.4750**

5. Authority correspondence

Advancement work need	.4112**
Autonomy work need	.7561**
Recognition work need	.3421**
Responsibility work need	.3297**
Skill of workers in the job	.3343**
Promotability of workers in the job	.3144**
Authority of workers in the job	.6001**
Friendliness of workers in the job	.3854**
Recognition attainable of workers in the job	.3170**
Security of workers in the job	.3391**
Social service of workers in the job	.3518**
Bosses back up the staff	.3998**
Working conditions	.3502**
Advancement correspondence	.3393**
Compensation correspondence	.3158**
Human relations supervision correspondence	.3750**

6. Company policies and practices correspondence

Company policies and practices work need	.7269**
Technical supervision need	.3858**
Good working conditions work need	.3528**
Company policies and practices needs met for workers in the job	.4515**
Supervision human relations	.4913**
Technical supervision and training	.3610**

7. Compensation correspondence

Achievement work need	.3282**
Advancement work need	.3726**
Compensation work need	.7498**
Recognition work need	.3169**
Good working conditions work need	.3830**
Workers in the occupation are promotable	.3039**
Workers in the occupation adapt to policy and procedure changes	.3396**
Compensation or pay in the occupation	.4510**
Friendly workers in the occupation	.3447**
Occupation does not conflict with moral values	.3288**
Security of the job	.3543**
Advancement correspondence	.3966**
Authority correspondence	.3158**
Coworkers correspondence	.3564**
Recognition correspondence	.3098**
Security correspondence	.3176**
Social status correspondence	.3084**
Working conditions correspondence	.3970**

8. Coworkers correspondence

Friendly coworkers work need	.3831**
Use of skills in the occupation	.3189**
Friendly workers in the occupation	.4849**
Moral values in the occupation	.3438**
Autonomy in the occupation	.3114**
Security in the occupation	.4144**
Altruism in the occupation	.3409**
Social status in the occupation	.3103**
Bosses back up the staff	.3246**
Working conditions good	.3774**
Compensation correspondence	.3564**
Social service correspondence	.4021**
Good working conditions correspondence	.5066**

9. Creativity correspondence

Creativity work need	.6206**
Responsibility work need	.4049**
Confident can be creative	.3748**
Responsibility correspondence	.6704**
Social service correspondence	.3928**
Variety correspondence	.3261**

10. Independence correspondence

Creativity work need	.3110**
Independence work need	.7553**
Use of skill in the occupation	.3097**
Achievement in the occupation	.3121**
Friendly workers in the occupation	.3036**
Independence in the occupation	.5500**
Security in the occupation	.3268**
Altruism in the occupation	.3578**
Bosses back up staff in the occupation	.3429**

11. Moral values correspondence

Moral values work need	.5249**

12. Recognition correspondence

Recognition work need	.5922**
Perseverance	.3046**
Active adjustment style	.3053**
Skill use in the occupation	.3033**
Achievement in the occupation	.3060**
Promotability	.3119**
Recognition in the occupation	.5200**
Social status in the occupation	.3314**
Bosses back up staff in the occupation	.3237**
Confident can achieve recognition	.3410**
Advancement correspondence	.4492**
Compensation correspondence	.3098**
Social status correspondence	.4733**

13. Responsibility correspondence

Creativity work need	.4069**
Responsibility work need	.5148**
Number of leisure activities	.3335**

Friendly workers in the occupation	.3877**
Recognition in the occupation	.3245**
Autonomy in the occupation	.4239**
Altruism in the occupation	.3734**
Confident are creative in the job	.3190**
Ability utilisation correspondence	.3022**
Creativity correspondence	.6704**

14. Security correspondence

Security work need	.6321**
Adapting to policies and procedures in the occupation	.3638**
Independence in the occupation	.3003**
Security in the occupation	.4857**
Altruism in the occupation	.3146**
Bosses back up workers in the occupation	.4234**
Good training and supervision	.4287**
Good working conditions	.3433**
Security satisfaction	.3482**
Compensation correspondence	.3098**
Get along with supervisors	.3263**
Training needs and training correspondence	.3916**
Working conditions correspondence	.3196**

15. Social Service correspondence

Compensation work need	.3170**
Friendly coworkers work need	.3247**
Social service work need	.6288**
Altruism in the job	.4515**
Friendly coworkers correspondence	.4021**
Creativity correspondence	.3928**
Social status correspondence	.3076**
Get along with supervisors	.3006**

16. Social Status correspondence

Advancement work need	.3853**
Recognition work need	.4710**
Social status work need	.7669**
Use of skill in the occupation	.4078**
Achievement in the occupation	.3927**
Promotability in the occupation	.5227**
Adapting to policies and practice changes in the occupation	.3689**
Friendly workers in the occupation	.4188**
Creativity in the occupation	.3347**
Recognition in the occupation	.4107**

Security in the occupation	.3790**
Altruism in the occupation	.4274**
Social status in the occupation	.6407**
Get along with supervisors in the occupation	.3357**
Good training and supervision in the occupation	.3176**
Variety in the occupation	.3612**
Good working conditions in the occupation	.3821**
Confident have good social status	.3875**
Advancement correspondence	.4750**
Compensation correspondence	.3084**
Recognition correspondence	.4733**
Social service correspondence	.3076**
Working conditions correspondence	.3614**

17. Get along with supervisors correspondence

Achievement work need	.3173**
Company policies and practices work need	.3111**
Supervision (human relations)	.6911**
Skill in the occupation	.3940**
Achievement in the occupation	.3991**
Activity in the occupation	.3560**
Promotability in the occupation	.3015**
Adapt to policy and practice changes in the occupation	.4260**
Workers friendly in occupation	.3925**
Moral values in the occupation	.3409**
Recognition in the occupation	.3751**
Autonomy in the occupation	.3432**
Security in the occupation	.4651**
Altruism in the occupation	.3698**
Get along with supervisors in the occupation	.6518**
Good training and supervision	.3330**
Working conditions in the occupation	.3625**
Recognition satisfaction	.3018**
Activity correspondence	.3040**
Autonomy correspondence	.3750**
Company policies and practices correspondence	.4913**
Security correspondence	.3263**
Social service correspondence	.3006**
Technical supervision correspondence	.3778**

18. Technical supervision correspondence

Security work need	.3318**
Supervision (human relations) work need	.3569**
Technical supervision need	.6907**
Activity in the occupation	.3005**
Adapting to policy and practice changes	.3367**
Altruism in the occupation	.3186**

Technical supervision in the occupation	.5998**
Working conditions in the occupation	.3734**
Get along with supervisors	.4155**
Activity correspondence	.3149**
Company policies and practices correspondence	.3610**
Security correspondence	.3916**
Human relations supervision correspondence	.3778**

19. Variety correspondence

Creativity work need	.3257**
Variety work need	.7323**
Variety in the occupation	.4928**
Activity correspondence	.3370**
Creativity correspondence	.3261**

20. Working conditions correspondence

Working conditions work need	.5410**
Pay in the occupation	.3053**
Friendly workers in the occupation	.3930**
Creativity in the occupation	.3435**
Autonomy in the occupation	.3041**
Security in the occupation	.4009**
Altruism in the occupation	.3732**
Social status in the occupation	.3407**
Get along with supervisors	.3189**
Working conditions in the occupation	.5642**
Compensation correspondence	.3970**
Coworkers correspondence	.5066**
Security correspondence	.3196**
Social status correspondence	.3614**

Note. ** = $p < .01$

N.2 Significant correlates of individual job satisfaction terms

	Ability	Achievement	Activity	Advancement	Authority
Job attachment	.6185**	.6181**	.4361**	.4212**	.4306**
Perseverance	.4041**	.3542**	NS	.3595**	.3828**
Speed	.3444**	.3598**	NS	NS	NS
Personal competence (2)	NS	NS	NS	.3406**	NS

Satisfaction compared
with others

	.5233**	.4784**	NS	.3126**	.3212**
Skill.2	.5015	.4677**	.3518**	.4367**	.3836**
Ach.2	.5355**	.5260**	.3985**	.4687**	.4831**
Acty.2	.3403**	NS	.4514**	NS	.3470**
Prom.2	.4542**	.3338**	NS	.5805**	.4067**

Coworkers	.3128**	NS	NS	NS	NS
Creativity	NS	.3504**	NS	NS	.3592**
Recognition	.4534**	.4642**	.3249**	.3999**	.4372**
Autonomy	.3631	.3503**	NS	NS	.4075**
Supervision (human)	NS	NS	NS	.3206**	.3219**
Supervision (technical)	.3276**	NS	NS	.3222**	NS
Variety	.3405**	NS	NS	NS	.3302**
General	.8245**	.8760**	.7590**	.7651**	.7094**
Act.s2	.4182**	NS	.3769**	NS	.4304**
React.s2	.3390**	NS	.3300**	NS	.4656**
Persev.s2	.4701**	NS	.3763**	.3416**	.4454**
Skill.s2	.7020**	.5852**	.4270**	.4724**	.5064**
Ach.s2	.66747**	.6769**	.4360**	.4930**	.5604**
Auth.s2	.3530**	.3513**	NS	NS	.4573**
Autn.s2	.3089**	.3377**	NS	NS	.3317**
Acty.s2	.4130**	.3603**	.6281**	NS	.3903**
Vars.s2	.4637**	.3710**	NS	NS	.3868**
Stat.s2	.4120**	.3247**	NS	.3429**	.3695**

Ability Achievement Activity Advancement Authority

Persv.s2	.4701**	.3763**	NS	.3416**	.4454**
Recog.s2	.5214**	.5342**	.3051**	.4007**	.4456**
Sup.s2	.4299**	.3674**	NS	.3231**	NS
Cret.s2	.3238**	.3267**	NS	NS	.3805**

Policies Pay Coworkers Independence Moral values

Job attachment	NS	NS	NS	NS	NS
Perseverance	NS	NS	NS	NS	NS
Speed	NS	NS	NS	NS	NS
Personal competence (2)	NS	NS	NS	NS	NS
Satisfaction compared with others	NS	NS	NS	NS	NS
Skill.2	.3273**	NS	.3153**	NS	NS
Ach.2	.3642**	NS	NS	.3225**	NS
Acty.2	NS	NS	NS	NS	NS
Prom.2	NS	NS	NS	NS	NS
Auth.2	NS	NS	NS	NS	.3061**
Pol.2	.4640**	.3201**	NS	NS	.3009**

Pay.2	NS	.4385**	NS	NS	NS
Coworkers	NS	NS	.3506**	NS	NS
Creativity	NS	NS	NS	NS	NS
Recognition	.3434**	NS	NS	NS	NS
Autonomy	NS	NS	NS	.3114**	NS
Supervision (human)	.3768**	NS	NS	NS	.3095**
Supervision (technical)	.4044**	NS	NS	NS	NS
Variety	NS	NS	NS	NS	NS
General	.7313**	.5974**	.7350**	.6768**	.6584**
Act.s2	NS	NS	NS	NS	NS
React.s2	NS	.3202**	NS	NS	NS
Persev.s2	NS	NS	NS	NS	NS
Skill.s2	NS	NS	NS	NS	NS
Ach.s2	.3510**	NS	.3487**	NS	NS
Auth.s2	NS	NS	NS	NS	NS
Autn.s2	NS	NS	NS	NS	NS
Acty.s2	NS	NS	NS	NS	NS
Pay.s2	.3130**	.6810**	NS	NS	NS
Vars.s2	NS	NS	NS	NS	NS
Stat.s2	NS	NS	NS	NS	NS
Persv.s2	NS	NS	NS	NS	NS
Recog.s2	NS	NS	NS	NS	NS
Coworkers	NS	NS	.4455**	NS	NS
Sup.s2	.3803**	NS	.3052**	NS	NS
Cret.s2	NS	NS	NS	NS	NS
Adjust to clubs	NS	NS	.3513**	NS	NS

	Recognition	Responsibility	Security	Social service	Social status
Job attachment	NS	.4653**	NS	.4373**	.4076**
Perseverance	NS	.4495**	NS	.3035**	NS
Active	NS	.3902**	NS	NS	NS
Speed	NS	.3517**	NS	.3183**	NS
Personal competence (2)	NS	NS	NS	NS	NS
Satisfaction compared with others	NS	.3330**	NS	.3369**	.3378**
Skill.2	.3771**	.4261**	.3638**	.4194**	.3925**
Ach.2	.4121**	.5120**	.3333**	.4386**	.3932**
Acty.2	NS	.3078**	NS	NS	.3481**
Prom.2	NS	.3522**	.3647**	.3597**	.3861**
Auth.2	NS	NS	NS	NS	NS
Pol.2	NS	NS	NS	NS	NS
Pay.2	NS	NS	NS	NS	NS
Coworkers	NS	NS	NS	.3346**	.3583**
Creativity	NS	.4339**	NS	NS	NS
Recognition	.4724**	.4438**	NS	.4393**	.3220**
Autonomy	.3134**	.4737**	NS	.4092**	NS

Sec.2	NS	NS	.3810**	NS	NS
Alt.2	NS	NS	NS	.3904**	NS
Stat.2	NS	NS	NS	NS	.3755**
Supervision (human)	NS	NS	NS	NS	.3198**
Supervision (technical)	NS	NS	.3163**	NS	NS
Variety	NS	NS	NS	NS	.3217**
General	.8077**	.8423**	.7370**	.6768**	.7505**
Act.s2	.3846**	.4261**	NS	NS	NS
React.s2	.3839**	.3922**	NS	NS	.3715**
Persev.s2	.3148**	.4692**	NS	NS	.3143**
Skill.s2	.4431**	.5754**	NS	NS	.4679**
Ach.s2	.5133**	.6148**	NS	NS	.4939**
Auth.s2	NS	.3586**	NS	NS	.3666**
Autn.s2	NS	.4372**	NS	NS	NS
Acty.s2	.3846**	.3892**	NS	NS	.3250**
Pay.s2	NS	NS	NS	NS	NS
Sec.s2	NS	NS	.5683**	NS	NS
Vars.s2	NS	.3709**	NS	NS	.3925**
Stat.s2	NS	.3202**	NS	NS	.5455**
Persv.s2	NS	.4692**	NS	NS	.3143**
Recog.s2	.5321**	.4615**	NS	NS	.4279**
Coworkers	NS	NS	NS	NS	.3077**
Sup.s2	.3642**	NS	.3884**	NS	.3309**
Cret.s2	.3354**	.4726**	NS	NS	NS
Adjust to clubs	NS	NS	NS	NS	NS
	Supervision (human)	Supervision (technical)	Variety	Working Conditions	General satisfaction
Job attachment	NS	NS	.5462**	.2416**	.5073*
Perseverance	NS	NS	.3623**	NS	.3913**
Active	NS	NS	NS	NS	NS
Speed	NS	NS	.3497**		.3460**
Personal competence (2)	NS	NS	NS	NS	NS
Satisfaction compared with others	NS	NS	.4692**	NS	.3486**
Skill.2	NS	.4191**	.3975**	.3502**	.4795**
Ach.2	NS	.3191**	.4838**	NS	.5067**
Acty.2	NS	NS	.3462**		.3239**
Prom.2	NS	NS	.3958**	NS	.4001**
Auth.2	NS	NS	NS	NS	.3022**
Pol.2	.3697**	.3768**	NS	NS	.3496**
Pay.2	NS	NS	NS	NS	NS
Coworkers	NS	NS	NS	NS	.3169**
Creativity	NS	NS	.3200**	NS	NS
Recognition	NS	.3100**	.3367**	NS	.4540**
Autonomy	NS	NS	NS	NS	.3634**
Sec.2	NS	NS	NS	NS	NS

Alt.2	NS	NS	NS	NS	NS
Stat.2	NS	NS	.3022**	NS	NS
Supervision (human)	.3286**	NS	NS	NS	.3533**
Supervision (technical)	.3497**	.4224**	NS	NS	.3221**
Variety	NS	NS	.5530**	NS	.3408**
Con.2	NS	NS	NS	.3788**	.3083**
General	.7319**	.7911**	.7941**	.7075**	1.000
Act.s2	NS	NS	.3928**	NS	NS
React.s2	NS	NS	.3751**	NS	NS
Persev.s2	NS	NS	.4289**	NS	NS
Skill.s2	NS	.3647**	.5726**	NS	NS
Ach.s2	.3107**	.3879**	.5525**	NS	NS
Auth.s2	NS	NS	.3898**	NS	NS
Autn.s2	NS	NS	.3384**	NS	NS
Acty.s2	NS	NS	.4040**	NS	NS
Pay.s2	.3071**	NS	NS	NS	NS
Sec.s2	NS	NS	.3030**	NS	NS
Vars.s2	NS	NS	.6100**	NS	NS
Stat.s2	NS	NS	.4397**	NS	NS
Persv.s2	NS	NS	.4289**	NS	NS
Recog.s2	.3302**	.3407**	.4402**	NS	NS
Coworkers	NS	NS	NS	NS	NS
Sup.s2	.4250**	.4413**	NS	.3550**	NS
Sup2.s2	.4020**	NS	NS	NS	NS
Cret.s2	NS	NS	.3051**	NS	NS
Adjust to clubs	NS	NS	NS	NS	NS

Note.

Skill.2	=	Ability utilisation importance at stage two
Ach.2	=	Achievement importance at stage two
Prom.2	=	Promotability importance at time two
Act.s2	=	Active mode self-efficacy
React.s2	=	Reactive mode self-efficacy
Skill.s2	=	Ability utilisation self-efficacy
Ach.s2	=	Achievement self-efficacy
Auth.s2	=	Authority self-efficacy
Autn.s2	=	Autonomy self-efficacy
Acty.s2	=	Self-efficacy for activity
Vars.s2	=	Self-efficacy for variety
Stat.s2	=	Self-efficacy for status
Persv.s2	=	Perseverance Self-efficacy
Sup.s2	=	Self-efficacy for obtaining human relations supervision
Cret.s	=	Creativity self-efficacy at stage one
Pol.2	=	Importance of having company policies administered fairly at stage two
Pay.2	=	Importance of good pay or compensation at stage two
Recog.s2	=	Self-efficacy for obtaining recognition
Sec.2	=	Job security importance at stage two
Alt.2	=	Moral values importance at stage two

Con.2 = Good working conditions importance at stage two
 General = General satisfaction scale score of the MSQ
 Sup2.s2 = Self-efficacy for obtaining good technical supervision
 Coworkers, Creativity, Recognition, Authority, Supervision Variety = the importance of all these

Creativity

Job attachment	.5290**
Perseverance	.4247**
Active	.4619**
Speed	.3977**
Compared with others sat	.4466**
Skill.2	.3842**
Ach.2	.5392**
Acty.2	.3158**
Prom.2	.3565**
Creativity	.5373**
Recognition	.4276**
Autonomy	.4170**
Stat.2	.4550**
Variety	.4301**
General	.7791**
Act.s2	.5254**
React.s2	.4487**
Persev.s2	.4951**
Skill.s2	.5783**
Ach.s2	.6104**
Auth.s2	.4466**
Autn.s2	.4216**
Acty.s2	.4301**
Vars.s2	.5410**
Stat.s2	.4550**
Persv.s2	.4951**
Recog.s2	.4948**
Coworkers	.4455**
Adjust to clubs	.3513**

Note.

Skill.2	= Importance of skill need at time 2
Ach.2	= Importance of achievement need at time 2
Acty.2	= Importance of activity need at time 2
Prom.2	= Promotability at time 2
Stat.2	= Importance of social status at time 2
General	= General satisfaction (MSQ composite score)
Act.s2	= Self-efficacy for use of active mode
React.s2	= Self-efficacy for use of reactive mode
Persev.s2	= Self-efficacy for perseverance
Skill.s2	= Self-efficacy for skill utilisation
Ach.s2	= Self-efficacy for achievement
Auth.s2	= Self-efficacy for having authority
Autn.s2	= Self-efficacy for having autonomy
Acty.s2	= Self-efficacy for activity
Vars.s2	= Self-efficacy for variety
Stat.s2	= Self-efficacy for gaining social status
Persv.s2	= Self-efficacy for perseverance
Recog.s2	= Self-efficacy for recognition

N.3 Intercorrelations of job satisfaction terms

	Ach	Act	Adv	Aut	Ccp	Com
Au	.8167**	.6262**	.7124**	.6868**	.5625**	.4161**
Ach	1.0000	.6834**	.6828**	.6386**	.6020**	.4798**
Act	.6834**	1.0000	.5173**	.5170**	.4189**	.3856**
Adv	.6828**	.5173**	1.0000	.5813**	.5486**	.4492**
Aut	.6386**	.5170**	.5813**	1.0000	.4641**	.3899**
Ccp	.6020**	.4189**	.5486**	.4641**	1.0000	.5200**
Com	.4798**	.3856**	.4492**	.3899**	.5200**	1.0000
Cw	.5755**	.5270**	.5037**	.4732**	.5037**	.4050**
Cre	.7354**	.5987**	.6218**	.7152**	.5149**	.3760**
Ind	.5395**	.6424**	.5175**	.4694**	.4217**	.4444**
Mv	.5681**	.5716**	.4587**	.3132**	.4404**	.3835**
Rec	.7812**	.5567**	.5790**	.5382**	.6367**	.4512**
Res	.7823**	.6357**	.6569**	.7304**	.5815**	.4839**
Sec	.5869**	.5333**	.6397**	.4536**	.5576**	.4854**
Sse	.7658**	.5487**	.5919**	.6515**	.5673**	.4364**
Sst	.6857**	.5507**	.7089**	.7048**	.4742**	.4925**
Shr	.5908**	.4716**	.4870**	.3765**	.7779**	.4938**
St	.6793**	.5486**	.6413**	.4041**	.7256**	.4697**
Var	.7406**	.6907**	.6007**	.6780**	.4325**	.3811**
Wc	.6403**	.5591**	.5408**	.3788**	.5343**	.4471**
Gen	.8760**	.7590**	.7651**	.7094**	.7313**	.5974**

	Cw	Cre	Ind	M	Rec	Res
Au	.5127**	.7586**	.4991**	.4160**	.7000**	.7469**
Ach	.5755**	.7354**	.5395**	.5681**	.7812**	.7823**
Act	.5270**	.5987**	.6424**	.5716**	.5567**	.6357**
Adv	.5037**	.6218**	.5175**	.4587**	.5790**	.6569**
Aut	.4732**	.7152**	.4694**	.3132**	.5382**	.7304**
Ccp	.5037**	.5149**	.4217**	.4404**	.6367**	.5815**
Com	.4050**	.3760**	.4444**	.3835**	.4512**	.4839**
Cw	1.0000	.5187**	.4997**	.6383**	.6360**	.6426**
Cre	.5187**	1.0000	.4990**	.4228**	.6441**	.8194**
Ind	.4997**	.4990**	1.0000	.6007**	.4482**	.6720**
Mv	.6383**	.4228**	.6007**	1.0000	.5171**	.5308**
Rec	.6360**	.6441**	.4482**	.5171**	1.0000	.7058**
Res	.6426**	.8194**	.6720**	.5308**	.7058**	1.0000
Sec	.5513**	.4878**	.4889**	.5132**	.4878**	.5239**
Sse	.6079**	.6833**	.4847**	.4988**	.7195**	.6987**
Sst	.5193**	.6430**	.4478**	.3608**	.5600**	.6274**
Shr	.6029**	.5327**	.4301**	.5284**	.6548**	.5855**
St	.6406**	.5339**	.4683**	.5961**	.6667**	.6083**
Var	.4945**	.8015**	.5437**	.4176**	.5957**	.7276**
Wc	.5601**	.4784**	.4895**	.5054**	.6114**	.5455**
Gen	.7350**	.7791**	.6768**	.6584**	.8077**	.8423**

	Sec	Sse	Sst	Shr	St	Var
Au	.5337**	.7506**	.7055**	.5127**	.6055**	.7611**
Ach	.5869**	.7658**	.6857**	.5908**	.6793**	.7406**
Act	.5333**	.5487**	.5507**	.4716**	.5486**	.6907**
Adv	.6397**	.5919**	.7089**	.4870**	.6413**	.6007**
Aut	.4536**	.6515**	.7048**	.3765**	.4041**	.6780**
Cpp	.5576**	.5673**	.4742**	.7779**	.7256**	.4325**
Com	.4854**	.4364**	.4925**	.4938**	.4697**	.3811**
Cw	.5513**	.6079**	.5193**	.6029**	.6406**	.4945**
Cre	.4878**	.6833**	.6430**	.5327**	.5339**	.8015**
Ind	.4889**	.4847**	.4478**	.4301**	.4683**	.5437**
Mv	.5132**	.4988**	.3608**	.5284**	.5961**	.4176**
Rec	.4878**	.7195**	.5600**	.6548**	.6667**	.5957**
Res	.5239**	.6987**	.6274**	.5855**	.6083**	.7276**
Sec	1.0000	.5451**	.5622**	.5892**	.6257**	.5735**
Sse	.5451**	1.0000	.6875**	.5343**	.5875**	.6362**
Sst	.5622**	.6875**	1.0000	.4217**	.5208**	.6968**
Shr	.5892**	.5343**	.4217**	1.0000	.8396**	.4645**
St	.6257**	.5875**	.5208**	.8396**	1.0000	.5320**
Var	.5735**	.6362**	.6968**	.4645**	.5320**	1.0000
Wc	.5429**	.5899**	.6015**	.5227**	.5991**	.5183**
Gen	.7370**	.8163**	.7505**	.7399**	.7911**	.7941**

	Wc	Gen	Au
Au	.5768**	.8245**	1.0000
Ach	.6403**	.8760**	.8167**
Act	.5591**	.7590**	.6262**
Adv	.5408**	.7651**	.7124**
Aut	.3788**	.7094**	.6868**
Cpp	.5343**	.7313**	.5625**
Com	.4471**	.5974**	.4161**
Cw	.5601**	.7350**	.5127**
Cre	.4784**	.7791**	.7586**
Ind	.4895**	.6768**	.4991**
Mv	.5054**	.6584**	.4160**
Rec	.6114**	.8077**	.7000**
Res	.5455**	.8423**	.7469**
Sec	.5429**	.7370**	.5337**
Sse	.5899**	.8163**	.7506**
Sst	.6015**	.7505**	.7055**
Shr	.5227**	.7399**	.5127**
St	.5991**	.7911**	.6055**
Var	.5183**	.7941**	.7611**
Wc	1.0000	.7075**	.5768**
Gen	.7075**	1.0000	.8245**

Note.

Au = Ability utilisation
 Act = Activity
 Aut = Authority
 Com = Compensation
 Cre = Creativity
 Mv = Moral Values
 Res = Responsibility
 Sse = Social service
 St = Supervision (technical)
 Wc = Working conditions
 Gen = General satisfaction (MSQ)

Ach = Achievement
 Adv = Advancement
 Cpp = Company policies and practices
 Cw = Coworkers
 Ind = Independence
 Rec = Recognition
 Sec = Security
 Shr = Supervision (human)
 Var = Variety
 Sst = Social status

N.4 Dawis and Lofquist (1971) intercorrelations of adjusted scale values of the 20 MIQ scales (total group: N = 5,358)

1.00
.63 1.00
.37 .38 1.00
.49 .47 .26 1.00
.33 .28 .27 .43 1.00
.34 .37 .30 .37 .27 1.00
.23 .28 .30 .45 .33 .41 1.00
.29 .37 .40 .23 .26 .34 .30 1.00
.53 .45 .21 .40 .49 .28 .21 .22 1.00
.27 .25 .49 .21 .28 .21 .27 .28 .26 1.00
.21 .26 .11 .10 .10 .39 .14 .27 .18 .05 1.00
.43 .50 .36 .53 .43 .37 .46 .32 .38 .31 .12 1.00
.50 .47 .27 .45 .58 .27 .26 .25 .77 .36 .16 .42 1.00
.27 .28 .50 .42 .21 .36 .48 .37 .09 .34 .13 .36 .15 1.00
.40 .44 .35 .17 .22 .25 .06 .40 .33 .19 .28 .20 .32 .17 1.00
.31 .32 .28 .40 .45 .23 .33 .37 .26 .29 .12 .48 .33 .31 .25 1.00
.28 .32 .35 .40 .34 .61 .45 .32 .30 .24 .27 .40 .32 .39 .21 .24 1.00
.34 .33 .43 .40 .33 .56 .39 .36 .25 .29 .21 .38 .27 .42 .24 .28 .69 1.00
.33 .32 .50 .27 .38 .22 .27 .38 .40 .47 .10 .32 .43 .26 .33 .33 .25 .26 1.00
.32 .35 .46 .39 .25 .49 .51 .44 .18 .37 .12 .42 .23 .56 .22 .34 .45 .49 .33 1.00

N.5 Correlates of the General Job Satisfaction scale (MSQ composite measure)

	r
Job attachment	.5073**
Perseverance	-.3933**
Speed	-.3460**
Satisfaction compared with friends	-.3486**
Promotability	.4001**

N.6 Significant correlates of perceived job satisfactoriness

Perceived job satisfactoriness measured by perceived performance

Working to a predictable pace	.4013**
Endurance level	.3639**
Well-being at time two	.3463**
Confident having authority needs met	.3294**
Confident abiding by rules and regulations	.3128**
Confident working independently	.3464**
Have friendly work mates	.3969**
Are promotable	.3510**

Perceived satisfactoriness measured by perceived achievement

Ability utilisation satisfaction	.6647**
Achievement satisfaction	.6769**
Activity satisfaction	.4360**
Advancement satisfaction	.4930**
Authority satisfaction	.5604**
Company policies and practices satisfaction	.3510**
Satisfaction with co-workers	.3487**
Creativity satisfaction	.6104**
Recognition satisfaction	.5133**
Responsibility satisfaction	.6148**
Social service satisfaction	.5436**
Social status satisfaction	.4939**
Human relation supervision satisfaction	.3107**
Social status satisfaction	.3879**
Variety satisfaction	.5525**
Working conditions	.3404**
General satisfaction (MSQ measure)	.6037**
Confident can use active adjustment style	.5130**
Confident can use reactive adjustment style	.3452**
Confident are flexible	.5806**
Confident can persevere	.7997**
Confident can achieve	.5073**
Confident can use authority	.4167**
Confident can be autonomous	.4967**
Confident can have variety	.4572**
Confident have status	.4216**
Confident can persevere	.5806**
Confident can gain recognition	.6434**
Being supervised well	.3722**
Absenteeism is low	.3011**
Confident can be creative	.4404**
Job fits in with lifestyle	.3122**

Perceived satisfactoriness measured by abiding by rules

Can undertake repetitive work	.3889**
Perceived performance	.3128**

Perceived Satisfactoriness as measured by Perceived Promotability

Satisfaction with advancement	.3823**
Confident can use active adjustment style	.3296**
Confident can use skills	.3081**
Confident can use authority	.3367**
Confident can be autonomous	.3083**
Confident can have job security	.3563**
Variety in job	.3018**
Social status in job	.3113**
Achieving recognition	.3251**

**Satisfactoriness measured by adapting to changes
(in procedures and methods)**

Endurance	.3348**
Secure job	.2486**
Variety in job	.3127**
Friendly co-workers	.4219**
Performance	.3510**
Absenteeism low	.3605**
Can work in a team	.4782**
Get along with supervisors	.4892**

Satisfactoriness measured by ability to work as a member of a team

Confident can use active adjustment style	.3015**
Variety in job	.3656**
Friendly co-workers	.3844**
Perceived promotability	.4782**
Get along with supervisors	.4774**

Satisfactoriness measured by ability to get along with supervisors

Workers in this job get along with supervisors	.3081**
Satisfaction with human relations supervision	.4020**
Job security	.3466**
Obtaining recognition	.3339**
Supervision and training is good	.4445**
Adapt to procedures and method changes	.4892**
Work as a member of a team	.4774**

N.7 Correlates of Job Attachment

	Pearson r
Expected Tenure	.3232**
Perseverance	.4254**
Speed	.4146**
Personal competence post-employment	-.3026**
Satisfaction compared with friends	.6445**
Job importance	.3259**
Workers use their abilities in this job	.3578**
Workers achieve in this job	.4437**
Workers achieve recognition	.3525**
Ability utilisation satisfaction	.6185**
Achievement satisfaction	.6181**
Activity satisfaction	.4361**
Advancement satisfaction	.4212**
Creativity satisfaction	-.5290**

Recognition satisfaction	.4237**
Responsibility satisfaction	.4653**
Social service satisfaction	.4373**
Social status satisfaction	.4076**
Supervision technical	.4076**
Variety satisfaction	.5462**
General satisfaction (MSQ)	.5073**
Active flexibility	.3883**
Self-efficacy for perseverance	.4649**
Self-efficacy for ability utilisation	.5807**
Self-efficacy for achievement	.6601**
Authority self-efficacy	.3892**
Autonomy self-efficacy	.3592**
Active mode self-efficacy	.3883**
Activity self-efficacy	.3541**
Variety self-efficacy	.5091**
Social status self-efficacy	.3576**
Perseverance self-efficacy	.4649**
Recognition self-efficacy	.5470**

N.8 Significant correlates of general adjustment

1. Adjustment to joining a new organisation

Perseverance	.3259**
Predictability of pace	.3122**
Using a reactive adjustment style	.3160**
Speed of response to improve work situation	.4332**
Well-being (time one)	.3306**
Well-being (time two)	.3477**
Life satisfaction (time two)	.3112**
Satisfaction with co-workers	.3513**
Confident can use active adjustment style	.3693**
Adjust to a new town or location	.4508**

2. Adjustment to a new town or location

Speed of response to improve work situation	.3241**
Life satisfaction (time two)	.3041**
Adjust to joining a new organisation	.4508**