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An Analysis
of the
Job Disposition Questionnaire
and its Possible Utilisation
in New Zealand

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ABSTRACT

The Job Disposition Questionnaire, designed in the United Kingdom to assist in vocational guidance, has also been successfully applied in the selection of job applicants. An advantage of the Job Disposition Questionnaire over other guidance aids is its emphasis on the average and below average ability individuals. The present study was designed to examine the Job Disposition Questionnaire's potential use in New Zealand. A sample of 515 subjects, consisting of 270 school students and 245 members of six occupational groups was analysed. Factor analysis indicated that the Job Disposition Questionnaire was based on a limited number of specific factors rather than the more general factors outlined by the designers of the questionnaire. Discriminant analysis indicated that the questionnaire discriminates successfully among nurses, chefs, electricians, horticultural workers, forestry workers and secretaries. Investigation related to reliability gave mixed results, suggesting the need for further examination. A study investigating effects over a five year period indicated no significant changes in response pattern to the questionnaire. These results suggest that the Job Disposition Questionnaire could be applied in New Zealand. However, reservations exist with regard to its reliability and the limited number of occupational groups studied.

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Chapter One: Work

From tribal communities to the nuclear family not only has work always been available, but it has often been a prerequisite to successful assimilation of individuals into a society.

Its scope has ranged from hunting and gathering, to machine operating, to individual craftwork. Indeed, it seems that work has evolved from an individual scavenging process to a subservience-based system and, in some cases, to an expression of individual abilities. Though the work experience may have differed, the underlying concept remains unchanged: we work to provide essential needs such as food, shelter and clothing.

The concept of work, perhaps more structured in previous times, is now becoming blurred with the concept of leisure. Some discussion related to the definition of work may assist in clarifying the distinction between work and leisure.

Neff (1974) defines work as "an instrumental activity - performed not only for its own sake but for other aims" (p.158). These other aims, as outlined by Neff and expanded upon by Harrison (1976) and Jahoda (1979), include such areas as providing daily life with a pattern, defining aspects of personal status and enabling people to "feel they are responsible and worthwhile human beings" (Neff 1974, p.159). Thus work seems to be a multi-faceted process involving a labyrinth of activities which together fulfil certain societal and individual requirements.

It could be argued that other elements within society fulfil a similar role to that of work. Such institutions as the family, community groups and sports clubs also define many of the aspects cited above. However, each institution reflects one or two isolated areas. Only in work itself are all the abovementioned factors combined and, as such, work is a necessary function of society.

Unemployment

As well as being necessary, work is rapidly becoming a privilege within society. According to the latest International Labour Organisation figures (ILO Supplement to Bulletin, 1982) unemployment rates vary from country to country. For example, Japan's unemployment rate is 2.5%, whereas Germany's is 6.9%. Of interest are figures for the United Kingdom and the United States of America - both heavily industrialised nations. Their figures indicate 3,190,000 (14.0%) unemployed in the United Kingdom (July 1982) and 9,957,000 (9.2%) (April 1982) in the United States. A breakdown of these figures provides a clearer indication of problem areas. In both countries it is the young of 18-25 years of age, generally unskilled workers, who are among the majority of unemployed.

Such figures are repeated in other westernised countries such as New Zealand. Officially New Zealand has an unemployment rate of 4.4%¹, a total of 50,237 people (N.Z. Labour and Employment Gazette, 1982). New Zealand figures indicate:-

- (a) highest level unemployed in the 15-19 year age group, followed by 20-24 year olds, and
- (b) labourers and school leavers have highest level unemployment in terms of their occupational group.

Combined, these results suggest that the young and unskilled seem to have the most difficulty in the employment market.

Literature related to unemployment (Harrison 1976) has noted that the 25 to 45 years age group with a history of steady employment are most able to cope with unemployment. Others, such as Watts (1978) suggest that school-leavers suffer a sense of rejection and

1. In New Zealand individuals must be registered as unemployed before they are included in statistics. Unofficial estimates range from 5% to 15%.

worthlessness when faced with unemployment. According to Watts this could be due to the lack of identity with and experience of work. Such rejection (if one takes it to its ultimate conclusion) could lead to an increase in crime and unrest amongst young people, as was possibly exemplified in the July 1981 rioting in England (Friend and Metcalf, 1981).

It seems that those least able to cope with unemployment make up the majority of the unemployed. The situation does not seem to be improving. According to Hepworth (1979) in the last five years unemployment has been steadily rising and "many political economists believe that widespread unemployment will become a permanent feature of western society" (p.1).

Such unemployment has deleterious effects on both individuals and societies. Such consequences as strained family relationships, financial worries, loss of self-respect and boredom have been observed in the unemployed (Jahoda 1979, Harrison 1976). A framework for delineating these effects has been suggested by Kelvin (1981). He divides them into physical, psychological and social. Physically there is lassitude, psychologically there is depression and resignation, and socially there is reduction in social contact.

Society must bear the cost of unemployment - both in monetary terms as in unemployment benefits, and in human terms such as in the waste of human resources.

In attempting to prevent this waste, society has instituted various measures. In New Zealand they include subsidised Young Persons Training Programmes, in which employers offering training in employment are paid a weekly wage subsidy; and Work Skills Development Programmes in which unemployed young persons are taught a variety of skills to increase their employment chances. Similar schemes exist in other countries. The United Kingdom offers Youth Opportunities Programmes and Work

Experience Programmes. Hartley's (1979) comments seem particularly relevant to subsidised work schemes. She suggested that the schemes (i.e. meaningful activity as opposed to real employment) might result in school leavers feeling that they are not being taken seriously as adults. However, initial evaluations of the schemes operated in the United Kingdom (Smith and Sugarman 1981, Stafford 1982) suggest that the schemes do have advantages. The problem seems to be that these advantages are short term, with the schemes acting only as a buffer rather than resolving the underlying issue of unemployment.

Watts (1978) perhaps anticipated Hartley's response when he suggested that society should be preparing individuals for adult roles "in which paid employment may not always be available" (p.234). Such preparation could diminish any antipathy towards subsidised work.

Further to this Watts identified a variety of issues related to unemployment. These ranged from employability skills to opportunity creation skills. These skills might become indispensable if, as suggested by Townsend (1977), employment and unemployment can be placed on a continuum - with no long term state of employment or unemployment. This suggests that at some time the individual will require the know-how to survive unemployment at least until re-employment becomes available (which it may never do).

Chapter Two: Interests

Among the issues that Watts (1978) discussed were leisure skills, that is knowledge of possible leisure activities and skills involved in managing use of the individual's time. One method to help identify leisure activities is to discover the interests of the individual. In theory the individual's interests should be reflected to some extent in leisure activities.

This same argument has received much attention in relation to work. It has been hypothesised that knowledge of an individual's interests can lead to a successful job search and resultant employment. Given the high rate of unemployment, especially among the young, identification of individual interests could channel people into well-suited jobs in which they will remain because of their underlying interest in them. Another pay-off in identifying interests relates to the prospect of unemployment. Identification of interest areas may help initiate thought with regard to leisure activities.

Research related to interests can be traced back to the beginning of the twentieth century. A comprehensive analysis of the development and measurement of interests up to 1931 is provided by Fryer (1931). He suggested that research was following two kinds of model - subjective and objective. The subjective models were concerned with such items as self-report blanks, whereas the objective models concentrated more on information and learning tests.

According to Fryer one of the first interest inventories was the Carnegie Interest Inventory published in 1921. The Carnegie was divided into two sections. The first section consisted of a list of 72 occupations. After each occupation the subject had to grade his feelings toward the occupation on a three point Likert scale - like, don't know or dislike. The second section consisted of a list of 126 general interest items.

In this section the subject graded his response on a five point Likert scale - like very much, like, don't know, dislike and dislike very much.

The Carnegie was the first inventory that could be considered as a standardised form for measurement purposes (Fryer, 1931). The structure and content of many later inventories were derived from the Carnegie. These included Freyd's Occupational Interest Inventory for Men and Women in 1923, which was basically a revision of the Carnegie Occupational section, and the Minnesota Interest Inventory, especially designed for personnel work with college students and containing 31 of the original Carnegie items. Development continued through Cowdery's Interest Inventory, which contained 263 items divided into "occupation" and "general" sections. The Purdue Inventory was based on the Cowdery and extended the number of items included from 263 to 349. This was followed by the Strong Vocational Interest Blank, which first appeared in 1927. Fryer states that of the two original sections, occupational and general, the general section had received the most adaptation. This is understandable, given that the original general section consisted of statements relating to peculiarities of people; for example: people with protruding jaws.

According to Cottle (1968) Strong's Vocational Interest Blank (SVIB) formed the next major trend in interests research. The SVIB is based on the principle that people in occupations will have likes and dislikes which can be identified and profiled. People unsure of occupations can obtain their own profile and then compare it with those already obtained from a variety of occupations - indicating possible lines of interest.

Since the original publication much research has investigated the SVIB, with most indicating high reliability and validity. Criticism has been directed at the use of professional and businessman subjects for the men in general norms utilised by Strong (Buros, 1978). Several revisions of the SVIB have been published

and these are constantly being researched with supportive results. Strong believed that interest was an indication of satisfaction but not necessarily of success. Thus the SVIB only provides a guide - it does not promise solutions.

Following Strong many others have produced interest inventories. Kuder, in 1934, developed the Kuder Preference Record. As with the SVIB the Preference Record has been revised many times. Its operating principle is the same as that of the SVIB. However, research has been less supportive of its merits (Buros, 1978). Criticism has revolved around its middle class bias of items and its lack of predictive validity.

The next advancement in interest inventories was the Minnesota Vocational Interest Inventory (MVII) developed by Clarke and Campbell (1965). The MVII was specifically designed to measure the vocational interests of non-professional men. Its construction is similar to that of Kuder and Strong - i.e. subjects' profiles are compared with those of various occupational groups. Several criticisms have been directed at the MVII. Crites (1972) suggests that the MVII is in fact ipsative and as such there is difficulty in interpreting scores to clients. Westbrook (1972) has criticised the method used to obtain reliability co-efficients and warns that caution should be applied when using the instrument.

A more recent development related to interest inventories has been Holland's (1970) Self Directed Search (SDS). Holland bases his inventory on a theory of personality types: Realistic, Investigative, Conventional, Artistic, Enterprising and Social. The principle underlying the inventory is that individuals form personality patterns which can be related to areas of interest. The SDS has generated much research, mostly positive (e.g. Aranya, Barak, and Amernic, 1981). However, there are some criticisms. For instance, past experience in

work, whether desired or not, influences the type of profile that clients receive. Brown (1972) questions the accuracy of the SDS in assessing vocational behaviour as well as suggesting the need for more reliability and validity data. Another often quoted problem is the computational mistakes made by individuals using the SDS (Dolliver and Hansen, 1977). Modifications, such as required supervision, may be necessary. Although this removes some of the individual's responsibility it would increase the accuracy of the instrument.

The Occupational Interest Guide (OIG) developed by Closs in 1975 differs from inventories discussed so far in that it originated in the United Kingdom. It contains 112 pairs of forced-choice statements. These statements measure eight interest areas: Scientific, Social Service, Persuasive, Literary, Artistic, Clerical, Practical and Natural. The items are based on job activities as opposed to job titles. As with the MVII the scoring procedure is ipsative as opposed to normative. The reported reliability data and the design of the OIG provide support for its utilisation.

The majority of research related to interest tests has been concentrated on the SVIB, Kuder, SDS and MVII. Other inventories have been designed but have not achieved the wide utility of those discussed above. Holland (1976) states that the SVIB and Kuder have dominated the activities of practitioners and researchers, with the MVII being less widely used.

These inventories consist of either job title or job activity. Crowley (1981a) suggests that interest patterns from job titles are almost identical to job activities. Therefore inventories such as the SVIB are not inferior to the OIG or other activity-based inventories. Discrepancies that arise between the two forms in a guidance situation could be further explored by the counsellor (Crowley, 1981a).

It could be expected that the various interest inventories might be related in some meaningful way. However, Zytowski (1968), after comparing the SVIB with the Kuder Occupational Interest Survey (KOIS) and the MVII, found median reliabilities for each pairing of inventories to be 0.25 for the SVIB and KOIS, 0.19 between the KOIS and the MVII and 0.04 between the SVIB and MVII. According to Zytowski this indicates that prediction of scores from one inventory to another would be unreliable. Zytowski suggests that this could be due to initial sampling errors in the selection of members for occupational norm groups and/or differences in the norming and scoring procedures.

The confusion between different inventories is also reflected in the various definitions of "interest". Strong (1943) discussed interest thus: "Interest is present when we are aware of an object or, better still, when we are aware of our set of dispositions towards the object. We like the object when we are prepared to react toward it, we dislike the object when we wish to let it alone or get away from it" (p.7). Holland (1973) states that "vocational interests are simply another aspect of personality" (p.7). Super and Bohn (1970) suggest "Values are the objectives that people seek; interests are the activities and objects through which they seek them" (p.27).

Such definitions cover myriad ideas. Combined they represent factors including personality, value systems and activities. Closs (1975) provides a more comprehensive and descriptive definition of interest. Although expressed in simplistic terms, Closs's definition adequately conveys both the scope and subject matter postulated by other researchers. Closs suggests that interests have six main identifying characteristics.

These are:-

- 1) Interest is subjective.
- 2) Interests involve a pleasant feeling.
- 3) Interest is intrinsic to the activities in which it is experienced, i.e. the pleasant feeling purely from the participation in the activity.
- 4) Participation in these activities involves concentration of attention.
- 5) The concentration of attention is comparatively effortless.
- 6) Activities which are experienced as interesting are those in which the individual's capacity to appreciate, understand and control the environmental factors involved are more or less matched by the demands of the activity - where "capacity" relates to temperament, personality as well as ability.

With this definition in mind it is valuable to investigate the role that interests have had related to theoretical issues in vocational psychology.

Theoretical Issues

Crites (1981) provides an outline of five major theories underpinning vocational psychology. These are Trait and Factor, Client-Centred, Psychodynamic, Developmental and Behavioural. In each of these theories interest and interest-testing are related to the philosophical framework.

Of all the theories the trait and factor approach relies most heavily on testing. Interest inventories can be included within a battery of tests applied to individual clients. It is also recognised, according to Crites, that career decisions could be delayed until

interests have become fully crystallised. The trait and factor approach incorporates interest in the initial testing phase as well as realising the limitations of decisions based on developing ideas.

The client-centred method relies heavily on a non-directive approach. There would be more time spent on expressed interests than inventoried interests. As the client-centred method is unstructured there is no standard policy towards topics such as interests and aptitudes. There is no pressure to discuss such issues. In recent years Rogers has revised his opinion on testing, stating that "tests are not necessarily excluded from the counselling process" (Crites, 1981 P.79). The emphasis is on precision as opposed to saturation testing. In addition the client participates in the test selection process. Interest inventories could be utilised at this point.

In psychodynamic career counselling descriptions of various tests are provided to the client, who then chooses which type of test he wishes to take. The counsellor decides the specific test on the basis of his or her greater knowledge of the variety of tests in use. Interest inventories form part of the tests available.

The developmental approach tries to maximise the value of tests by administering them in a discriminating way and involving the client in every phase of the process (Crites, 1981). As with other theories interest and interest inventories are slotted into the approach conforming to the tenets of its adherents. Ginzberg, Ginsburg, Axelrad and Herma's (1951) developmental theory "assigns interests a significant role at a particular age period" (Osipow 1973, p.284). Ginsberg's view, and that of other developmental career counsellors could be related to the fact that in interests change most occurs between the ages of fifteen and eighteen and stabilise by age twenty-one (Crites, 1981).

The behavioural career counsellor places more importance on interest inventories than on other types of vocational tests. Interests, according to the theory are more subject to the impact of learning. The use of interest inventories provides a basis for discussion on various occupational alternatives, as well as indicating options previously not considered.

Theoretical support exists for the utilisation of interest inventories in vocational psychology. Each theory incorporates interest inventories according to its underlying philosophy which suggests that wide benefit is gained from interest inventories.

As previously indicated, various measures have been developed to test interests - such as the SVIB, Kuder and MVII. According to Anastasi (1976) "having proved so far to be among the most successful tests outside the aptitude domain, interest inventories are now well on the way to attaining theoretical respectability" (p.543).

The methodology involved with the study of interest seems to have developed to the stage of acceptance within the proposed theoretical outline.

Types of Interests

While the foregoing may be the case, there is continuous debate as to the utility of inventoried interests. Super and Bohn (1973) identify four types of interests:-

Expressed interests	Statements a person makes about his interests.
Inventoried interests	Statistically treated statements which yield scores.
Manifest interests	A person's overt activity, e.g. repairing a car as a hobby.
Tested interests	A person's knowledge as measured by tests of information.

Of these types most controversy has arisen between expressed interests and inventoried interests. The debate revolves around the advantage of inventories over questioning. Borgen and Seling (1978) state that "early studies indicated that there was only modest agreement between expressed and inventoried interests; from this fact the seemingly logical conclusion was drawn that the expressed choices have inferior validity" (p.537). Borgen and Seling's research indicated otherwise - that expressed choice predictions were consistently more accurate than inventoried (SVIB) predictions - especially when expressed choice and SVIB predictions were not the same for a given person. Slaney (1978) also advocates the importance of expressed interests in vocational counselling. More recently Reeves and Booth (1979) have suggested that expressed interests can be used instead of inventoried interests in vocational guidance. Slaney and Russell (1981) investigated the level of agreement between expressed and inventoried interests of college women. They found that groups lower in agreement between expressed and inventoried interests were less career decided than the groups higher in agreement.

Arguments supporting inventoried interests have been based in part on the assumption that whereas expressed interests fluctuate widely, inventoried interests change only slightly over time. Super and Crites (1962) state that interests change little over the years, with the most change occurring in adolescence. The premise of their argument is that inventoried interests will provide a clearer indication of interests than expressed interests. However, Reeves and Booth would again disagree - their findings, based on young and inexperienced workers, supported the validity of expressed interests.

Although controversy continues between the two opposing viewpoints, both inventoried and expressed

interests continue to be applied. Borgen and Seling (1978) make the comment that both inventoried and expressed interests should be utilised. They suggest that the inventory could identify career possibilities and expressed interests could be used to confirm or refute such possibilities. This compromise seems to have the greatest utility in the light of the present research. Borgen and Seling view the interest inventory as a necessity in some situations and as a back-up in others. The onus is on the counsellor to decide when the situation requires the use of an interest inventory.

Relationship between Interests and Other Factors

Interests, almost by definition, are linked with various other individual and occupational factors. Holland (1976) suggests that interests are possibly correlated across personality measures, aptitude tests, self-estimated competencies and perceptual tasks. Crites (1969) outlines links between interests and personality, interests and values and interests and motivation. Similarly Super and Bohn (1973) discuss links between interests and occupations, success and satisfaction. The relationships between interests and values are very close - "values and interest inventories are often used more or less interchangeably, and their relationships warrant treating them as interest inventories" (Super and Crites, 1962, p.92). The relationship between interests, personality and motivation seems slightly more tenuous, with conflicting research being the norm rather than the exception.

The links between interest and occupational factors appear to be much stronger, with support existing for relationships between interests, occupations, success and motivation. Therefore as well as being of some utility in counselling, interests are related to a variety of other issues. At this point it is important

to note that most of the interest inventories devised to date have been aimed at the middle and upper occupational grouping. The MVII was an attempt to shift the emphasis towards a less skilled interpretation of occupational choice.

The Job Disposition Questionnaire

Another example of an interest inventory designed to explore the non-professional vocational choices is the Job Disposition Questionnaire (JDQ) (Clarke and Hartston, 1979). The JDQ was specifically designed for people of average and below average ability - based on the premise that the less well-informed about jobs need to be asked more basic questions concerning jobs. This reflects Cooley's (1967) assertion that career plans and interest inventory responses would be expected to co-vary as the student gains further knowledge of himself, and of work and workers. The JDQ has been designed to test those who are still ignorant of many aspects of work.

Developed in the United Kingdom the JDQ has also found favour as a recruiting tool (Mottram, Clarke and Downs, 1980).

The JDQ consists of a list of forty-nine items based on research of a larger number of items. These items fall into four categories: Physical Environment, Social Environment, Work Content and Working Method. The authors considered that these four headings contributed to an individual's disposition towards his work.

Answering the questionnaire leads to the formation of an individual "profile". This profile can then be compared with those of various occupational groups who have also answered the questionnaire. The profile for a particular job is obtained by comparing the JDQ response pattern of those in the job with that of a suitable general population. The job sample normally consists of people under 30 years of age who have been

in the job for at least six months and considered satisfactory at it. The profile consists of those items on the JDQ chosen more frequently by the job sample than by members of an appropriate young worker group.

According to the authors the reliability of the test ranged from 0.62 to 0.88 which were considered high for an interest measure. Validity studies have indicated high degrees of correspondence between similar occupations in terms of their profiles and also high face validity.

The authors of the JDQ suggest that it be used to aid selection, vocational guidance and placement. Vocational guidance is usually applied in schools and public sponsored utilities, selection and placement is usually the responsibility of personnel employees in business concerns. Therefore the JDQ could be used by a variety of professionals in different fields. Many vocational guidance and selection tools have been developed and are widely used. A comparison between these and the JDQ is essential to indicate where and how the JDQ could be utilised.

Chapter Three: Vocational Guidance,
Selection and Leisure

A multitude of tests measuring everything from aptitudes to personality are applied in vocational guidance. In terms of interest-testing a variety of instruments are used.

Vocational guidance in New Zealand is the responsibility of the Department of Labour, a government funded body. At the time of writing (August 1982) there is no standard set of tests applied in all Vocational Guidance Centres. Tests vary from centre to centre.

The main tests in use are the OIG, the Connolly Occupational Interest Questionnaire (Connolly), the Crowley Occupational Interest Blank (Crowley), the MVII, the SDS and the Kuder Vocational Preference Inventory (Kuder). The SVIB is not used because of its American orientation and lack of New Zealand norms.

Of the inventories the OIG, Connolly, Crowley and Kuder provide indications of interest areas, whereas the SDS and MVII provide indications of specific suitable occupations.

The reasoning behind the bias towards interest areas as opposed to specific occupations lies with the philosophy of vocational guidance. Some practitioners feel that tests which provide specific occupations limit clients' options by focusing on narrow areas.

It is possible, therefore, that the JDQ could have a more restricted role in vocational guidance than its authors suggest. Perhaps used in conjunction with other tests the JDQ could provide a method of narrowing attention to specific jobs, although the onus is on the counsellor to select the most appropriate test for the situation.

Of the tests used in vocational guidance two seem more related to the JDQ than the others: the Crowley and the MVII. The Crowley, like the JDQ, was specifically designed for teenagers of average and below average

ability. The MVII's development was based on non-professional men, matching the JDQ's bias towards non-professional occupations.

The Crowley, published in 1970, provides an indication of areas of interest and job satisfaction. When published there was no reliability data. It has been utilised by its author in career education programmes (Crowley, 1981b), but otherwise seems to have had minimal use. Since its publication reliability and validity data has appeared and seems strong (0.73 and above reliability for all interests scores except one). Criticism has been directed at the ipsative scoring method used, and the poor vocational guidance section. Kline (1978) states that if the Crowley has a use "it is in providing general vocational discussion among children and teachers" (Buros 1978, p.1574). Kline suggests that in this situation it may be a valuable instrument, but it is not a psychological test.

Such comments are supported by Sharp (1978) who suggests that the Crowley is limited to providing only a starting point in the vocational guidance area.

The JDQ provided reliability data when published and has been researched since its instigation. Presumably the Crowley has not been widely used. Perusal of the Crowley suggests it would be of more use in schools than Vocational Guidance Centres.

The MVII is limited by its orientation towards males, whereas the JDQ covers both sexes. However, the MVII includes interest areas in association with occupational titles, as opposed to the JDQ's more limited emphasis on occupational titles.

The JDQ slots between the Crowley and the MVII, having some advantages over both questionnaires.

School Usage

The majority of New Zealand secondary schools (pupils aged 13 to 18) employ trained guidance teachers. These teachers have the power to utilise whichever tests

they wish. However, the emphasis is more on counselling than testing. If testing is required the pupil can use the service of vocational guidance centres. The JDQ's use, as in other tests, would therefore be limited in the school setting.

Selection

The JDQ's application is not limited to vocational guidance purposes. Mottram et al (1980) successfully utilised the JDQ with specific reference to selection and placement. Selection and placement operate from diametrically opposed philosophical bases. Vocational guidance refers to the satisfaction of the individual in the job, selection is related to the satisfactoriness of the person for the job. To fulfil this requirement numerous methods have been employed in both research and practice. To identify the JDQ's position within this area it is beneficial to outline selection methods in common use.

Statistical and Clinical Decision Making

Selection and placement have revolved around two theoretical stances; statistical decision making models and counselling decision making models. (Cronbach and Gleser, 1965; Allbright and Glennon, 1961.)

In the field of statistical decision making the two most influential models are those of Cronbach and Gleser (1965) and Rulon, Tiedeman and Tatsuoka (1967). Counselling decision models have been proposed by Howell and Newman (1967) and to some extent by Allbright and Glennon (1961).

Statistical Decision Making

Cronbach and Gleser's (1965) premise is that in a placement problem one can only compare the contributions of various tests measuring the same aptitude continuum. They suggest that an individual's score

from a test battery can be compared to other scores achieved by similar individuals - leading to placement in a higher than average or lower than average position. Guion (1976) describes such a procedure as useful when

- (a) minimal levels of acceptable proficiency can be clearly defined,
- (b) test scores associated with minimum proficiency can be clearly defined, and
- (c) jobs can be ordered along a continuum of minimum test scores.

Cronbach and Gleser's model seems to combine objective analysis grounded on subjective beliefs in the validity of tests and value definitions of "acceptable proficiency".

Rulon et al (1967) state that personnel advising is essentially a procedure of trying to infer the later job classification from a knowledge of the test scores of an individual. Rulon discusses "centour" scores. Such scores are established through an elaborate procedure of identifying job satisfaction by the men in a particular job (a dubious proposition in any circumstance) and satisfaction of the firm with the men in the job. This is taken as a criterion for group membership. The concept seems very similar to that of work adjustment (Lofquist, Daws, England, Weiss and Betz, 1966) which also uses concepts of satisfactoriness and satisfaction.

Once obtained, the centour scores enable personnel advisers to infer uniformity of a particular set of scores to those of known job incumbents. Rulon acknowledges that such a philosophy has its problems. Notably,

- a) it does not offer any opportunity to allocate people so that the maximum efficiency of the organisation is obtained, and
- b) it maintains the status quo.

In an environment of increased accountability to organisational needs, Rulon's theory might prove inadequate.

Both the theories of Rulon et al and Cronbach and Gleser are heavily dependent on the use of tests in the allocation of individuals to specific jobs. Care must be taken in both the selection and application of tests. With the increased emphasis on human rights the discrimination of sex and race through the use of biased tests becomes an issue. Gross and Su (1975) suggest that no single model can be developed to identify all types of discrimination that may arise, therefore prior to selection (or placement) decision making careful appraisal of possibly culturally discriminatory procedures should be entertained.

Clinical Decision Making

Selection based on clinical decision making involves human evaluation as opposed to statistical evaluation of data.

Information can be obtained from a variety of sources. The interview is one method used in most selection and placement decisions. Other methods include obtaining biographical information (Schoenfeldt 1974) and job samples (Asher and Sciarrino 1974).

As an inventory the JDQ could be utilised by both theoretical models. In statistical decision making the JDQ could be classified as a test where minimum scores need to be obtained. In clinical decision making it could provide one source of information for an individual to evaluate.

Usage of the JDQ in Selection and Placement

The methodological approach used in the study to investigate the JDQ's use as a selection tool (Mottram et al 1980) reflected the process used by the authors of the JDQ. Initially an electrical apprentice profile (EAP) was developed by comparing answers to the JDQ by 3rd and 4th year electrical apprentices with those of a general population sample. Then all applicants for electrical apprentices were tested on the JDQ.

Results indicated high scores for accepted apprentices on the EAP.

In addition Mottram et al were able to use the JDQ as a placement tool. This was investigated because of the variety of electrical trades for which an apprentice could be suitable. Using similar methodology electrical trade profiles were identified.

These encouraging results suggest that the JDQ could easily be applied in selection and placement.

The armed services provide an example of an organisation in which placement is an important concern. Because of the various job requirements and necessary training it is important to achieve accurate placement. Resources are wasted when applicants fail to perform to an acceptable standard.

The JDQ seems ideal for this type of organisation. Many groups of occupations can be tested, successful personnel can be located, and there exists a large pool to select from. Large private businesses could also utilise the JDQ by developing their own profiles - although this could be limited by financial constraints.

Leisure and Retraining

The JDQ can be used as a selection, placement and guidance tool. Part of guidance for the future might involve guidance for non-work. In a report on employment published by the New Zealand Planning Council (1980) it was noted that growth of employment in New Zealand has slowed markedly since 1974. This was associated with domestic inflation which accelerated in the 1970's, balance of payments difficulties since the oil price increase in 1973, and farmers curtailing expansion due to declining share of income.

Whatever the cause, unemployment is presently increasing despite the government-supported job creation schemes. Whether unemployment will remain a problem is a matter of continuing debate. The New Zealand

Commission for the Future, in a report entitled "Some Economic Implications of Social Change in New Zealand" (Duncan, Ojala, Philpott, Thompson, 1980) suggests that new technologies should be embraced and that temporary redundancies should be accepted, given the new situation. However, they note that redundancy should not come without retraining. Zepke (1979) views the future employment situation as one in which there will be either a down-grading of the work ethic associated with a more positive view of leisure, or a situation where manual labour is encouraged at the expense of automation and service work; but automation is already expanding rapidly in New Zealand, limiting the likelihood of the second option.

If retraining and/or leisure are to be the major direction for the future, some type of guidance will be required.

The JDQ could assist in selection of people for various retraining skills. The philosophy is similar to that of placement, i.e. placing the person in the job area to which he is most suited.

The JDQ's potential in a leisure-orientated society is more difficult to interpret. The JDQ provides an indication of the most suitable occupation. Perhaps by isolating the important factors of that occupation various leisure activities could be identified. These could then be discussed with the individual in a counselling situation.

Other tests have been investigated with regard to their relation to leisure activities (e.g. Holland's SDS) and have been found useful.

Developed as an aid to vocational guidance, the JDQ has also been successfully applied as a selection tool. Although presently used in these two areas, the

JDQ could easily form part of a leisure-orientated programme in the future.

Due to these facts and the emphasis on the average and below average ability individuals, it could be beneficial if the JDQ were applied in a New Zealand setting.

Chapter Four: Hypotheses and General Method

Five Hypotheses were examined:

H.1 The factor structure of the JDQ resembles the four main work headings suggested by Clarke and Hartston (1979), viz. -

Physical Environment relating to such job features as comfort, danger, physical restraints and freedoms;

Social Environment - how many people one works with, what sort of people, relationship with supervisor;

Work Content - tools and material utilised, scope and intricacy of task, nature of task;

Working Method - instructions, tolerance limits, variety, planning assembly or manufacture.

H.2 The JDQ discriminates between six occupational groups.

H.3 The JDQ provides reliability co-efficients similar to those obtained by Clarke and Hartston (1979).

H.4 JDQ responses of similar age and sex would differ significantly over a six year period, and

H.5 Changes in response patterns over a six year period should be related to physical job conditions.

These hypotheses were chosen for the investigation of the structure of the JDQ in New Zealand conditions so as to enable comparisons to be made between the British and New Zealand findings.

The first hypothesis is without doubt the most important. Clarke and Hartston state that the JDQ is based on four main work headings. It is essential to establish whether or not these headings are in fact being tested before further analysis is made on the JDQ.

The second hypothesis derives from the fact that the JDQ is used to discriminate between occupational groups. Clarke and Hartston state that the JDQ is able to discriminate among a wide range of occupational groups. This

being the case in the United Kingdom it should also apply in the New Zealand setting, given similar economic and social conditions.

The third hypothesis refers to an important part of the testing process - reliability. Tests of vocational interests should not be subject to radical changes over short periods of time. The authors found the JDQ to be reliable over a two week test-retest period. The purpose of the third hypothesis was to try to replicate this finding using New Zealand subjects.

The fourth hypothesis is more of an exploratory analysis of the data. Prior to initiating the present research, previously collected unanalysed data related to the JDQ in New Zealand became available. This data, obtained from secondary school children of both sexes, was collected in 1975. As part of the present study data was obtained from one of the sources of the 1975 data, a single sex (female) secondary school. The sample obtained was of similar age and level of education. A comparison between the two groups was initiated to see if any changes had occurred in response patterns over the six year period (1975-1981). It was hypothesised that differences would occur, given that the sample was female, with a 14 to 16 year age range. Changes in society, especially concerning women (e.g. return to the work force), were thought to be of a possible influential nature.

Related to this hypothesis is the fifth hypothesis, that changes which do occur would relate to physical factors. This hypothesis evolved from the increasing participation of women in non-traditional jobs, such as driving and labouring. It was thought that a change of emphasis could have occurred, resulting in significant differences on questions relating to physical factors of work.

Because of the relatively complex nature of each hypothesis the research was divided into four separate

studies, each study being an entity in itself. A separate discussion section at the end of the four studies links the findings together.

General Method

Analysis

The data were analysed using four separate studies. The first study uses factor analysis to identify the factor structure of the JDQ. The second study investigates whether or not the JDQ can discriminate between various occupational groups. Discriminant analysis was therefore chosen to analyse the data. The third study examines the reliability of the JDQ using reliability analysis. The fourth and final study investigates changes in response to the JDQ over a period of five years using an analysis of variance procedure.

Subjects

A total of 515 subjects was used in the studies. This group consisted of 270 school students (Table I) and 245 members of occupational groups (Table II).

Table I: Composition of School Student Sample

School Level	Number	Age Range	Male	Female
Fourth Form	95	13 to 16	95	0
Fifth Form	160	14 to 16	53	107
Seventh Form	15	17 to 19	15	0

Table II: Composition of Occupational Group Sample

Group	Number	No Sex Given	Male	Female	Average Age Range
Chefs	69	0	67	2	20 - 29
Forestry Workers	13	0	13	0	Under 20
Nurses	60	4	2	54	30 - 39
Electricians	28	1	27	0	30 - 39
Secretaries	35	1	0	34	20 - 29
Horticultural Workers	40	3	18	19	(Under 20 (20 - 29

For all occupational groups, the criteria for selection of subjects in the present study was a minimum of six months in the job. This differed from the original research which included the additional criteria of satisfaction of employer with the employee. Due to the subjective nature and lack of definition of "satisfaction" in the original research this criteria was excluded from the present study.

However, additional specific requirements were requested to obtain some uniformity among group members. These were:

- | | |
|----------------------------|--|
| (i) Chefs | Preferably qualified or under training |
| (ii) Forestry Workers | Must engage in tree planting, digging |
| (iii) Nurses | Registered to New Zealand standard |
| (iv) Electricians | Registered to New Zealand standard |
| (v) Secretaries | Must engage in clerical and typing duties |
| (vi) Horticultural Workers | Must engage in some aspect of horticulture work, i.e. amenity, nursery, orchard or vegetable production. |

Procedure

Contact was made with a variety of organisations within New Zealand and the criteria for selection and aims of the research were outlined. Once permission was granted to use groups of employees the questionnaire was personally administered or sent to the organisation to administer. The method of administration varied between employers and geographical locations, but in both cases the objectives of the research were made clear to employees, either through verbal introduction or written explanation with the JDQ which also disclosed the voluntary nature of the task. Of the school students 236 completed the questionnaire in 1975 and 44 completed the questionnaire in 1981. (See Appendix 1 for written explanation and JDQ copy)

Although the distribution of the sexes within the occupational groups tends to conform with traditional

expectations the sex of the subject was not a criterion for being questioned. The original researchers used single sex groups but later reported that their profiles could be used without fear of discrimination.

Chapter Five: Factor AnalysisPlan of Analysis

Factor analysis enables the researcher to identify the underlying factor structure of a group of variables. The method involves testing for qualitative and quantitative distinctions in data. These distinctions, according to Nie, Hull, Jenkins, Steinbrenner and Bent (1975) are identified by the existence of separate factors and factor loadings. Factor analysis "fractionates" the variance of a variable and distributes it among a new set of variates or "factors" (Nie et al 1975). Each factor can be considered as an underlying variable which represents the common parts of those variables loading highly on the factor.

Various methods of factor analysis can be applied, each of which relates to the classification of subjects and variables. Table III provides a means of determining the best technique to apply.

Table III: Assessment of Suitable
Factor Analytic Techniques

		S u b j e c t s	
		Sample	Population
Variables	Sample		Alpha
	Population	Canonical (RA0)	Image or/and Covariance or/and Principal Factors

Source: Weiss, O.J.

P.349 Dunnette, 1976.

In the present analysis both subjects and variables form populations - i.e. all of the data, as opposed to a sample from the data are utilised in the analysis. This suggests that Canonical (RA0) and Alpha factor analyses have little relevance - whereas Image, Covariance (PA2) and Principal factors (PA1) are suitable for analysing the data. In addition Nie et al (1975) state that RA0, Alpha and Image are relatively new and that their merits are still the subject of some debate. PA1, PA2 and Image factor analysis each have separate characteristics, as outlined in Table IV.

Table IV: Main Features of PA1, PA2 and Image Factor Analysis

Method	Features
PA1	<ul style="list-style-type: none"> (1) Unities are applied as diagonal elements. (2) Attempts to account for all the variance of each variable and it is therefore assumed that all the variance is relevant.
PA2	<ul style="list-style-type: none"> (1) Uses communalities as diagonal elements. (2) Uses iterative procedure to obtain "Best match" (i.e. improves estimates of communality.) (3) Most widely accepted method of factor analysis
Image	<ul style="list-style-type: none"> (1) Each variable is decomposed into two parts - one part which can be estimated from other variables in the same substantive domain - one part which cannot be predicted from other variables. (2) Only that part of the variable which overlaps with other variables influences the correlation of the variable with the factor.

Derived from Gorsuch (1974) and Nie et al (1975)

Comparing these three procedures it might seem that they all have some relevance. However, PA1 is outweighed by the advantages of PA2 analysis, i.e. use of communalities estimates and an iteration procedure. Nie et al (1975) suggest that PA2 "can handle most of the initial factoring needs of the user" (p.480). PA2 analysis, using squared multiple correlations in the diagonals, gives a very similar result to image analysis (Gorsuch 1974). The main difference between the two methods is that communalities resulting from the principal components solution are altered from the squared multiple correlations due to the attempt to fit the off-diagonal elements, whereas in image analysis the off-diagonal elements are altered to conform with the squared multiple correlations (Gorsuch, 1974). Therefore image analysis provides a more detailed examination of variables and factors. There is usually a difference between the results of image and PA2 analyses. This difference is most obvious on occasions when over-estimates of communalities are used. On the basis of this information PA2 and image factor analysis are the most suitable for investigating the factor structure of the JDQ.

An important prerequisite to statistical analysis is the establishment of parameters to guide interpretation of results. When discussing factor analysis there are two salient considerations: variable loadings and determination of factors.

Factor Loadings

No mandatory cut-off point exists to establish whether or not a variable loads significantly on to a factor. Statistical significance of the loading does not provide a ready answer as statistically significant variables may not necessarily be meaningful in certain contexts. Gorsuch (1974) states that an absolute value of 0.3 as a minimum loading has been utilised by many researchers. To obtain some sort of consistency Gorsuch's recommended level will be adhered to in this research.

Determination of Factors

A variety of measures can be utilised to determine the number of significant factors present in the factor analytic procedure. Gorsuch (1974) has outlined various statistical and mathematical approaches to identifying factors. Although identifying the factors these procedures fail to distinguish important from trivial factors.

A sound method of determining the most relevant factors is the scree test (Gorsuch 1974). The scree test is based on the eigenvalues of the data. According to Gorsuch when the eigenvalues drop dramatically in size an additional factor would add relatively little to the information already extracted. To apply the test, the roots are plotted with the value of the eigenvalue along the ordinate and the eigenvalue's factor number along the abscissa. The important factors can be identified as those which curve above a straight line given by the other eigenvalues. Another method of identifying significant factors is to include those factors with eigenvalues greater than one. This method is less powerful than the scree test (Gorsuch 1974). Therefore the scree test was applied.

Subjects: The total sample of 515 subjects was used in the factor-analytic study.

Results: PA2 Factor Analysis

The scree test indicated the existence of 5 factors. Below factor 5 a levelling off indicates the lack of influence these factors have on the total analysis. Using the 0.3 cut-off point variables related to each factor were identified. Tables V and VI represent the variables, and factor loadings for PA2 analysis. (See Appendix 2 for complete list of factors and factor loadings for PA2 analysis.) Figure 1 presents the results of the scree test for both PA2 and image analysis.

FIGURE 1

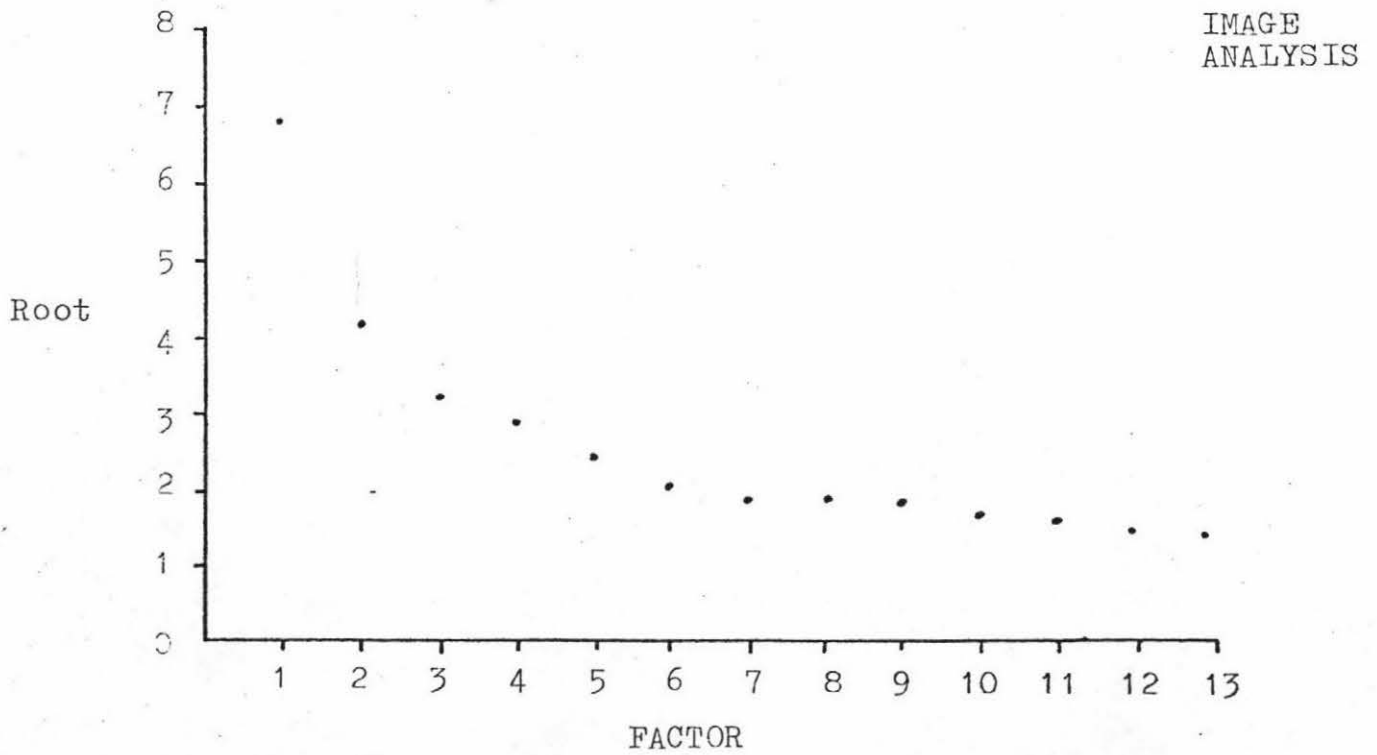
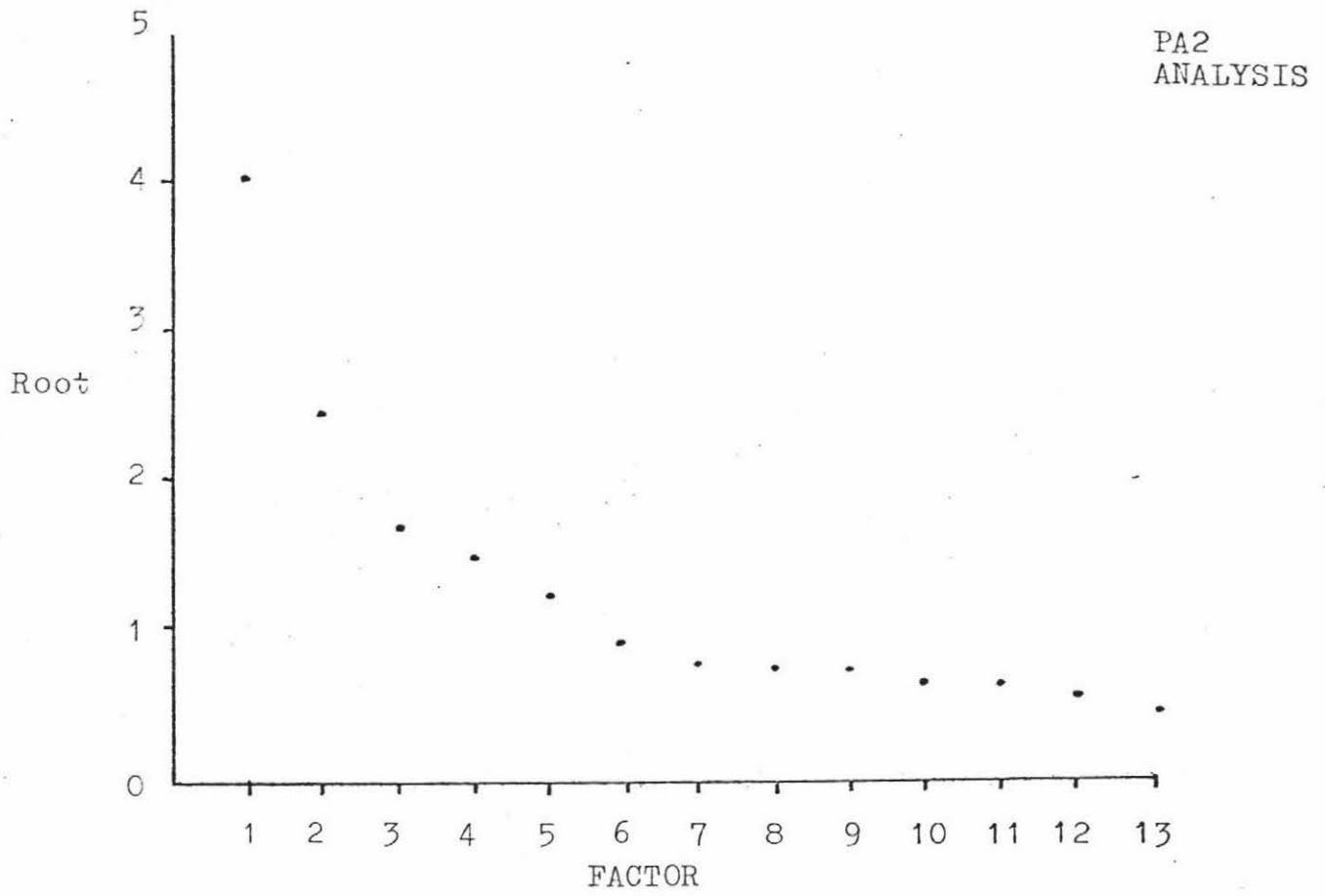


TABLE V : PA2 Analysis : Factor One and Two with Factor Loadings

Factor One			Factor Loading
27	Some work places are very hot. Do you think:	a. You could stand excessive heat very well? b. You could stand excessive heat for short periods? c. You could not stand excessive heat at all?	0.570
28	Some jobs have to be done where there are lots of fumes and smells. Do you think:	a. It would not affect you? b. You would get used to them in time? c. You would not be able to work there?	0.531
33	If you had to work somewhere in cramped and confined conditions would you mind?	a. Not at all b. A little c. Yes	0.515
26	Some work places are very cold. Do you think:	a. You could stand excessive cold very well? b. You could stand excessive cold for short periods? c. You could not stand excessive cold at all?	0.499
25	Some work places are very noisy. Do you think:	a. You could get used to the noise and it would not bother you? b. You could get used to the noise but you would not like it? c. You could not get used to the noise?	0.478
23	Would you mind if your hands got dirty?	a. Not at all b. A little c. Yes	0.350
38	Would you mind working where there was some risk of an accident?	a. Not at all b. A little c. A good deal	0.333
35	If it were necessary to work outside in wet weather would you mind?	a. Not at all b. A little c. A good deal	0.320
20	Would you mind if your work involved rectifying mistakes made by other people?	a. Not at all b. A little c. Quite a lot	0.317
30	Some jobs are underground. Do you think:	a. You would not mind working underground? b. You would not mind working underground some of the time? c. You would prefer not to work underground?	0.302
Factor Two			
37	Where would you prefer to work if you had a choice?	a. Indoors most of the time b. Outdoors most of the time	0.615
24	Some work places have to be kept spotlessly clean. Would you prefer:	a. To work in very clean surroundings? b. To work where you do not have to worry about keeping things clean?	0.453

TABLE VI : PA2 Analysis : Factors Three, Four and Five and Respective Factor Loadings.

Factor Three			Factor Loadings
19	How long would you like to work at the same task?	a. One day or less b. About one week c. More than a week	0.495
13	Would you prefer:	a. A great deal of variety in your work? b. Some variety in your work? c. A regular routine?	0.384
Factor Four			
49	In many firms there are training schemes and trade advancement tests. Would you like to have a job:	a. Where you have to get more qualifications whilst working? b. Where you would not need any further qualifications?	0.329
46	If you had a choice would you prefer to work:	a. In a large room with more than 15 people? b. In a room with 6-15 people? c. With less than 6 people?	0.313
Factor Five			
16	How complicated would you like your work to be?	a. Very complicated needing a lot of thought b. Slightly complicated c. All straightforward and easy to understand	0.409
48	In some jobs the organisation of the work is the responsibility of a supervisor. Would you prefer:	a. To organise your own work? b. To have your work organised for you?	0.408

Variance accounted for by each FactorTable VII Percentage of Variance Accounted for by Factors in PA2 and Image Analysis

Factor	Percentage of Variance PA2 Analysis	Account for Image Analysis
1	21.9	12.7
2	13.4	7.7
3	9.2	6.0
4	7.9	5.3
5	6.7	4.6

Table VII presents the information related to the variance accounted for by each factor. In PA2 analysis Factor One accounts for the largest percentage of variance with a large drop to the second factor.

In image analysis the percentage of variance accounted for by each factor is less than PA2 analysis, suggesting a further spread of variance among factors. As in PA2 analysis, Factor One accounts for most of the variance.

Factor Labels for PA2 Analysis

Each factor obtained in PA2 and image analysis can be labelled. These labels are based on the type of question which is significantly related to the factor, and how highly significant the question is.

Factor 1: Physical Job Conditions (Table V)

The highest loading questions in Factor One were those related to noise, smell, heat and cold. Work position also ranked highly. As these variables reflect conditions that could be experienced on different jobs, the label "Physical Job conditions" was applied.

Factor 2: Task Environment

Question 37, which refers to indoor versus outdoor work, was the highest loading question on the second factor. The other variable referred to cleanliness. To a degree the questions within this factor are

"residual" to those relating to the first factor. Although the questions involved do have limited scope and therefore represent a specific portion of the physical conditions the distinction is fine, although still significant.

Factor 3: Work Variety (Table VI)

The label "Variety" was adopted because one of the question was directly concerned with variety of work and the other was closely connected, as it related to length of time at the same task. This possibly indicated the need for different types of tasks, that is variety of work.

Factor 4: Training (Table VI)

Two questions loaded highly on Factor Four. These were questions 49 and 46. Question 49 identifies possibilities for training and advancement. Question 46 is concerned with working with other people. The questions have little common ground, resulting in ambiguity in labelling. However, the question with the highest loading is always more powerful, therefore the label "Training" was attached.

Factor 5: Self Responsibility (Table VI)

The questions included within this factor examine responsibility for organisation and the desired complexity of work. The umbrella term "Self Responsibility" was used to convey the impression of the individual's own responses and reactions in the work place.

Image Factor Analysis

As with PA2 analysis, the eigenvalue and scree test identified the existence of five factors (figure 1). The cut-off point of 0.3 was again applied. Tables VIII and IX identify factors, variables and variable loadings for image analysis (see Appendix 3 for a complete list of factors and factor loadings for image analysis).

TABLE VIII : Image Analysis : Factor one and Two With Factor Loadings

Factor One			Factor Loading
28	Some jobs have to be done where there are lots of fumes and smells. Do you think:	a. It would not affect you? b. You would get used to them in time? c. You would not be able to work there?	0.459
27	Some work places are very hot. Do you think:	a. You could stand excessive heat very well? b. You could stand excessive heat for short periods? c. You could not stand excessive heat at all?	0.457
26	Some work places are very cold. Do you think:	a. You could stand excessive cold very well? b. You could stand excessive cold for short periods? c. You could not stand excessive cold at all?	0.449
33	If you had to work somewhere in cramped and confined conditions would you mind?	a. Not at all b. A little c. Yes	0.431
25	Some work places are very noisy. Do you think:	a. You could get used to the noise and it would not bother you? b. You could get used to the noise but you would not like it? c. You could not get used to the noise?	0.426
38	Would you mind working where there was some risk of an accident?	a. Not at all b. A little c. A good deal	0.347
23	Would you mind if your hands got dirty?	a. Not at all b. A little c. Yes	0.330
Sex			0.305
Factor Two			
37	Where would you prefer to work if you had a choice?	a. Indoors most of the time b. Outdoors most of the time	0.526
31	When you are working would you prefer to:	a. Stay in one position (e.g. sitting or standing) most of the time? b. Keep changing position or walking round a lot of the time?	0.350
29	When you are working would you prefer to:	a. Sit most of the time? b. Stand most of the time?	0.348

TABLE IX : Image Factor Analysis : Factors Three, Four and Five, with Factor Loadings.

Factor Three			Factor Loading
16	How complicated would you like your work to be?	a. Very complicated needing a lot of thought b. Slightly complicated c. All straightforward and easy to understand	0.456
48	In some jobs the organisation of the work is the responsibility of a supervisor. Would you prefer:	a. To organise your own work? b. To have your work organised for you?	0.406
Factor Four			
40	In some jobs you have very little contact with other people. Would you prefer:	a. To be on your own a lot of the time? b. To have a lot of contact with other people?	0.370
Sex			0.355
Factor Five			
17	Some jobs are required to be done by a certain time. Would you like to work to a deadline:	a. Most of the time? b. Sometimes? c. Rarely?	0.369
18	When you have a job to do would you prefer to:	a. Work quickly? b. Take your time?	0.366

Factor LabelsFactor 1: Physical Job Conditions (Table VIII)

Included within this factor were questions dealing with smells and fumes, hot and cold working conditions, cramped conditions and getting one's hands dirty. The label "Physical Job Conditions" seemed appropriate to these types of questions. The sex variable also occurred in Factor 1. Just meeting criteria, at 0.305 this variable loaded on Factor 4 as well, with a loading of 0.355.

Factor 2: Task Environment (Table VIII)

Loading on this factor were questions 29, 31 and 37. Questions 29 and 31 refer to work position (sitting versus standing). Question 37 is concerned with location of work (indoors versus outdoors). Again, it could be suggested that this factor provides a "secondary" level for physical working conditions. There seems to be no clearly distinguishable common trait among the questions to separate them from those in the first factor.

Factor 3: Self Responsibility (Table IX)

This factor corresponds exactly (in terms of questions) to Factor 5 in PA2 analysis. Questions 16 and 48 occur in both. Their relative factor loadings are of interest (Table X).

Table X Comparison between Factor 5 in PA2 Analysis and Factor 3 in Image Analysis

Variables	Method of Analysis	
	PA2 (Factor 5)	Image (Factor 3)
16	. 409	. 456
48	. 408	. 406

The loadings on Question 18 are similar in both analyses. However, the loading on Question 16 is much larger in image than PA2.

Factor 4: Social Environment (Table IX)

Factor Four in image analysis is related to people contact and sex. The "social environment" label was attached due to question 48 (working with others) and the fact that the sex of one's workmates contributes to the social environment.

Factor 5: Work Speed (Table IX)

This new label was chosen as both the questions relating to the factor have some relation to the speed of the work. Question 17 examines working to a deadline and question 18 is concerned with working quickly or taking one's time.

Table XI Factor Labels for Image and PA2 Analysis

	L A B E L	
Factor	Image	PA2
1	Physical Job Condition	Physical Job Condition
2	Task Environment	Task Environment
3	Self Responsibility	Work Variety
4	Social Environment	Training
5	Work Speed	Self Responsibility

Discussion: PA2 and Image Factors

In both PA2 and image analysis five factors emerged as significant (see Table XI). In three of the five factors the labels applied were identical. This indicates that the factors in each analysis were measuring similar aspects of work.

In Factor One, where image and PA2 were both labelled Physical Job Conditions, there were discrepancies between the analyses. Questions 20, 30 and 35 (rectifying mistakes, working underground, wet weather

work) were excluded from Factor One in image analysis, yet were included in PA2 analysis. In addition rectifying mistakes and working underground fail to appear in any other factor.

The other difference is the inclusion of the sex variable in Factor One (Physical Job Conditions) and Factor Four (Social Environment) in image analysis. In PA2 analysis sex did not load significantly on any factor. One reason for the dual loading could be the importance attached to the social environment in combination with the physical environment by members of one sex or the other. Again it is noteworthy that the loading on the first factor (Physical) is 0.305, much lower than that of the fourth factor (Social) at 0.355. This indicates a clear demarcation between the influence of the two factors. The social environment is more important than the physical environment for the sex variable.

In Factor One PA2 analysis identified ten questions with factor loadings above 0.3, and image analysis identified eight such questions. This difference in number is due to the method of analysis. The PA2 method involves loading as many variables as possible on the first factor. This is further supported by reviewing the strength of the loading. In PA2 analysis the range is from 0.302 to 0.570 with a mean loading of 0.421. In image analysis the range is limited from 0.305 to 0.459 and the mean loading is smaller at 0.400. The nature and order of questions within each factor provide more support for the factors' correspondence to each other. The first five questions in both first factors are identical, although their order is slightly different.

Given the two different types of analysis, the correspondence between the results is high for the first factor.

In the second factor, Task Environment, question 37 (work preference - indoors versus outdoors) was the only question common to both types of analysis. The label "task environment" was applied to both types of factors because the remaining questions, although not common to each factor, were relevant to the task environment field. In image and PA2 analysis question 37 had the highest loading for the factor. As perhaps could be expected, image analysis had one more question loading on the second factor than PA2 analysis. This could be explained through the higher numbers of questions loading on Factor One in PA2 analysis. The number of questions loading significantly on Factor Two in both analyses was considerably less than those questions loading on Factor One. In PA2 analysis only two questions (Q37 - indoor-outdoors and Q24 - cleanliness) loaded on or above the 0.3 level. In image analysis there were three significant questions (Q37, Q31 - sitting versus moving, and Q29 - sitting versus standing). This suggests that Factor Two relates to a fewer number of questions and could be an extension of Factor One given its similar content.

Factor Three in image analysis was identical to Factor Five in PA2 analysis. As indicated in Table X the loading on question 48 (responsibility for organisation) in both PA2 and image analysis is very similar (a 0.002 difference). However, the loading on question 16 (complexity of work) differs markedly between the two methods of analysis (i.e. 0.456 in image, 0.409 in PA2). The reason for this is unclear. Again, it could be a function of the analytic procedure used. Factor Three in image and Factor Five in PA2 were both labelled "Self Responsibility".

Factor Three in PA2 analysis comprises two questions (Q19 - same task, Q13 - variety) both relating to variety of work. Both factor loadings were well above the 0.3 level, 0.495 and 0.384 respectively.

Factor Four in PA2 analysis was more difficult to label than Factor Three. Two questions loaded on the factor, Q49 - training and Q46 - personal contact. The loadings were lower than the previous factor, being 0.329 (training) and 0.313 (personal contact). The two questions have no obvious connection with each other, and the label "Training" was attached only because of its higher loading. It could be hypothesised that the number of people in the working environment is related to necessity for training and advancement. However, this hypothesis lacks credibility.

Factor Four in image analysis was labelled "Social Environment". The two questions which loaded significantly, Q40 - personal contact, and sex can both be related to social environment. There seems to be some common ground between Factor Four of both analyses. The personal contact influence is obvious in both factors. However, as indicated the personal contact question in image analysis was suppressed by the training and advancement question.

Finally, Factor Five in image analysis consisted of two questions (Q17 - deadlines, Q18 - speed) concerned with the speed of work. Both questions had very similar loadings, 0.369 and 0.366 respectively. The factor was labelled "Work Speed".

Relationship of Present Factors to Clarke and Hartston's

The present factors seem to be more distinctive than those of Clarke and Hartston, isolating specific as opposed to general factors. This could be a function of the analytic procedure. Clarke and Hartston's factors were based on what they considered an individual's disposition towards work. It seems that no

statistical analysis was attempted to confirm these factors.

Some of the factors identified in this study could be covered by Clarke and Hartston's factors. For example, Work Speed and Work Variety could both be applied to Clarke and Hartston's category of Working Method.

The present study identified more factors than the original authors suggested. However, the factor structure of the two sets of data being very similar provides support for Clarke and Hartston's reasoning.

An interesting point to speculate upon is whether job disposition is synonymous with job satisfaction. Locke (1976) discussing the link between work and satisfaction, includes many variables. Among these variables are responsibility, control over work pace, variety, difficulty and amount of work. These also form the basis of many of the factors in the present study. It could be hypothesised that the JDQ not only identifies the inclination towards a job, but also the satisfaction that the job will afford.

Further research could be initiated to confirm present findings on the factor structure of the JDQ, as well as investigating links between the JDQ and job satisfaction.

Plan of Analysis

Clarke and Hartston (1979) used the chi-square test to develop profiles which distinguished between groups. The chi-square test consists of two sets of data. The observed frequency (f_o) for a given response category and the expected frequency (f_e) for the same response pattern. To calculate the statistic the following formula is used:
$$\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e} \quad (\text{Keppel and Saufley, 1980}).$$
 For expected frequency, Clarke and Hartston collected a sample of young male and female workers representative of all the main occupational areas. This sample became the "General Population Response Pattern" by obtaining a weighted average of the occupational means (each occupation was weighted according to the proportion of the general population involved in that occupation).

The mean response patterns of each occupational group were compared to the "General Population Response Pattern" to identify important questions and develop profiles.

The use of the chi-square technique involves a variety of issues, such as independence of observations and sample size (Keppel and Saufley, 1980; Nie et al, 1975). With the use of the JDQ independence is not a major issue; however, the issue of sample size is not so clear. Clarke and Hartston's expected frequency sample was 1,885 subjects. It is possible that with the larger size sample small deviations could generate statistically significant chi-squares. Clarke and Hartston acknowledge this fact and have tried to control it by selecting a significance level which gives twenty or so important items with a minimum significance level of 0.05.

Clarke and Hartston's procedure involves collecting two sets of data and then controlling for bias in the statistical analysis. A simpler, yet as effective procedure, is available in the form of discriminant analysis. Discriminant analysis requires only one set of data and there is no necessity to control for sample size.

However, discriminant analysis does not control for missing data as the analysis is based on weightings of all the variables. If some variables have no weighting, the resulting functions could be biased in one direction or another, therefore lacking in predictive ability.

The JDQ is not a forced choice questionnaire and subjects are asked to "Try to answer every question; if you feel, however, you really cannot make the choice leave it out" (JDQ, p.1). This instruction resulted in subjects missing questions out, therefore the sample size was reduced from 265 to 166.

According to Nie et al (1975) discriminant analysis can be utilised when there is a desire to statistically distinguish between two or more groups. The JDQ contains the variables (questions) in which the groups are expected to differ. These variables are weighted and linearly combined in some fashion so that the groups are forced to be as statistically distinct as possible. A number of functions are derived from the weighted and combined variables. These functions can then serve two purposes: analysis and classification.

Analysis: The weighting co-efficients can be interpreted in a similar manner to variable loadings in factor analysis. Variables which add most to the differentiation along functions can be identified, and the various functions can be labelled. Variables were selected for inclusion in the analysis according to Wilks stepwise selection methods. This method was chosen over the direct method in which all independent variables are entered concurrently. The direct method can involve the possibility of excess information and inadequate discriminating power of some variables.

There are five possible stepwise methods in SPSS discriminant analysis. Wilks was chosen over the other methods because it took into account the difference between the centroids and the homogeneity within the groups.

Classification: The derived functions can be used to classify the original data to see how many cases are correctly classified. This procedure produces the probability of membership in a respective group. Cases can then be assigned to the group for which they have the highest probability. Another useful figure given by the classification phase is the second highest probability group to which the case would belong.

The major advantage of the classification stage is that the derived functions can be used to classify new functions with unknown memberships. Instead of developing profiles, as was the impetus in Clarke and Hartston's study, the emphasis is on the development of functions which will ascribe individual scores on the JDQ to specific occupational groups and even second preference groups.

Discriminant analysis using the SPSS procedure enables the researcher to define the prior probabilities for each group using a PRIORS specification card. This card is used when groups are of very different sizes, when the cost of misclassification is extreme, and when knowledge is available of group member probabilities (Nie et al, 1975). Although knowledge of group membership probabilities was available, the groups were not of vastly differing sizes and the cost of misclassification was not extreme. If misclassification occurred, the option of second highest probability group was available for clarifying the classification. Therefore the "priors - equal" option was used. This option makes no adjustments based on prior probabilities.

Subjects: 166 members of six occupational groups.
(see Table XII)

Table XII Subjects and Occupational Groups
in Discriminant Analysis

Subjects	Group
37	Chefs
13	Forestry Workers
49	Nurses
21	Electricians
19	Secretaries
27	Horticultural Workers

Procedure: Administration of the JDQ as outlined in the method.

Results

Analysis of the data produced five discriminant functions. Each function is related to a specific set of variables and is therefore able to be labelled and compared with other functions. Tables XIII to XVII identify the questions and loadings related to each function. Appendix 4 presents tables containing all the functions.

TABLE XIII : Discriminant Function Coefficients and Variables for Function 1.

Variables			Co- efficients
16	How complicated would you like your work to be?	a. Very complicated needing a lot of thought b. Slightly complicated c. All straightforward and easy to understand	0.806
28	Some jobs have to be done where there are lots of fumes and smells. Do you think:	a. It would not affect you? b. You would get used to them in time? c. You would not be able to work there?	-0.515
33	If you had to work somewhere in cramped and confined conditions would you mind?	a. Not at all b. A little c. Yes	0.502
14	Before starting a job would you prefer:	a. To spend time planning the work? b. To think things out briefly and then start? c. To get started as soon as possible and think as you go along?	0.499
31	When you are working would you prefer to:	a. Stay in one position (e.g. sitting or standing) most of the time? b. Keep changing position or walking round a lot of the time?	-0.389
48	In some jobs the organisation of the work is the responsibility of a supervisor. Would you prefer:	a. To organise your own work? b. To have your work organised for you?	0.377
26	Some work places are very cold. Do you think:	a. You could stand excessive cold very well? b. You could stand excessive cold for short periods? c. You could not stand excessive cold at all?	-0.347
47	If there is a large amount of work to do with unlimited time would you prefer:	a. To do all the work yourself? b. To share the work with one or two others? c. To share the work with a larger group?	0.292
6	Sometimes reports have to be written. Would you prefer:	a. To write reports yourself? b. For others to write the reports?	0.254

TABLE XIV : Discriminant Function Coefficients and Variables for Function 2.

Variables			Co- efficients
3	What size jobs would you like to work on?	a. Small (under 1 ft) b. Medium (1-5 ft) c. Large (over 5 ft)	0.441
7	Would you mind having a job where a good memory is important?	a. Yes b. No	0.422
15	Many jobs have to be done to a certain standard. Would you prefer:	a. Always to be responsible for checking that your work is up to standard? b. Occasionally to have someone else to check it? c. Always to have it checked by someone else?	0.388
17	Some jobs are required to be done by a certain time. Would you like to work to a deadline:	a. Most of the time? b. Sometimes? c. Rarely	0.380
2	Would you like to make things:	a. That have to be very exact? b. Where exact measures are less important?	0.366
1	What would you most like to work with?	a. Hand tools (not power driven) b. Power driven tools or machines which you can control c. Power driven machines automatically controlled.	0.285
5	Some jobs involve making technical drawings. Would you prefer:	a. To do this work regularly? b. For others to do this work?	0.254

TABLE XV : Discriminant Function Coefficients and Variables for Function 3.

Variables			Co- efficients
24	Some work places have to be kept spotlessly clean. Would you prefer:	a. To work in very clean surroundings? b. To work where you do not have to worry about keeping things clean?	0.631
29	When you are working would you prefer to:	a. Sit most of the time? b. Stand most of the time?	0.630
39	How would you feel about a job which involved a lot of heavy lifting?	a. You would not like it at all b. You would not mind doing some heavy lifting c. It would not worry you	0.465
44	Would you prefer to work with people who are:	a. Mostly of the same age group as you? b. Of a different age group from you?	0.449
37	Where would you prefer to work if you had a choice?	a. Indoors most of the time b. Outdoors most of the time	0.350
35	If it were necessary to work outside in wet weather would you mind?	a. Not at all b. A little c. A good deal	0.317
43	Would you prefer to work with:	a. Mainly people of the same sex as yourself? b. People of both sexes? c. Mainly people of the opposite sex?	0.300

TABLE XVI : Discriminant Function Coefficients and Variables for Function 4.

Variables			Co- efficients
11	Many jobs are done in various parts. Would you prefer:	a. To do them all yourself? b. To do several parts? c. To do only one part?	0.389
9	Would you prefer a job that involved:	a. A good deal of maintenance and repair work? b. Some maintenance and repair work? c. Hardly any maintenance and repair work?	0.385
30	Some jobs are underground. Do you think:	a. You would not mind working underground? b. You would not mind working underground some of the time? c. You would prefer not to work underground?	0.362
36	What are your feelings about working above the ground?	a. You would dislike working at heights b. You would not mind working a short distance above the ground c. You would be happy working at any height	0.359
45	Some jobs involve working with people from other countries. Would you prefer:	a. To work only with local people? b. To work with a mixture of local and foreign people?	0.285
21	If your job involved making articles, would you prefer them to be:	a. Beautiful? b. Useful?	0.277
42	Although your work may not require public contact, would you mind if the public could see you at work?	a. You would prefer not to be seen by the public b. It would not worry you to be seen by the public	-0.263

TABLE XVII : Discriminant Function Coefficients and Variables for Function 5.

Variables			Co-efficients
40	In some jobs you have very little contact with other people. Would you prefer:	a. To be on your own a lot of the time? b. To have a lot of contact with other people?	0.446
4	Some jobs involve making calculations. Would you prefer:	a. To do these calculations yourself? b. For others to do this work?	0.439
20	Would you mind if your work involved rectifying mistakes made by other people?	a. Not at all b. A little c. Quite a lot	0.430
49	In many firms there are training schemes and trade advancement tests. Would you like to have a job:	a. Where you have to get more qualifications whilst working? b. Where you would not need any further qualifications?	-0.364
27	Some work places are very hot. Do you think:	a. You could stand excessive heat very well? b. You could stand excessive heat for short periods? c. You could not stand excessive heat at all?	0.354
13	Would you prefer:	a. A great deal of variety in your work? b. Some variety in your work? c. A regular routine?	0.338
41	In your day to day work would you prefer to be:	a. Mostly in contact with the general public? b. Occasionally in contact with the general public? c. Mostly in contact with your workmates only?	-0.286
19	How long would you like to work at the same task?	a. One day or less b. About one week c. More than a week	0.218
22	If you had to make a number of articles would you prefer:	a. To take time and make them to a high standard? b. To make them quickly to an acceptable standard?	0.208

Function Labels

Function 1: Work Sample (Table XIII)

The first function contains nine questions, each of which relates to one of four sub-groups - physical conditions (e.g. fumes, confined spaces, working in the cold), work type (e.g. writing reports or not), work preparation (e.g. planning and organisation of work) and task environment (sharing work or doing it alone). Given the wide scope of the questions it was felt justifiable to label the function "Work Sample".

Function 2: Work Preparation (Table XIV)

Questions included in this function were tools, exactness, size of job, technical drawings, memory and standard of work. Memory and standard of work are perhaps of a debatable value for inclusion in such a function. In a personal communication (Downs, 1981) it was stated that memory (i.e. the question associated with it) had proved to be less interpretable than other questions. This to some extent explains its overall lack of relevance, and perhaps its lack of relevance to this particular function. The other debatable question, standard of work, could be related to preparation for work - i.e. the better prepared the worker, the higher the standard of work.

Function 3: Physical Conditions (Table XV)

The label "physical conditions" was applied because the function included clean surroundings, sitting and standing, heavy lifting, indoor and outdoor work and working in wet weather. Two other questions were part of this function, one concerned with working with people of the same age, the other with people of the same sex.

Function 4: Work Type (Table XVI)

This function referred to whether the job is done

in parts or not, inclusion of maintenance work, work which can be publicly viewed and whether the work involves construction of useful or aesthetic items. Other questions which are perhaps better suited to the third function also appear in Function 4 - such as underground versus above ground work. It seems as though the functions are not discrete but tend to have a majority of similar items as well as a few dissimilar items included. In Function 4 this trend is exemplified by the inclusion of "working with people from other countries".

Function 5: Task Environment (Table XVII)

The final function involves several questions which can be divided as indicated in Table XVII.

Table XVIII Division of Questions in Function 5

Variety in Work Contact with people Training and Advancement	Task Environment
Hot Work Places	Job Environment
Making Calculations Fixing Mistakes	Work Type

Task environment differs from job environment on one dimension: job environment may be limited to the physical aspects of work, task environment is more encompassing and could refer to the physical, social and motivational aspects of work.

As previously noted, "rogue" questions appear within the function - in this case those related to work type and job environment.

Summary

The analysis of data indicated the existence of five functions. The next stage, classification shows whether or not the groups could be identified using the functions obtained.

Classification

According to theory, if the JDQ identifies different occupational groups then individual cases should be correctly classified using the previously developed discriminant functions. Table XIX indicates the results of classification analysis.

TABLE XIX

RELATIONSHIPS BETWEEN PREDICTED AND ACTUAL GROUP MEMBERSHIP
ALL OCCUPATIONAL GROUPS INCLUDED

Actual Group Membership	% PREDICTED GROUP MEMBERSHIP					
	Chefs	Nurses	Horticulture Workers	Secretaries	Forestry Workers	Electricians
Chefs (n=37)	91.9	2.7	2.7	0	0	2.7
Nurses (n=49)	2.1	81.3	4.2	8.3	0	4.2
Horticulture Workers (n=27)	0	7.4	92.6	0	0	0
Secretaries (n=19)	0	0	0	100	0	0
Forestry Workers (n=13)	0	0	7.7	0	92.3	0
Electricians (n=21)	0	4.8	0	4.8	0	90.5

The results suggest that the JDQ can discriminate between occupational groups. Of equal interest is the number of cases incorrectly classified, and the second highest probability group. (Appendix 5 provides a summary of the classification results.)

Nurses

Incorrect classification 18.7% of the nurses sample were incorrectly classified. This was a total of 9 cases who were divided as follows: Secretaries 4 cases, Horticultural workers 2 cases, Electricians 2 cases, Chefs 1 case.

Second Highest Group: Table XX presents the data related to the second highest group.

Table XX Second Highest Probability Group
for Nurses Sample

a) Correctly Classified for Nurses b) Initially Incorrectly Classified

Group	No.of Cases	%
Electricians	16	41
Secretaries	14	36
Horticulture	5	13
Chefs	4	10

Group	No.of Cases	%
Nurses	8	89
Secretaries	1	11

The second highest occupational group for nurses is electricians, closely followed by secretaries. There is then a drop to the horticultural and chef groups. 89% of the nurses initially incorrectly classified had nursing as the second highest probability group. One case was incorrectly classified both initially and in the second highest probability group.

Electricians

Incorrect classification: 9.5% (2 cases) of the electricians sample were incorrectly classified - one as a nurse, the other as a secretary.

Second Highest Group: Table XXI presents data related to the second highest group.

Table XXI Second Highest Probability Group
for Electricians Sample

a) Correctly Classified
as Electricians

Group	No.of Cases	%
Nurses	12	63.2
Chefs	3	15.8
Horticulture	2	10.5
Forestry	1	5.25
Secretaries	1	5.25

b) Initially Incorrectly
Classified

Group	No.of Cases	%
Electricians	2	100

The data indicate that the second highest probability group for electricians was nurses. Nurses accounted for 63.2% of the cases. The next highest was chefs at 15.8% and horticulture workers at 10.5%. The less favoured second highest groups were forestry workers and secretaries (both 5.25%).

Chefs

Incorrectly classified: 8.1% of cases were incorrectly classified. This was a total of three cases, each classified into different groups: nurses, horticultural workers and electricians.

Second Highest Group: Horticultural workers and nurses accounted for most of the second choice cases (22). Electricians, forestry workers and secretaries accounted for the remainder (12). Table XXII presents this information.

Table XXII Second Highest Probability Group
for Chefs Sample

a) Correctly Classified as Chefs

Group	No.of Cases	%
Horticulture	12	35.3
Nurses	10	29.4
Electricians	6	17.6
Forestry	5	14.7
Secretaries	1	3.0

b) Initially Incorrectly Classified

Group	No.of Cases	%
Chefs	2	66.7
Secretaries	1	33.3

Forestry

Incorrectly classified: 7.1% (1 case) of the forestry sample was incorrectly classified as a horticultural worker.

Second Highest Group: The second highest group was almost equally divided between horticultural workers and chefs (see Table XXIII).

Table XXIII Second highest Probability Group
for Forestry Workers Sample

a) Correctly Classified
as Forestry Workers

Group	No.of Cases	%
Horticulture	7	58.2
Chefs	5	41.8

b) Initially Incorrectly
Classified

Group	No.of Cases	%
Forestry	1	100

Horticultural Workers

Incorrectly Classified: 7.4% incorrectly classified (2 cases). Both cases were classified as nurses.

Second Highest Group: The second highest probability group data indicated that forestry workers were the main group, closely followed by electricians, chefs and nurses (see Table XXIV).

Table XXIV Second Highest Probability Group
for Horticultural Workers

a) Correctly Classified as
Horticultural Workers

Group	No. of Cases	%
Forestry	8	32
Chefs	6	24
Electricians	5	20
Nurses	5	20
Secretaries	1	4

b) Initially Incorrectly
Classified

Group	No. of Cases	%
Horticulture	1	50
Secretaries	1	50

Secretaries

Incorrect classification: 100% correct classification.

Second Highest Group: The second highest probability group was clearly nurses. Nurses were followed, to a much lesser extent, by electricians and chefs. (Table XXV)

Table XXV Second Highest Probability Group
for Secretaries

Group	No. of Cases	%
Nurses	16	84.5
Electricians	2	10.5
Chefs	1	5.0

Discussion

Discriminant Functions

The analysis procedure identified five significant functions which together distinguish occupational groups from each other. The first function, labelled Work Sample, consisted of a variety of questions relating to all aspects of work. The remaining functions, Work Preparation, Physical Conditions, Work Type and Work Environment are composed of questions that share certain characteristics and can therefore be clearly labelled.

The first function in discriminant analysis differentiates maximally between the groups. The following functions differentiate the remainder of cases not clearly identified by the first function. This could explain why Work Sample and not any of the other functions appeared first. The Work Sample function is so named because of its broad nature. It includes questions representative of all the other functions. The questions which constitute the first function may be those which are fundamental to the JDQ. They are perhaps the questions which represent each area of work most effectively.

The other functions are clearer. The questions which they consist of can be easily related to each other. However, one unusual trend was observed. The functions were not always clear cut. In each case one or two unexpected questions appeared. As in Factor Analysis, the function was labelled according to the majority of items. Hence the inclusion of seemingly unrelated questions in specific functions.

Regardless of the order in which the functions appear, they are all necessary to the classificatory stage of discriminant analysis.

Classification of Groups

The results indicated an 89.7% overall correct

classification of occupational groups. The range was from 81.3% for nurses to 100% for secretaries (see Table XIX).

The discrepancy in correct classification rate between groups could be due to any of a variety of reasons. Group definitions are one possible reason for this result. Chefs, nurses and electricians had to be qualified or registered to fulfil the selection criteria. Secretaries, forestry workers and horticultural workers were not required to be qualified. Instead the latter three groups were defined by statements which referred to individual work skill requirements, and therefore less structured than the qualifications required by the former three occupational groups.

The results indicated that chefs, nurses and electricians were less well classified than secretaries, forestry workers and horticultural workers. This suggests that the less well defined the group is, the better its members are classified. However, there are several explanations for this finding.

The sample of nurses was obtained from a group involved in nursing studies at a university. These nurses were of a wide age range and there is a possibility that they had worked in a variety of nursing areas. These areas could have demanded different skills, emphasising some at the expense of others. This could have resulted in a lack of consistency between subjects' response.

The chef sample comprised chefs from three areas. A New Zealand hotel-motel chain, private restaurants in two New Zealand cities and a group from the New Zealand Air Force. These differing organisations cater for a wide range of clientele. Even the working conditions vary depending on the size of the organisation. These factors offer some clues in explaining the classification figure for the chefs.

The results for electricians were not subject to the same vagaries as for nurses or chefs. The sample was collected from two very similar organisations whose electricians fulfilled almost identical roles. The classification figure has been subject to no specific biases.

Not only were there influences on chefs and nurses. The 92.3% figure for forestry workers also needs clarification. A total of 13 subjects were included in the forestry analysis. One forester was not correctly classified. This resulted in 7.7% drop from 100%. The small sample size created an artificially high percentage drop.

Even with these explanations the overall classification rate of 89.7% is still at a very acceptable level.

Second Highest Probability Group

The results referring to the second highest probability group invite further discussion.

Forestry workers and horticultural workers were closely related (i.e. both being the second highest probability group of each other). Secretaries' second highest probability group were nurses, although nurses' second highest probability group were electricians, not secretaries. Electricians' second highest probability group were nurses. Finally, chefs' second highest group were horticultural workers, closely followed by nurses.

On an intuitive level the link between some of the occupational groups is illogical. This is especially so with nurses and electricians. One of the best methods of investigating links between occupational groups is to utilise job descriptions.

The Department of Labour in New Zealand issues lists of comprehensive and up-to-date job descriptions.

To obtain some degree of standardisation these lists will be referred to in this discussion.

Forestry workers' and horticultural workers' job descriptions are very similar. Both groups need to be able to handle physical work outdoors in most types of weather and withstand monotonous jobs; and yet there are no entry qualifications.

Chefs need to be not only fit but also cool headed, and to show initiative and ingenuity. A basic level of two years' secondary schooling is required.

Workers in the clerical field need to be able to spell, work neatly and are expected to have loyalty and initiative. Organising ability is also important. Education to the fifth form is required.

Nurses need to obtain a measure of technical knowledge, and to be careful, neat and well organised. Commonsense and patience are also necessary, as is secondary education.

Electricians need to be conscientious, careful and have the ability to work in a wide range of settings. There is a high degree of technical education involved in the process of training and application of the electrician's work. A minimum requirement of two years' secondary education is necessary before training can be started.

With this knowledge links between various occupational groups are more obvious. Both nurses and electricians are involved in technical work requiring a high degree of care and safety. This could explain the connection between the groups observed in the second highest probability group data.

Forestry workers and horticultural workers share similar job descriptions and it could be expected that there would be close correspondence between them.

Nurses also share some traits with secretaries, organisational skills and neatness in particular.

Apart from fitness, chefs and horticultural workers share little in the way of job description. Chefs share more skills with nurses. Such skills as organisation and commonsense can be placed in this category.

The information provided by "second highest probability group" therefore tends to reflect similar job characteristics. Although the job may involve a different area of work, the skills could be generalised. This information is also very valuable in a counselling or selection situation. Instead of narrowing the option to one occupation, two occupations can be discussed.

Application of JDQ

The results support the claim that the JDQ discriminates between occupational groups. As previously indicated the JDQ's utility lies in the fields of vocational guidance, selection, and placement.

In terms of vocational guidance it could easily be added to the range of tests in use. This is mainly on the grounds of its design for average and below average students. In the counselling situation it could be applied in cases where the client is not very verbal. In this case it would be used as an exploratory device, to initiate the client's thoughts or vocational options. The JDQ could also help to narrow the range of careers considered by clients. With the addition of more occupational groups, and larger sample sizes, the JDQ could have greater utility. Its greatest advantage is in the use of New Zealand norms. The majority of tests used in New Zealand vocational guidance are based on Australian or British norms. Further research on the JDQ could go some way toward redressing this imbalance.

The JDQ's use in selection and placement could be greater than its use in vocational guidance. Time

and money would be required to establish profiles. Once established the JDQ could form part of a firm's selection procedure. The JDQ is less time-consuming to apply than many tests and so far has proved to be a strong selection tool (Mottram et al,1980).

More research needs to be initiated to add other occupational groups to the six presented in this study. In addition further discriminant analyses of a larger sample are required to replicate and extend the present findings.

Scoring Procedure

As previously indicated the results provide a set of functions which discriminate an individual's response to a specific occupational group. These functions could be encoded into computer facilities to provide a quick, accurate assessment of an individual's questionnaire. Computer facilities are not at present widely available at the grass roots level of guidance (schools and vocational guidance centres), necessitating alternative methods of scoring the questionnaire.

Analysis of the results can provide indications of means and standard deviations of the data. This information can be converted into Z scores. Scores on each function can then be plotted, and a resulting best and second best occupational choice can be obtained.

Another method is to investigate discriminative power by developing occupational profiles. This is achieved by using the discriminant function co-efficients of the data. Variables related to each function can be identified and then can be stepped into the analysis to discover the point at which no significant improvement is achieved. Once the significant variables are identified, the individual occupational group scoring

profile can be developed through reference to the original data.

Therefore three possible scoring methods exist: the computer based use of functions, the use of Z scores, and the further development of profiles.

Chapter Seven: Reliability Analysis

Plan of Analysis

Reliability refers to the consistency of scores obtained by the same persons when re-examined with the same test on different occasions or with different sets of equivalent items, or under variable examining conditions. Various methods have been applied to test reliability. The major methods are Test - Retest, Alternate Forms, split half and Kuder-Richardson Alpha (Anastasi, 1976).

Test - Retest

Under Test-Retest the reliability co-efficient is the correlation between the scores obtained by the same persons on two administrations of a test. Error variance corresponds to performance differences from one test session to another - these differences could be due to changes in the subject (e.g. illness) and/or changes in the environment. The higher the reliability, the less susceptible the test scores are to random daily conditions in the subject. According to Anastasi (1976) it is rare for a test-retest study to last longer than six months and this keeps error variance to a minimum.

The major problems with Test-Retest are practice effects and recalling responses if the interval between sessions is very short.

Alternate Forms

This technique involves using another form of a test which supposedly measured the same criteria. It is usually applied when a test has two components.

The problems of the method are two-fold - the first requirement of another similar test may be hard or impossible to fulfil and the second "preferred" requirement, that the test have two components may also be a limiting factor.

Split Half

Using split half reliability two scores are obtained by each subject by dividing the test into two comparable halves. The split can be, for example, first half of the test - second half of the test, or odd numbers versus even numbers. The split half reliability provides a measure of consistency with regard to content sampling.

The inherent problem of split half reliability is the decision on how to split the test into halves. With a graduated test of intelligence the answer is fairly easy - odd and even numbers should increase at equal intervals. However, with tests in which groups of items are related in a variety of ways the creation of "halves" is more difficult. Another possible shortcoming, again noted by Anastasi (1976), is that the obtained correlation gives the reliability of only a half test as opposed to alternate and test-retest whole test reliability.

Kuder-Richardson Alpha

The Kuder-Richardson Alpha is based on the consistency of responses to all items in a test. The inter-item consistency is influenced by two sources of error variance - content sampling and heterogeneity of behaviour domain sampled. The more homogenous the domain the higher the inter-item consistency. The procedure involves finding the variance of all individual scores for each item and then to add these variances across all items. According to Campbell (1976) the sum of the co-variances in Kuder-Richardson Alpha is largely a function of the intercorrelations among the parts.

An important point to note is whether or not the criterion that the test is trying to predict is itself relatively homogenous or heterogeneous. Anastasi (1976) suggests that several homogeneous tests could be "created"

from a heterogeneous test to assist in unambiguous interpretation of test scores combined with adequate criterion coverage.

Table XXVI provides a brief summary of the types of reliability widely used and the error variance involved with each.

Table XXVI Reliability Summary Table

<u>Type of Reliability</u>	<u>Error</u>	<u>Variance</u>
<u>Co-efficient</u>		
Test-Retest	Time	Sampling
Alternate form	Content	Sampling
Split half	Content	Sampling
Kuder-Richardson Alpha	Content Content	Sampling and Homogeneity

Selection of Reliability Method

Clarke and Hartston (1979) utilised the test-retest method of 91 school children and found a reliability range of 0.62 to 0.88. Other interest inventories, e.g. the Kuder Occupational Interest Survey, the MVII and the SVIB have reliability co-efficients ranging from 0.80 to 0.91 using the test-retest procedure (Buros, 1972).

To choose the best reliability method one can systematically analyse each one as it applies to the JDQ. The test-retest method seems applicable and easy to administer. Further support for its use is suggested by the wide utility other interest inventories have made of it. The alternative form does not seem to be an adequate measure as it requires two forms

of a test (the JDQ exists as one complete test) and the fact that reliabilities between interest inventories are low (Zytowski, 1968).

Split half reliability poses problems in that the JDQ cannot easily be divided into "halves" - the test was not designed to do this. Perhaps various related questions could be grouped together to provide appropriate halves. However, this requires proof that the selected questions are indeed related in some manner. At the moment the allocation to groups would possibly be based on subjective criteria as opposed to empirical fact. Possibly more research is required before split half reliability can even be considered.

Kuder-Richardson Alpha is, in mathematical terms, "the mean of all split half co-efficients resulting from different splittings of the test" (Anastasi, 1976, p.118). As just explained, the JDQ was not designed to be "split" and no evidence exists as to the best method of achieving the split. The JDQ is also heterogeneous - it purports to measure interest - which cannot be reduced to a unidimensional trait. Anastasi's discussion concerning the sub-grouping of variables within a heterogeneous test to utilise the Alpha test bears some consideration. However, as in split half reliability there is at present a major stumbling block - namely the identification and labelling of the homogeneous sub-groups. Factor analysis has to a degree identified certain groups. Yet more research is required to replicate present findings and expand on these findings in terms of sample size.

All considered there is a possibility for the use of Kuder-Richardson Alpha but no evidence exists to support its present utility for this particular sample.

Therefore the test-retest reliability procedure was chosen for this study.

Subjects 42 fifth form girls, age range 15 to 16.

Procedure The girls received the questionnaire with instructions as outlined in the general method. Two weeks later the same sample received the JDQ with the same instructions given in the first section. Questionnaires were collected at each instance and results recorded.

Result of Test-Retest Reliability

The Pearson Product-Moment Correlation programme of SPSS (Nie et al,1976) was utilised to obtain reliability co-efficients for the JDQ. A question by question analysis was decided upon as it provided more information re individual questions and possible problems associated with their reliability.

Table XXVII presents information regarding the correlation co-efficient for each question. TableXXVIII is a copy of the JDQ for reference purposes.

The range of r co-efficients extended from 0.1480 (question 48) to 0.8306 (question 42).

Table XXVII

Pearson Product-Moment Co-efficients
for Reliability Study

Question	r	Question	r
1	0.535	25	0.571
2	0.645	26	0.317
3	0.661	27	0.499
4	0.521	28	0.659
5	0.297	29	0.424
6	0.559	30	0.616
7	0.223	31	0.184
8	0.189	32	0.554
9	0.444	33	0.575
10	0.686	34	0.513
11	0.267	35	0.649
12	0.559	36	0.599
13	0.342	37	0.422
14	0.705	38	0.372
15	0.668	39	0.450
16	0.633	40	0.822
17	0.550	41	0.609
18	0.394	42	0.831
19	0.600	43	0.563
20	0.762	44	0.421
21	0.594	45	0.475
22	0.548	46	0.614
23	0.695	47	0.707
24	0.701	48	0.148
		49	0.298

Please do not write on these sheets

No.	Question	Answers
1	What would you most like to work with ?	a. Hand tools (not power driven) b. Power driven tools or machines which you can control c. Power driven machines automatically controlled
2	Would you like to make things:	a. That have to be very exact ? b. Where exact measures are less important ?
3	What size jobs would you like to work on ?	a. Small (under 1 ft) b. Medium (1 - 5 ft) c. Large (over 5 ft)
4	Some jobs involve making calculations. Would you prefer:	a. To do these calculations yourself ? b. For others to do this work ?
5	Some jobs involve making technical drawings. Would you prefer:	a. To do this work regularly ? b. For others to do this work ?
6	Sometimes reports have to be written. Would you prefer:	a. To write reports yourself ? b. For others to write the reports ?
7	Would you mind having a job where a good memory is important ?	a. Yes b. No
8	Would you prefer a job that involved:	a. Making or constructing new things a good deal of the time ? b. Making or constructing new things some of the time ? c. Hardly ever making or constructing new things ?
9	Would you prefer a job that involved:	a. A good deal of maintenance and repair work ? b. Some maintenance and repair work ? c. Hardly any maintenance and repair work ?
10	In some places there is a wide range of jobs to be tackled. Would you like:	a. To become expert on one or two of them ? b. To switch jobs with others for the sake of experience and variety ?

11

No.	Question	Answers
11	Many jobs are done in various parts. Would you prefer:	a. To do them all yourself ? b. To do several parts ? c. To do only one part ?
12	For your work would you like to have:	a. Complete but straightforward instructions ? b. Some instructions and some opportunity to use your own ideas ? c. Minimum instructions so that you have to use your own ideas ?
13	Would you prefer:	a. A great deal of variety in your work ? b. Some variety in your work ? c. A regular routine ?
14	Before starting a job would you prefer:	a. To spend time planning the work ? b. To think things out briefly and then start ? c. To get started as soon as possible and think as you go along ?
15	Many jobs have to be done to a certain standard. Would you prefer:	a. Always to be responsible for checking that your work is up to standard ? b. Occasionally to have someone else to check it ? c. Always to have it checked by someone else ?
16	How complicated would you like your work to be ?	a. Very complicated needing a lot of thought b. Slightly complicated c. All straightforward and easy to understand
17	Some jobs are required to be done by a certain time. Would you like to work to a deadline:	a. Most of the time ? b. Sometimes ? c. Rarely ?
18	When you have a job to do would you prefer to:	a. Work quickly ? b. Take your time ?
19	How long would you like to work at the same task ?	a. One day or less b. About one week c. More than a week
20	Would you mind if your work involved rectifying mistakes made by other people ?	a. Not at all b. A little c. Quite a lot

No.	Question	Answers
21	If your job involved making articles, would you prefer them to be:	a. Beautiful ? b. Useful ?
22	If you had to make a number of articles would you prefer:	a. To take time and make them to a high standard ? b. To make them quickly to an acceptable standard ?
23	Would you mind if your hands got dirty ?	a. Not at all b. A little c. Yes
24	Some work places have to be kept spotlessly clean. Would you prefer:	a. To work in very clean surroundings ? b. To work where you do not have to worry about keeping things clean ?
25	Some work places are very noisy. Do you think:	a. You could get used to the noise and it would not bother you ? b. You could get used to the noise but you would not like it ? c. You could not get used to the noise ?
26	Some work places are very cold. Do you think:	a. You could stand excessive cold very well ? b. You could stand excessive cold for short periods ? c. You could not stand excessive cold at all ?
27	Some work places are very hot. Do you think:	a. You could stand excessive heat very well ? b. You could stand excessive heat for short periods ? c. You could not stand excessive heat at all ?
28	Some jobs have to be done where there are lots of fumes and smells. Do you think:	a. It would not affect you ? b. You would get used to them in time ? c. You would not be able to work there ?
29	When you are working would you prefer to:	a. Sit most of the time ? b. Stand most of the time ?

No.	Question	Answers
30	Some jobs are underground. Do you think:	a. You would not mind working underground ? b. You would not mind working underground some of the time ? c. You would prefer not to work underground ?
31	When you are working would you prefer to:	a. Stay in one position (e.g. sitting or standing) most of the time ? b. Keep changing position or walking round a lot of the time ?
32	Some work has to be done away from a factory, or office, often at a customer's premises. Would you prefer:	a. To do this kind of work ? b. To work within an office or factory ?
33	If you had to work somewhere in cramped and confined conditions would you mind ?	a. Not at all b. A little c. Yes
34	Some jobs have to be done in an uncomfortable position. Do you think:	a. You would not be willing to take a job like that ? b. You would not mind being uncomfortable some of the time ? c. It would not worry you ?
35	If it were necessary to work outside in wet weather would you mind ?	a. Not at all b. A little c. A good deal
36	What are your feelings about working above the ground ?	a. You would dislike working at heights b. You would not mind working a short distance above the ground c. You would be happy working at any height
37	Where would you prefer to work if you had a choice ?	a. Indoors most of the time b. Outdoors most of the time
38	Would you mind working where there was some risk of an accident ?	a. Not at all b. A little c. A good deal
39	How would you feel about a job which involved a lot of heavy lifting ?	a. You would not like it at all b. You would not mind doing some heavy lifting c. It would not worry you

v

No.	Question	Answer
40	In some jobs you have very little contact with other people. Would you prefer:	a. To be on your own a lot of the time ? b. To have a lot of contact with other people ?
41	In your day to day work would you prefer to be:	a. Mostly in contact with the general public ? b. Occasionally in contact with the general public ? c. Mostly in contact with your work-mates only ?
42	Although your work may not require public contact, would you mind if the public could see you at work ?	a. You would prefer not to be seen by the public b. It would not worry you to be seen by the public
43	Would you prefer to work with:	a. Mainly people of the same sex as yourself ? b. People of both sexes ? c. Mainly people of the opposite sex ?
44	Would you prefer to work with people who are:	a. Mostly of the same age group as you ? b. Of a different age group from you ?
45	Some jobs involve working with people from other countries. Would you prefer:	a. To work only with local people ? b. To work with a mixture of local and foreign people ?
46	If you had a choice would you prefer to work:	a. In a large room with more than 15 people ? b. In a room with 6-15 people ? c. With less than 6 people ?
47	If there is a large amount of work to do with unlimited time would you prefer:	a. To do all the work yourself ? b. To share the work with one or two others ? c. To share the work with a larger group?
48	In some jobs the organisation of the work is the responsibility of a supervisor. Would you prefer:	a. To organise your own work ? b. To have your work organised for you ?
49	In many firms there are training schemes and trade advancement tests. Would you like to have a job:	a. Where you have to get more qualifications whilst working ? b. Where you would not need any further qualifications ?

Discussion

In a questionnaire such as the JDQ high reliability is expected. As previously noted, the SVIB, Kuder and MVII have reliabilities above the 0.90 r correlation co-efficient. Clarke and Hartston quoted a reliability range of 0.6 to 0.8 for the JDQ. This figure is obviously less than that achieved by the SVIB, Kuder and MVII.

The range of reliabilities in the present analysis was 0.15 to 0.83. It is necessary to investigate the reliability data more closely to clarify why such a wide range was evident.

Seven r correlation co-efficients were below 0.3. These were questions, 5, 7, 8, 11, 31, 48 and 49 (see Table XXVII for a complete list of JDQ questions).

Question 7's low correlation co-efficient can be explained by its acknowledged lack of relevance to the questionnaire (Personal Communication, 1981). This question could be removed if more research is to be centred on the JDQ.

Question 49 poses some interesting issues. It refers to the necessity of further qualifications. The subjects in the study were all in the 5th form, the stage at which they sit their first external examination (School Certificate). Perhaps there is stress from continued wavering between more study commitment - long term goals, and a sink or swim effort to pass - short term goals.

The remaining questions with low r correlation co-efficients pose more difficulties in interpretation. Question 5 - technical drawing, question 8 - construction of items and question 11 - jobs done in parts or not, seem clear and definable. Why such a change should occur over a two week period is difficult to understand. Question 31 - sitting still or moving around and question 48 - organisation of work, are equally difficult to

interpret. Further reliability studies could be initiated to investigate this finding.

Six of the co-efficients were above 0.7. These were questions 14, 20, 24, 40, 42 and 47. Questions 40, 42 and 47 are all "socially" orientated, questions 14, 20 and 24 refer to work content - planning, rectifying mistakes and cleanliness. It is interesting to note that the socially-orientated questions (especially questions 40 and 42) scored the highest r co-efficients. It could be that the subjects (girls) had strongly formed ideas re social conditions and relationships at work as opposed to other areas (such as physical surroundings). Whether this trait is sex-linked cannot, as yet, be determined. These variables related highly to the social environment factor underlying the questionnaire. It could be argued that the underlying factors have differing strengths.

The work content factors, e.g. planning, are also worth noting. It could be hypothesised that those factors with the highest r co-efficient are perceived as more important to the subjects, which makes the prominence of question 24 (cleanliness) all the more interesting. The whole issue of sex stereotyping could be further investigated to provide more information. The other two factors, planning and rectifying mistakes, could also have been previously discussed and considered by the subjects - perhaps these variables are viewed as desirable or undesirable prerequisites for any job.

The results of the reliability study are therefore inconclusive. More reliability studies need to be completed on the JDQ before its use becomes widespread.

Chapter Eight: Longitudinal Analysis

Plan of Analysis

49 Oneway Analysis of Variance (ANOVA) were computed to compare responses in 1975 to those in 1981. Other statistical methods, such as the T-test, were not applicable as total scores on the JDQ are meaningless. Meaning is derived from the profiles of each person, that is, how individual questions are answered as opposed to viewing a total score. Each ANOVA compared the response of the 1975 sample to the 1981 sample for an individual question.

Subjects

The 84 subjects were derived from two groups. Both groups consisted of 42 subjects matched for age: 15 to 16; sex: all female; educational level: 5th form; and type of school: girls' public school.

Procedure

The sample was collected as outlined in the method section. Using the programme ONEWAY(SPSS, Nie et al, 1976) 49 analyses of variance were computed.

Results

As there were a large number of ANOVAs it is feasible that statistical significance of a question could be due to chance. Therefore a statistical significance level of 0.01 was adopted to reduce such chance effects.

Table XXIX presents the results of each ANOVA. Two ANOVAs were statistically significant. Question 1 - tools and question 33 - cramped and confined positions.

Table XXIX

Analysis of Variance
between 1975 and 1981 Samples

Question	F ratio	Question	F ratio
1	10.1 p <0.01	25	0.75 NS
2	0.85 NS	26	0.56 NS
3	0.03 NS	27	0.92 NS
4	0.58 NS	28	0.14 NS
5	0.82 NS	29	0.17 NS
6	0.45 NS	30	5.60 NS
7	0.22 NS	31	2.35 NS
8	2.87 NS	32	0.10 NS
9	0.25 NS	33	9.25 p <0.01
10	0.21 NS	34	0.00 NS
11	3.38 NS	35	2.85 NS
12	0.52 NS	36	0.11 NS
13	1.70 NS	37	3.59 NS
14	6.52 NS	38	1.53 NS
15	1.32 NS	39	0.41 NS
16	0.04 NS	40	0.04 NS
17	2.66 NS	41	0.123 NS
18	0.00 NS	42	0.53 NS
19	0.81 NS	43	0.33 NS
20	0.86 NS	44	0.02 NS
21	0.83 NS	45	1.01 NS
22	0.45 NS	46	0.00 NS
23	1.48 NS	47	1.20 NS
24	2.69 NS	48	2.01 NS
		49	0.74 NS

Discussion

The first hypothesis related to the longitudinal study suggested that there would be statistically significant differences in the responses to the questions over the five year period. Only two of the forty-nine questions were significant, providing little support for this hypothesis. The second hypothesis concerned with this study indicated that significant differences in answering questions would be related to physical job conditions. Both significant questions were related physical job conditions. However, as none of the other physical job condition questions were significant, again little support is provided for the hypothesis.

There are two possible explanations for this result. Either change has occurred over time, no matter how minimal, or the findings were due to chance, regardless of the adopted lower-significance level of 0.01.

Due to the low number of significant questions the more probable explanation is that chance accounts for the findings.

This suggests that girls' responses have remained static despite changes in the work situation and society in general. This result was unexpected and provides room for some comment.

New Zealand data has indicated a 7.7% rise in full time female employment since 1976 (Department of Labour, 1981). During the same period there was a 1.6% decline in employment for males. An interesting fact is that married women comprise 60% of the female workforce. This suggests re-entry into the workforce of women after childbearing.

Related to these figures are the workforce - occupational percentages. Figures are only available from the 1971 and 1976 census, due to the latest (1981) data being as yet unpublished.

Table XXX presents this information.

Table XXX

The Workforce Occupational Percentages 1976
(1971 in brackets) (from the Census)

<u>Occupational Group</u>	<u>Female % of female workforce</u>	<u>Male % of male workforce</u>	<u>Female % in each occupational group</u>
Professional, technical and related workers	18.2(17.2)	12.1(10.4)	41.4(41.2)
Administrative, execu- tive and managerial	0.7 (0.3)	4.4 (3.5)	7.0 (3.7)
Clerical workers	33.4(33.1)	8.1 (8.9)	66.0(61.2)
Sales workers	11.7(11.6)	9.0 (9.8)	38.0(33.6)
Agricultural, animal husbandry and forest workers, fishermen and hunters	5.4 (5.2)	12.6(14.3)	16.9(13.3)
Production workers, transport equipment operators and labourers	16.1(17.4)	46.6(46.6)	14.0(13.7)
Service workers (in- cluding armed forces)	12.2(13.9)	5.4 (5.4)	51.7(52.2)
Occupations n.e.c.	2.3 (1.4)	1.8 (1.0)	36.3(37.3)
Total	100 (100)	100 (100)	

Source:

N.Z. Labour and Employment Gazette, Vol.31, No.4 Dec. 1981.

As is clearly observable there has been little change since 1971. Women were predominantly employed in the clerical sector (66% in 1976) and appeared least of all in the executive and managerial positions (7.0% in 1976). Despite continuing gains in the fields of equal pay, maternity leave and preferential re-entry rights, there seems to have been little movement into non-traditional occupations.

This could be due to a variety of factors. Men in many cases do the employing, which possibly results in bias against women. Likewise there could be lack of motivation by women, due to belief in careers ending at childbirth. However, this is not supported when 60% of women re-enter the workforce.

The period covered by the JDQ testing is six years, 1975 to 1981. Employment data available prior to these years has indicated little change in the traditional employment pattern. No further current statistics are available to either confirm the traditional patterns or suggest that other patterns are operating.

If the JDQ is representative of girls' interests, it would seem that no change in interest scope has occurred over the five year period. This perhaps indicates choice of traditional female occupations.

The fact that the sample was obtained from a single-sex school could have had some bearing on the result. Any influences are impossible to identify as no data exist re the JDQ on co-educational schools in New Zealand in 1975.

Further discussion on the present finding is prevented by the absence of statistics from which to compare occupational trends.

Chapter Nine: Conclusions and Recommendations

The present research confirmed the following facts.

1. The factor structure of the JDQ in New Zealand is similar, although not identical to that in the United Kingdom.
2. The JDQ successfully distinguishes six New Zealand occupational groups.
3. The reliability of the JDQ in New Zealand does not reflect the reliability achieved in the United Kingdom. In general the reliability co-efficients are much lower.
4. There has been no significant change in response patterns to the JDQ over a six year period.
5. As there have been no significant changes over six years, there is no significant difference in response to Physical Working Conditions questions.

Suggestions for further Research

The present findings suggest many areas of potential study. Perhaps the most important area is the reliability of the JDQ. Proven reliability is almost a prerequisite to incorporation in either a selection or placement test. A larger sample (e.g.100), a range of test-retest periods, and a sample of males, females and mixed sexes could form the basis of future reliability research.

More occupational groups need to be investigated. Clarke and Hartston are continually adding more groups to the original research sample. The New Zealand sample could be added to by such groups as hairdressers, mechanics and drivers. The wider the range of groups, the more useful the questionnaire will ultimately be. For vocational guidance purposes the JDQ must include as many groups as possible.

Another task which could be undertaken is the

selection of a general population sample. This sample's responses to the JDQ could then be compared with individual occupational groups. In essence this is a replication of Clarke and Hartston's study. The profiles obtained could be compared with those obtained in discriminant analysis to identify similarities between the two samples. Prior to this task more profiles could be developed using the SPSS discriminant analysis procedure, as this would simplify the scoring procedure.

Another area worthy of more investigation is the extension of the JDQ to the more professional jobs. However, the desirability of such a move is questionable. The JDQ was designed for workers of average and below average intelligence and is simplistic in form. Extending it to include other jobs in professional areas would deny its "raison d'être". Other inventories, such as the OIG are more suitable for the professional area.

Applications of the JDQ

Research could also centre on applications of the JDQ, especially in schools and industry. In New Zealand school guidance counsellors are required to achieve minimum qualifications in testing before having access to, or administering tests. Theoretically this improves the standard of the testing process, and validates the testing situation. The JDQ could be administered in schools to examine its utility. It could also be compared with the Crowley to identify any advantages either might have.

As with schools, vocational guidance centres could test the JDQ to identify its potential. Various situations could identify several aspects of the JDQ's use. For example, the JDQ could be used to initiate the sessions, or used near the end of the session as a means of concentrating thought for follow-up interviews, or

it could be used as a counselling tool to identify a person's interests as they relate to the work setting. All these areas could be investigated and reported upon.

In private industry and large institutions, such as the army, the JDQ could be tested to check its predictive validity. If support could be obtained in this area its acceptability would be greatly improved.

Task similarity of various jobs is another issue. As indicated in the research "second choice" occupations can be similar or very different. A result which suggests that an individual is best suited to be an electrician, and next best a nurse, needs careful explanation. At this point much is dependent on the skill and philosophical position of the counsellor. A trait and factor career counsellor would place more weight on the test results. A developmentally orientated counsellor might highlight other aspects. This suggests that research based on the application of the test could assist in its implementation.

Leisure Activities

Yet another field of enquiry is related to leisure activities. As suggested in the introduction, interests could provide an indication of possible leisure activities. According to Zepke (1979) the possibility exists for a permanent pool of under-employed through the introduction of job sharing and early retirement. However, the New Zealand Planning Council (1980) suggest that "full employment would be an appropriate employment goal for the future" (p.18). Such opinion is echoed by employers (N.Z. Employers' Federation, 1980) who suggest that new technology will increase job opportunities in the long run.

Whatever the future holds, unemployment at present in New Zealand is 4.4% (officially). This suggests

that a large group of people need some assistance in coping with unemployment. The JDQ could assist in this area. For example, if an individual's JDQ group was electrician, skills associated with electrical work could be discussed. Identification of possible uses of such skills related to leisure activities is a natural follow-up of such an exercise. The JDQ is therefore used as an agent for channelling people into specific directions. Again, the use of trained counsellors is necessary to assist in identifying skills, and assistance in transference of work skills to leisure skills. Exploratory research could be initiated in this area, followed in due course by more intensive work. As the leisure philosophy is new and not readily accepted by many quarters of society, research progress will have to be careful and thorough. The research could actually be related to vocational guidance because the process is similar, i.e. JDQ plus counselling in both instances. However, the outcome is different - a "job" in vocational guidance, an "activity" in leisure guidance.

Conclusion

The JDQ, unlike other tests, was designed for a specified group within society. Although originally designed as an aid to guidance, its usefulness has also been established in the areas of selection and placement. This suggests that the JDQ is useful in a wide range of situations, and can be applied by a corresponding range of people. It is somewhat limiting in that it narrows occupational choice to one or two groups, but this is balanced by its emphasis on clarity and its relatedness to job factors. The very fact that it is limiting increases its utility in the field of selection and placement, where the goal is the best person for the job.

The present study confirmed the JDQ's validity in the New Zealand situation. Caution is advised with regard to reliability, which needs to be further tested before the JDQ can be universally applied. More occupational groups need to be added to those in this research, and larger sample sizes for each group are also necessary.

Nevertheless an 87.9% overall correct classification of groups provides support for the JDQ and remains an incentive for further research.



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THE INDUSTRIAL TRAINING RESEARCH UNIT (ITRU)

JOB DISPOSITION QUESTIONNAIRE

This questionnaire was developed in the United Kingdom as an aid for vocational guidance and personnel selection. Research has suggested that the questionnaire is a useful tool for selecting various occupations. Some jobs which have been studied include forestry workers, electricians, nurses and chefs.

The aim of my research is to investigate the questionnaire's usefulness under New Zealand conditions. I am comparing responses given by New Zealanders to those given overseas to see if there are any similarities. For this I need large samples of people from different occupations. I am particularly interested in the selection of chefs because a great deal of conflicting information exists on how to select them. For this reason, I am enlisting your aid.

The questionnaire consists of 49 multiple choice items. The first page gives instructions on how to complete the questionnaire. Please read this carefully. The questionnaire has a separate answer sheet for you to record your response to each question.

The questionnaire provides two examples of how to answer the questions. The first is: Would you prefer a job: a) Outdoors
b) Indoors

To answer it:

1. Select one of the answers (a or b). If you feel you cannot make the choice, leave the question out.
2. Turn to the answer sheet and tick the box which corresponds to your answer,

e.g.

Example A

a
b

Likewise, try the second example on the questionnaire.

Each question has a corresponding space on the answer sheet. Make sure that you tick the box which corresponds to the question you are working on.

The answer sheet consists of two sections - one for the responses and the other for confidential information. It is not necessary to include your name, but please include the other information as it is important. The questionnaire is anonymous and nobody in the Defence Department will see it. Each questionnaire has a stamped, addressed envelope for reply of both the questionnaire and the answer sheet. Please return as soon as possible.

Thank you for your assistance.

C. MCGREGOR

ITRU JOB DISPOSITION QUESTIONNAIRE

Write your name and all the other information asked for on the answer sheet.

In this booklet you will find questions about different aspects of work. There are no right or wrong answers because everybody has different ideas about jobs.

First you should answer the sample questions below. Although you read the questions from the booklet you must record your answers on the answer sheet (next to the same number as in the booklet). Read the examples below and record your answers in the section marked 'Examples' on the answer sheet.

Examples

- | | | | |
|----|------------------------|----|--------------|
| A. | Would you prefer a job | a) | Outdoors |
| | | b) | Indoors |
| B. | Would you prefer | a) | Day work |
| | | b) | Night work |
| | | c) | Some of both |

Try not to spend too long on each question. The questions are sometimes too short to give you all the information you would like to have. Give the best answer you can for most situations of the kind stated.

Try to answer every question; if you feel, however, you really cannot make the choice leave it out. Answer as honestly as possible what is true of you. Do not simply mark what seems "the right thing to say" to impress.

Please do not write on these sheets

No.	Question	Answers
1	What would you most like to work with ?	a. Hand tools (not power driven) b. Power driven tools or machines which you can control c. Power driven machines automatically controlled
2	Would you like to make things:	a. That have to be very exact ? b. Where exact measures are less important ?
3	What size jobs would you like to work on ?	a. Small (under 1 ft) b. Medium (1 – 5 ft) c. Large (over 5 ft)
4	Some jobs involve making calculations. Would you prefer:	a. To do these calculations yourself ? b. For others to do this work ?
5	Some jobs involve making technical drawings. Would you prefer:	a. To do this work regularly ? b. For others to do this work ?
6	Sometimes reports have to be written. Would you prefer:	a. To write reports yourself ? b. For others to write the reports ?
7	Would you mind having a job where a good memory is important ?	a. Yes b. No
8	Would you prefer a job that involved:	a. Making or constructing new things a good deal of the time ? b. Making or constructing new things some of the time ? c. Hardly ever making or constructing new things ?
9	Would you prefer a job that involved:	a. A good deal of maintenance and repair work ? b. Some maintenance and repair work ? c. Hardly any maintenance and repair work ?
10	In some places there is a wide range of jobs to be tackled. Would you like:	a. To become expert on one or two of them ? b. To switch jobs with others for the sake of experience and variety ?

No.	Question	Answers
11	Many jobs are done in various parts. Would you prefer:	a. To do them all yourself ? b. To do several parts ? c. To do only one part ?
12	For your work would you like to have:	a. Complete but straightforward instructions ? b. Some instructions and some opportunity to use your own ideas ? c. Minimum instructions so that you have to use your own ideas ?
13	Would you prefer:	a. A great deal of variety in your work ? b. Some variety in your work ? c. A regular routine ?
14	Before starting a job would you prefer:	a. To spend time planning the work ? b. To think things out briefly and then start ? c. To get started as soon as possible and think as you go along ?
15	Many jobs have to be done to a certain standard. Would you prefer:	a. Always to be responsible for checking that your work is up to standard ? b. Occasionally to have someone else to check it ? c. Always to have it checked by someone else ?
16	How complicated would you like your work to be ?	a. Very complicated needing a lot of thought b. Slightly complicated c. All straightforward and easy to understand
17	Some jobs are required to be done by a certain time. Would you like to work to a deadline:	a. Most of the time ? b. Sometimes ? c. Rarely ?
18	When you have a job to do would you prefer to:	a. Work quickly ? b. Take your time ?
19	How long would you like to work at the same task ?	a. One day or less b. About one week c. More than a week
20	Would you mind if your work involved rectifying mistakes made by other people ?	a. Not at all b. A little c. Quite a lot

No.	Question	Answers
21	If your job involved making articles, would you prefer them to be:	a. Beautiful ? b. Useful ?
22	If you had to make a number of articles would you prefer:	a. To take time and make them to a high standard ? b. To make them quickly to an acceptable standard ?
23	Would you mind if your hands got dirty ?	a. Not at all b. A little c. Yes
24	Some work places have to be kept spotlessly clean. Would you prefer:	a. To work in very clean surroundings ? b. To work where you do not have to worry about keeping things clean ?
25	Some work places are very noisy. Do you think:	a. You could get used to the noise and it would not bother you ? b. You could get used to the noise but you would not like it ? c. You could not get used to the noise ?
26	Some work places are very cold. Do you think:	a. You could stand excessive cold very well ? b. You could stand excessive cold for short periods ? c. You could not stand excessive cold at all ?
27	Some work places are very hot. Do you think:	a. You could stand excessive heat very well ? b. You could stand excessive heat for short periods ? c. You could not stand excessive heat at all ?
28	Some jobs have to be done where there are lots of fumes and smells. Do you think:	a. It would not affect you ? b. You would get used to them in time ? c. You would not be able to work there ?
29	When you are working would you prefer to:	a. Sit most of the time ? b. Stand most of the time ?

No.	Question	Answers
30	Some jobs are underground. Do you think:	a. You would not mind working underground ? b. You would not mind working underground some of the time ? c. You would prefer not to work underground ?
31	When you are working would you prefer to:	a. Stay in one position (e.g. sitting or standing) most of the time ? b. Keep changing position or walking round a lot of the time ?
32	Some work has to be done away from a factory, or office, often at a customer's premises. Would you prefer:	a. To do this kind of work ? b. To work within an office or factory ?
33	If you had to work somewhere in cramped and confined conditions would you mind ?	a. Not at all b. A Little c. Yes
34	Some jobs have to be done in an uncomfortable position, Do you think:	a. You would not be willing to take a job like that? b. You would not mind being uncomfortable some of the time ? c. It would not worry you ?
35	If it were necessary to work outside in wet weather would you mind ?	a. Not at all b. A little c. A good deal
36	What are your feelings about working above the ground ?	a. You would dislike working at heights b. You would not mind working a short distance above the ground c. You would be happy working at any height
37	Where would you prefer to work if you had a choice ?	a. Indoors most of the time b. Outdoors most of the time
38	Would you mind working where there was some risk of an accident ?	a. Not at all b. A little c. A good deal
39	How would you feel about a job which involved a lot of heavy lifting ?	a. You would not like it at all b. You would not mind doing some heavy lifting c. It would not worry you

No.	Question	Answer
40	In some jobs you have very little contact with other people. Would you prefer:	a. To be on your own a lot of the time ? b. To have a lot of contact with other people ?
41	In your day to day work would you prefer to be:	a. Mostly in contact with the general public ? b. Occasionally in contact with the general public ? c. Mostly in contact with your work-mates only ?
42	Although your work may not require public contact, would you mind if the public could see you at work ?	a. You would prefer not to be seen by the public b. It would not worry you to be seen by the public
43	Would you prefer to work with:	a. Mainly people of the same sex as yourself ? b. People of both sexes ? c. Mainly people of the opposite sex ?
44	Would you prefer to work with people who are:	a. Mostly of the same age group as you ? b. Of a different age group from you ?
45	Some jobs involve working with people from other countries. Would you prefer:	a. To work only with local people ? b. To work with a mixture of local and foreign people ?
46	If you had a choice would you prefer to work:	a. In a large room with more than 15 people ? b. In a room with 6-15 people ? c. With less than 6 people ?
47	If there is a large amount of work to do with unlimited time would you prefer:	a. To do all the work yourself ? b. To share the work with one or two others ? c. To share the work with a larger group?
48	In some jobs the organisation of the work is the responsibility of a supervisor. Would you prefer:	a. To organise your own work ? b. To have your work organised for you ?
49	In many firms there are training schemes and trade advancement tests. Would you like to have a job:	a. Where you have to get more qualifications whilst working ? b. Where you would not need any further qualifications ?

ANSWER SHEET

ITRU J.D.Q.

CONFIDENTIAL

Page i	Page ii	Page iii	Page iv	Page v
1 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	11 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	21 a <input type="checkbox"/> b <input type="checkbox"/>	30 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	40 a <input type="checkbox"/> b <input type="checkbox"/>
2 a <input type="checkbox"/> b <input type="checkbox"/>	12 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	22 a <input type="checkbox"/> b <input type="checkbox"/>	31 a <input type="checkbox"/> b <input type="checkbox"/>	41 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>
3 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	13 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	23 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	32 a <input type="checkbox"/> b <input type="checkbox"/>	42 a <input type="checkbox"/> b <input type="checkbox"/>
4 a <input type="checkbox"/> b <input type="checkbox"/>	14 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	24 a <input type="checkbox"/> b <input type="checkbox"/>	33 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	43 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>
5 a <input type="checkbox"/> b <input type="checkbox"/>	15 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	25 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	34 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	44 a <input type="checkbox"/> b <input type="checkbox"/>
6 a <input type="checkbox"/> b <input type="checkbox"/>	16 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	26 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	35 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	45 a <input type="checkbox"/> b <input type="checkbox"/>
7 a <input type="checkbox"/> b <input type="checkbox"/>	17 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	27 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	36 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	46 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>
8 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	18 a <input type="checkbox"/> b <input type="checkbox"/>	28 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	37 a <input type="checkbox"/> b <input type="checkbox"/>	47 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>
9 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	19 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	29 a <input type="checkbox"/> b <input type="checkbox"/>	38 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	48 a <input type="checkbox"/> b <input type="checkbox"/>
10 a <input type="checkbox"/> b <input type="checkbox"/>	20 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>		39 a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>	49 a <input type="checkbox"/> b <input type="checkbox"/>

DATE:.....

SURNAME:.....

FIRST NAMES:.....

SEX: MALE/FEMALE
(delete one)

AGE: (tick one)

Under 20; ___ 20-29; ___

30-39; ___ 40-49; ___

50-59; ___ 60+ ___

COUNTRY OF BIRTH:

Are you:

a) Working (job.....)

Length of time in present

job.....

OR

b) not presently employed

(last job.....)

Examples

A a
b B a
b
c

VARIMAX ROTATED FACTOR MATRIX

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
Q1	0.03224	0.02645	0.22873	-0.14708	0.04965	0.03057	0.01853	0.05284	0.13427	-0.00316
Q2	0.03133	0.06145	-0.04038	-0.01016	0.04701	-0.08999	0.07680	0.56689	0.17711	0.01431
Q3	-0.04277	0.44361	0.10274	-0.00879	0.11162	0.03988	-0.03268	0.13246	-0.00678	0.10193
Q4	0.07928	0.00986	0.01397	-0.05403	0.17190	-0.06434	0.10381	0.08082	0.30134	-0.11160
Q5	0.06894	0.03860	-0.07428	-0.01940	-0.06548	0.07022	-0.02953	0.14542	0.64532	-0.02191
Q6	-0.06447	0.10856	0.08080	0.05327	0.01226	0.12293	0.06953	0.06139	-0.05542	0.01345
Q7	0.02739	-0.06296	0.07513	-0.03064	-0.01857	-0.02311	0.07371	-0.01219	0.09023	-0.03110
Q8	0.05718	-0.16596	0.20327	-0.00398	0.18481	-0.07023	0.00910	0.14793	0.29082	-0.00693
Q9	0.28939	-0.26541	-0.08572	0.01622	0.07863	0.06030	-0.11313	-0.03230	0.13961	-0.03079
Q10	0.04844	0.02701	-0.28292	0.00350	0.04493	-0.08494	-0.03702	0.10839	0.05313	0.07683
Q11	-0.01575	0.03428	0.29509	-0.13408	0.11284	0.01476	0.04667	0.01252	0.13367	0.01445
Q12	-0.09331	-0.00274	-0.06160	0.01859	-0.62437	-0.05859	0.05706	-0.01163	-0.00634	0.10023
Q13	-0.01109	-0.08840	0.38393	0.16201	0.14761	0.13552	-0.05340	0.07275	0.00331	0.13742
Q14	-0.03705	-0.00613	-0.10398	0.02101	0.11881	-0.10300	-0.04925	0.26735	0.14866	0.02040
Q15	-0.02798	0.02889	0.15856	0.14232	0.13473	-0.00774	0.09269	0.08933	0.08026	0.05893
Q16	-0.01594	0.04506	0.06600	0.07332	0.40935	0.05131	0.05698	0.44971	0.07876	-0.07134
Q17	0.15860	0.01684	0.00615	0.07950	-0.00380	-0.01948	0.62706	0.04550	0.02673	-0.01328
Q18	0.04449	0.08815	0.15387	-0.10834	0.02715	0.04451	0.51845	0.04723	-0.03046	-0.04684
Q19	-0.09148	0.19351	0.49519	0.05975	0.01989	-0.10300	0.08291	-0.03078	-0.10452	-0.04272
Q20	0.31720	0.01582	0.03734	0.04487	-0.11648	0.11836	-0.02638	-0.10828	-0.06288	0.02797
Q21	-0.08429	0.05768	0.13135	0.09720	0.05728	-0.00574	-0.02800	-0.09035	0.00305	0.00231
Q22	0.00987	0.11911	-0.08563	0.08826	0.11005	0.05462	-0.03236	0.10031	0.04975	0.01089
Q23	0.35021	-0.31018	-0.07371	-0.08445	0.04045	0.18541	-0.05486	-0.02238	-0.00570	-0.11488
Q24	-0.16145	0.45249	0.05432	0.04074	-0.09601	0.04320	0.26574	0.08779	-0.01241	-0.02377
Q25	0.47775	-0.05711	-0.12573	0.09366	-0.12001	-0.01614	0.17469	-0.00475	0.01340	-0.00798
Q26	0.49950	-0.19547	-0.13668	-0.10096	-0.02535	0.02392	0.09089	-0.05641	0.06911	-0.00536
Q27	0.57031	-0.09019	0.17595	-0.03170	0.00207	-0.05055	0.08654	-0.07196	-0.03292	0.06293
Q28	0.53133	-0.00438	0.01907	0.04493	0.10602	-0.06430	0.01258	0.17006	-0.04972	-0.13132
Q29	-0.18305	0.23330	-0.06535	0.04286	0.03574	-0.02347	-0.08217	-0.05343	-0.08333	0.42466
Q30	0.30242	-0.02259	-0.05771	-0.01654	0.02998	-0.00268	-0.00088	-0.00253	0.17905	-0.05075
Q31	0.05149	0.14795	-0.25181	-0.09344	0.04841	-0.25935	0.00820	0.19428	0.00310	0.36812
Q32	0.09954	-0.09209	0.06972	0.04366	0.13190	0.63469	0.02745	-0.11730	0.03660	-0.07921
Q33	0.51312	0.08038	0.03520	0.01302	0.03329	0.02464	0.01735	-0.02138	0.13819	0.05930
Q34	-0.49274	0.05644	0.11285	0.11393	-0.03390	-0.01377	0.09699	0.05096	0.04156	0.25845
Q35	0.32019	-0.36094	-0.00466	-0.07692	-0.02673	0.29162	-0.02463	0.08653	0.03414	-0.19721
Q36	-0.34414	0.08959	0.06633	-0.03315	-0.02730	-0.14042	0.00788	-0.01557	-0.08446	0.09559
Q37	-0.09408	0.61518	-0.09891	0.17609	0.02112	-0.29265	0.01680	-0.09815	0.07948	0.13438
Q38	0.33303	-0.14647	-0.06761	-0.03409	0.07212	0.10171	0.04311	0.03210	0.03525	-0.46411
Q39	-0.33627	0.21533	0.01525	0.09739	-0.09068	-0.06225	-0.01176	-0.01239	-0.07966	-0.18799
Q40	0.03480	-0.09644	0.03273	-0.51567	-0.01567	-0.02375	0.07730	0.03284	0.06343	-0.04657
Q41	-0.10705	0.16663	-0.01653	0.46746	-0.04399	0.26731	-0.01700	0.12739	-0.02797	-0.02346
Q42	-0.18122	0.03611	-0.03178	-0.09870	-0.07373	0.04959	-0.04235	-0.01611	-0.04832	0.07016
Q43	0.06107	0.03364	0.10187	-0.10633	-0.10118	-0.04288	-0.02449	-0.04669	0.09680	-0.09740
Q44	-0.01894	-0.07378	-0.03859	-0.06729	-0.05009	-0.04396	-0.08132	0.02640	-0.00949	0.02969
Q45	0.02204	0.01285	-0.03173	-0.07757	0.01438	0.00760	-0.04821	0.04794	-0.02391	0.01603
Q46	0.13640	-0.00427	0.02087	0.31336	-0.19650	-0.09110	0.12201	-0.05863	0.08465	0.04217
Q47	0.00610	0.05012	0.06208	-0.06903	0.01429	-0.06216	0.01983	-0.01571	0.06395	0.02784
Q48	-0.10270	0.05752	0.10190	-0.02793	0.40754	0.04977	0.11290	0.13066	0.00006	0.02172
Q49	-0.01424	-0.02980	0.17964	0.32869	0.06761	-0.02406	0.10637	0.13816	0.03031	-0.13774
AGE	0.06936	-0.11308	-0.36703	0.17618	-0.07620	0.03254	-0.12408	-0.14094	0.04827	-0.05305
SEX	0.29573	-0.24717	0.00076	-0.30764	0.19590	-0.22200	-0.09615	0.05309	0.13822	-0.14246

	FACTOR 11	FACTOR 12	FACTOR 13	FACTOR 14	FACTOR 15	FACTOR 16	FACTOR 17	FACTOR 18
Q1	-0.01249	0.09153	-0.17881	-0.03646	0.03513	-0.07675	-0.18783	-0.01953
Q2	0.04173	-0.05471	0.02628	0.03607	-0.05894	-0.02571	0.07867	0.10042
Q3	0.02864	0.04924	-0.06091	-0.03931	0.09219	-0.06705	-0.12343	0.03195
Q4	0.28413	-0.01201	-0.06598	0.02478	0.03291	-0.20339	0.11988	-0.03345
Q5	-0.04838	-0.01923	-0.01073	0.02087	0.09390	0.02576	0.02087	0.10131
Q6	0.48771	-0.09111	-0.01272	-0.05861	0.01382	0.02346	0.05675	0.04194
Q7	0.02388	-0.10260	0.03860	0.16321	-0.03646	0.11995	0.07359	0.26603
Q8	-0.01084	0.00444	0.03181	-0.07676	-0.06071	0.01861	-0.03017	0.05964
Q9	0.06231	0.08746	-0.01053	0.07986	-0.02982	0.12584	0.32806	-0.16377
Q10	-0.03304	0.02890	-0.01371	0.01177	0.09400	0.01234	0.06308	0.07413
Q11	0.05911	0.06688	-0.06624	0.03173	0.11215	0.04885	-0.04571	-0.02383
Q12	0.05682	-0.00044	0.04302	0.02437	0.03672	-0.01724	0.06263	-0.04920
Q13	0.08583	-0.01219	0.03269	-0.12780	0.00556	-0.06899	-0.00009	0.02206
Q14	0.25286	-0.01150	-0.08594	0.03350	0.01995	0.11460	-0.18535	0.18637
Q15	0.10900	-0.10794	-0.02994	0.05128	0.13121	0.07866	0.06912	0.09502
Q16	0.23459	-0.00882	-0.01063	-0.00849	0.20185	0.05184	0.02907	-0.12752
Q17	0.16808	0.10245	-0.13110	-0.02620	0.00161	0.04680	-0.04457	0.16899
Q18	-0.04714	-0.18051	0.01370	-0.05648	0.02071	-0.04850	0.02975	-0.18973
Q19	-0.05028	-0.04075	-0.02820	0.05765	0.10324	0.03404	-0.00903	0.03084
Q20	0.09300	-0.10233	0.09050	-0.08285	-0.05361	0.11181	0.11690	0.10675
Q21	-0.06296	0.03981	0.11191	-0.02626	0.00506	0.01160	-0.37751	0.00306
Q22	0.04061	-0.05426	-0.01593	-0.12787	-0.06078	-0.06209	-0.07819	0.45821
Q23	0.03226	-0.00357	-0.04579	0.05339	-0.09301	-0.04454	-0.02814	-0.01251
Q24	0.18615	-0.04618	-0.11868	0.00085	-0.05552	0.05825	0.08418	0.13935
Q25	-0.05262	-0.04491	0.04671	0.10643	0.02887	-0.06934	0.05406	-0.05214
Q26	0.07786	0.03002	0.07791	0.02421	-0.00117	-0.14111	0.02189	0.00279
Q27	-0.03787	0.07495	-0.09551	0.09906	-0.01288	-0.19940	-0.05184	-0.00815
Q28	-0.14518	-0.05462	-0.05435	0.05625	-0.10520	0.01846	0.03508	0.03737
Q29	0.07419	-0.02778	0.04398	0.08851	0.26538	0.15995	-0.05396	-0.03361
Q30	0.02518	-0.07806	0.01081	-0.06969	-0.01998	0.27366	0.04570	-0.03780
Q31	-0.01009	0.01407	-0.04303	0.06215	0.26397	-0.03506	0.03564	-0.02522
Q32	0.09902	0.01098	-0.05527	0.02130	-0.09486	-0.00693	0.01308	0.02422
Q33	-0.03419	-0.04076	-0.01013	-0.07148	0.02148	0.14867	0.10979	-0.01553
Q34	-0.01889	0.09193	0.04914	0.03289	-0.05306	-0.03537	0.10112	-0.00359
Q35	0.11913	-0.00530	0.01279	-0.11779	0.14159	-0.08224	-0.01979	0.08772
Q36	0.13660	0.08728	-0.05339	0.04355	-0.04239	0.07230	-0.19693	-0.16687
Q37	0.16039	-0.00964	-0.00939	0.08862	0.08084	0.17037	-0.09224	-0.03319
Q38	0.03613	-0.09331	-0.03034	-0.03761	0.10917	-0.00431	0.07532	-0.02512
Q39	-0.04079	0.08333	0.05790	-0.06852	0.15479	0.41916	0.04443	0.07576
Q40	-0.00619	0.05476	-0.00319	0.03104	0.10453	-0.00007	0.07096	-0.05796
Q41	-0.00470	-0.42430	-0.21082	-0.03883	0.07209	-0.02076	-0.04617	-0.03878
Q42	-0.09882	0.58219	0.04439	0.05794	0.10549	-0.03319	-0.03962	-0.00832
Q43	-0.06004	0.24309	0.05816	0.21258	-0.03315	0.00823	0.25735	-0.03907
Q44	-0.03439	0.08125	0.69514	0.07112	0.04897	0.00398	-0.09171	-0.00089
Q45	-0.02918	0.06540	0.05055	0.66107	0.02402	-0.04107	0.04348	-0.03299
Q46	-0.01726	-0.03416	-0.01961	-0.04699	-0.22813	-0.01009	-0.07768	0.00168
Q47	0.01187	0.04958	0.03510	-0.00198	0.51626	0.00726	-0.03288	0.02597
Q48	0.17297	-0.18026	-0.02390	-0.04354	0.09761	-0.08691	-0.02517	0.09347
Q49	0.14164	-0.00833	-0.00131	-0.19389	0.10222	0.02917	0.03311	0.02667
AGE	0.30027	0.11064	0.34322	-0.05112	0.04400	-0.42146	0.14731	0.02974
SEX	0.08109	0.06972	0.06496	0.26711	-0.15334	-0.11444	0.27886	0.12094

VARIMAX ROTATED FACTOR MATRIX

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	FACTOR 8	FACTOR 9	FACTOR 10
G1	0.00426	-0.04019	0.08627	0.09449	0.05662	0.07387	-0.08355	0.22006	-0.00984	0.05013
G2	0.04273	0.08358	0.20981	-0.00064	0.09041	0.26734	0.08693	-0.02487	0.03188	-0.04001
G3	-0.09834	0.22886	0.14865	-0.09189	0.07060	0.01351	-0.02790	0.11629	0.02805	-0.08698
G4	0.10765	-0.04597	0.21795	0.06854	0.10613	0.23146	0.02377	0.05069	0.05539	-0.00129
G5	0.09283	-0.00609	0.03687	0.00043	-0.01990	0.35084	0.08141	0.01662	0.01644	0.05907
G6	-0.07168	0.00519	0.15824	-0.11421	0.12937	0.00654	-0.04177	0.06091	-0.05635	0.01620
G7	0.04512	-0.01877	0.02153	0.02664	0.03218	0.06127	-0.01591	0.00103	0.04470	-0.02349
G8	0.07410	-0.07354	0.19186	0.07827	-0.00757	0.22149	-0.07849	0.01701	-0.05555	-0.02820
G9	0.29016	-0.16264	0.01543	0.08884	-0.12990	0.07830	0.06452	-0.03687	0.07790	-0.03144
G10	0.05059	0.09669	0.01722	0.00566	-0.05315	0.06656	0.27334	-0.04011	0.02168	0.03947
G11	-0.02896	0.00819	0.15978	0.11922	0.05246	0.07056	-0.14942	0.14851	0.03009	0.12101
G12	-0.09487	0.05198	-0.36757	-0.02850	0.07484	0.01497	0.02730	-0.05708	0.01079	0.01780
G13	-0.03454	-0.09229	0.19470	-0.09594	0.00071	0.00498	-0.19690	0.02048	-0.07399	0.01908
G14	-0.02296	0.09337	0.21684	-0.01467	-0.02078	0.16567	0.09650	0.05702	-0.04688	-0.00093
G15	-0.01610	0.06283	0.19812	-0.11051	0.08566	0.07127	-0.03823	0.04132	-0.00269	0.07036
G16	0.00568	0.01997	0.45566	-0.04898	0.07958	0.15618	0.01842	0.04111	-0.01252	0.09283
G17	0.13927	0.02404	0.04310	-0.01586	0.36857	0.05094	-0.00621	0.09160	-0.03459	-0.00649
G18	0.05080	-0.00954	0.06184	-0.01521	0.36554	-0.01974	-0.08327	0.05093	-0.03365	0.02134
G19	-0.10801	-0.13843	0.08760	-0.04337	0.13243	-0.08067	-0.27630	0.10915	0.03588	0.06407
G20	0.25564	-0.04580	-0.01777	-0.07816	0.01766	0.00279	0.00403	-0.02863	-0.05142	-0.01781
G21	-0.10614	0.03970	0.01195	-0.04698	-0.02898	-0.05138	-0.07842	0.00092	-0.03409	0.01827
G22	-0.00201	0.02936	0.10536	-0.07752	-0.01265	0.08342	0.06647	-0.00627	-0.07262	0.02649
G23	0.33013	-0.33191	0.00462	0.06533	-0.06056	-0.01375	0.04225	0.01154	0.02456	-0.06489
G24	-0.16358	0.21934	0.03791	-0.14801	0.28196	0.03290	-0.05522	0.12286	0.02046	-0.01668
G25	0.42640	-0.03941	-0.11895	-0.03905	0.11655	0.02346	0.07640	-0.07986	0.06762	0.00517
G26	0.44925	-0.16755	-0.05675	0.13824	0.04509	0.04336	0.10001	-0.08602	0.03457	-0.00535
G27	0.45741	-0.07538	-0.01703	0.10346	0.08460	-0.04102	-0.06058	0.06177	0.08299	-0.01339
G28	-0.45866	-0.04048	0.06621	0.02405	0.02212	0.01996	0.00229	0.02922	0.07051	-0.07315
G29	-0.21558	0.34826	0.03471	-0.09633	-0.06582	-0.07740	0.02491	-0.01900	-0.09309	0.19036
G30	0.28518	0.00672	0.01806	0.00022	-0.01985	0.11166	0.00288	0.01593	-0.07273	0.00343
G31	0.01776	0.34967	0.06591	0.08191	-0.00804	0.05838	0.21165	-0.03392	0.02992	0.13032
G32	0.08985	-0.37480	0.08456	-0.12684	0.01184	-0.03899	-0.07671	0.07837	-0.00172	-0.01365
G33	0.43063	0.04124	0.00934	-0.01570	0.02213	0.06983	0.01006	0.05534	-0.02374	0.02692
G34	-0.44174	-0.14180	-0.00286	-0.04231	0.04500	0.02405	-0.03643	-0.03237	0.03595	-0.00709
G35	0.29967	-0.42349	0.05019	0.04625	-0.01373	0.06306	0.02160	-0.02752	-0.08136	0.08321
G36	-0.33117	0.18149	0.00544	0.04187	0.02306	-0.08751	-0.03545	0.08793	-0.00206	-0.01048
G37	-0.13921	0.52552	0.01341	-0.14758	0.07358	0.01835	0.01951	0.05087	0.03489	0.04915
G38	0.34716	-0.28831	0.07297	-0.00513	0.04884	0.06486	0.00441	-0.00397	-0.01584	0.02369
G39	-0.32832	0.31123	-0.07213	-0.08108	-0.02952	-0.05549	-0.00678	0.01009	-0.06959	0.11858
G40	0.04249	-0.07439	0.02506	0.37018	0.05365	0.04048	-0.01168	0.04470	0.03500	0.10713
G41	-0.07688	0.00153	0.07521	-0.51523	0.07224	0.00386	-0.03176	0.06482	-0.11860	-0.01091
G42	-0.19857	0.04063	-0.13337	0.22592	-0.07566	-0.03689	0.01413	-0.02905	0.12815	0.09611
G43	0.05200	-0.00691	0.10494	0.19320	-0.01231	0.05932	-0.03540	-0.01298	0.24788	-0.00255
G44	-0.03703	0.00791	-0.07665	0.14820	-0.12767	0.00884	0.02760	-0.30417	0.04506	0.06465
G45	0.02345	0.04004	0.01831	0.12211	-0.04851	-0.00825	0.03593	-0.03252	0.31157	-0.00256
G46	0.11512	0.04823	-0.17479	-0.16907	0.08243	0.04191	-0.05066	-0.01615	-0.05170	-0.16599
G47	-0.00614	0.10078	0.06409	0.06291	0.01969	0.03637	0.01197	-0.00776	-0.00930	0.30427
G48	-0.07107	0.00006	0.40640	-0.04899	0.10785	0.02034	-0.01276	0.04177	-0.00543	0.04445
G49	-0.00073	-0.03634	0.14840	-0.18171	0.11287	0.07578	-0.06953	0.00309	-0.12117	0.02418
AQE	0.09020	-0.13801	-0.23497	-0.00536	-0.17429	0.02285	0.15635	-0.30929	0.05746	-0.01338
SEX	0.30543	-0.13765	0.13109	0.35480	-0.09413	0.12591	0.05483	-0.05243	0.20073	-0.10020

	FACTOR 11	FACTOR 12	FACTOR 13	FACTOR 14	FACTOR 15	FACTOR 16	FACTOR 17	FACTOR 18	FACTOR 19	FACTOR 20
Q1	-0.02361	-0.11699	0.01301	-0.03116	0.04923	-0.04437	-0.01498	0.00443	0.00395	-0.02802
Q2	-0.00790	0.09390	0.06826	0.05217	-0.01032	-0.03851	0.04581	0.10105	0.09780	-0.00276
Q3	0.04864	-0.09538	0.13855	-0.06834	0.01940	-0.01281	-0.03407	-0.03396	0.05476	-0.06497
Q4	0.09667	0.06762	-0.00419	0.01746	-0.05623	-0.09394	-0.04184	-0.02787	-0.07241	0.01290
Q5	0.00019	0.02590	0.05395	0.06038	-0.00502	0.03495	-0.00416	-0.01644	-0.00545	0.00331
Q6	0.27400	0.05739	0.03524	0.04132	0.00706	0.00914	0.02571	0.02838	0.02391	0.00023
Q7	0.01455	0.02244	0.02272	0.24376	-0.00125	0.00654	0.00320	0.00738	0.00799	0.00067
Q8	-0.06190	-0.03594	-0.00947	0.06595	0.10087	-0.00155	0.03551	0.03228	-0.01823	0.00297
Q9	0.02723	0.15295	-0.13597	0.03419	0.03740	0.05179	0.04736	-0.04700	-0.01856	-0.02649
Q10	-0.02457	0.04371	0.04835	-0.00002	-0.00418	0.00101	0.01140	0.00238	0.00668	-0.01294
Q11	0.03516	-0.07145	-0.03161	0.02480	0.01357	0.02021	0.01879	-0.03745	0.02819	0.09132
Q12	0.05481	0.05942	-0.04770	0.01980	-0.01073	-0.02970	0.02397	0.03995	0.03576	0.00042
Q13	0.01994	-0.03935	0.02293	-0.00808	0.22609	-0.00866	0.03634	-0.00632	0.01522	0.00368
Q14	0.09122	-0.00012	0.09963	0.07772	-0.00621	0.02119	0.00126	0.19743	-0.01173	0.00256
Q15	0.06005	0.01002	0.00887	0.09249	0.05004	0.02336	0.06216	-0.01219	0.01677	0.01831
Q16	0.06975	0.04596	0.00770	-0.02053	-0.00525	0.00525	0.09142	0.06175	0.05318	-0.03354
Q17	0.07535	0.00733	0.08830	0.06552	0.01314	0.00489	0.05875	0.05271	-0.01297	0.05440
Q18	-0.00783	0.00356	-0.08806	-0.00267	-0.00308	-0.02276	-0.01020	-0.03724	0.00852	-0.03030
Q19	-0.02883	-0.07933	-0.01261	0.06910	0.05294	-0.01101	0.07772	-0.02568	0.00830	-0.04243
Q20	0.09841	0.04167	0.02896	0.08706	0.02366	0.02063	0.03371	-0.01494	0.16810	-0.00132
Q21	-0.02847	-0.28207	0.03242	-0.03254	0.01066	-0.00274	0.01139	0.00001	-0.00894	0.00593
Q22	0.01984	-0.03714	0.28244	0.04138	0.00908	-0.00681	0.01219	0.01531	0.00473	0.00132
Q23	-0.00869	0.02769	-0.03476	-0.00118	0.02693	-0.00720	-0.06837	0.05785	0.00692	-0.04632
Q24	0.14828	0.06626	0.13257	0.06152	-0.04438	0.06475	0.01305	-0.00398	0.02422	0.00878
Q25	-0.03227	0.04977	-0.02679	-0.01764	-0.00896	-0.04191	-0.01449	0.01416	0.00240	0.06590
Q26	0.02803	0.02250	0.00090	-0.01319	0.03801	-0.05370	-0.05087	0.01296	-0.05656	0.00527
Q27	-0.05978	-0.05188	-0.00226	0.01169	0.08876	-0.11410	-0.01525	0.00023	-0.03341	0.03856
Q28	-0.11368	0.03023	0.03335	0.01944	-0.01044	-0.01251	0.05377	0.04260	0.04503	0.02976
Q29	0.07697	-0.01817	0.02949	-0.06681	0.05351	0.05410	-0.08524	-0.01327	0.05499	0.01584
Q30	0.03738	0.05020	-0.05273	0.05830	-0.02923	0.16738	-0.00889	0.01587	0.00096	0.01333
Q31	-0.02558	0.05462	0.02490	-0.05558	0.00318	-0.06569	-0.04615	0.03913	0.02606	0.00583
Q32	0.10527	-0.00543	0.04929	-0.00929	0.03838	0.06708	-0.05183	-0.09304	0.02177	0.00816
Q33	0.01885	0.01624	-0.01121	0.03780	0.04470	0.08229	0.01631	-0.07767	0.01899	0.00491
Q34	-0.00827	0.01908	-0.00052	0.00214	0.11710	-0.00784	0.02466	-0.03888	0.04073	0.08151
Q35	0.05038	0.02400	0.03781	-0.01139	0.00577	-0.01885	0.00928	0.04335	0.05632	-0.00751
Q36	0.06399	-0.07236	-0.08408	-0.03913	0.02563	0.00689	-0.00498	0.10217	-0.02778	-0.00733
Q37	0.09577	-0.04866	0.06392	0.00148	-0.05827	0.06997	-0.00410	0.00795	-0.03176	-0.01053
Q38	-0.00112	0.07827	-0.02173	0.01184	-0.12908	0.02447	0.04340	0.01794	-0.03646	-0.08467
Q39	0.05129	-0.01164	0.02299	0.06117	0.02952	0.16512	0.04562	-0.00272	0.10080	-0.04085
Q40	-0.01816	0.08438	-0.06860	0.01165	-0.06042	-0.00118	-0.07277	0.00990	0.00676	0.00066
Q41	0.04218	0.03530	0.03263	-0.03158	-0.02030	0.00877	-0.01581	-0.00040	0.02270	-0.00988
Q42	-0.03718	-0.05124	0.10209	-0.11191	0.07455	0.04311	0.02685	0.00597	-0.01280	-0.00941
Q43	-0.01426	0.05570	-0.03685	0.04427	0.02755	0.04888	0.06830	-0.08052	-0.00293	-0.02353
Q44	-0.03373	-0.07833	-0.01015	0.00413	0.03194	-0.00839	-0.00541	0.00316	0.03455	-0.01437
Q45	-0.02282	0.03595	-0.05005	0.05318	-0.03372	-0.03700	-0.06102	0.02262	-0.00646	0.00857
Q46	-0.00625	-0.05691	0.01003	0.00795	0.03387	-0.00302	0.07188	0.02015	-0.02365	0.13127
Q47	0.00317	-0.02424	0.02411	-0.02918	0.00422	0.00057	0.01458	0.00212	0.00800	0.00101
Q48	0.04735	-0.00396	0.04727	0.03170	0.01203	-0.03379	-0.02996	0.00380	-0.01647	0.00964
Q49	0.04788	-0.02862	0.03016	0.01648	0.03263	-0.00090	0.22645	0.00338	0.02220	0.01558
AGE	-0.14665	0.01539	0.06633	-0.11808	-0.00644	-0.09794	-0.02127	-0.08733	-0.05988	0.00725
SEX	-0.04116	0.11779	-0.05827	0.14069	-0.03381	-0.08585	0.01040	0.01144	-0.04723	0.00516

	FACTOR 21	FACTOR 22	FACTOR 23	FACTOR 24	FACTOR 25	FACTOR 26	FACTOR 27	FACTOR 28	FACTOR 29	FACTOR 30
Q1	-0.01453	0.01150	0.01458	0.00104	0.06597	0.00787	0.00073	-0.00370	0.00151	-0.00032
Q2	-0.04386	0.02726	-0.04020	0.00348	0.02378	-0.04100	0.00459	0.00896	0.00282	0.00219
Q3	-0.00942	-0.02958	-0.03011	0.02319	0.02893	0.04376	0.00473	0.01410	-0.00335	-0.00602
Q4	-0.00307	0.00248	0.08452	0.02304	0.02904	-0.00698	0.00581	-0.01283	-0.00182	-0.00023
Q5	0.00972	-0.00176	-0.00261	0.01340	-0.01023	0.01001	-0.00223	-0.00427	-0.00006	-0.00093
Q6	0.00387	0.01281	0.00166	0.00064	-0.00033	-0.00023	-0.00034	-0.00079	0.00102	-0.00001
Q7	0.00006	0.00396	-0.00022	-0.00110	-0.00026	0.00022	-0.00013	0.00018	0.00001	-0.00006
Q8	0.00243	0.01359	-0.00164	-0.09585	-0.00152	0.00737	-0.00012	-0.00186	-0.00236	0.00160
Q9	0.10369	-0.00251	0.00767	-0.02676	-0.01396	-0.00527	-0.01477	-0.00910	0.00485	-0.00258
Q10	-0.01517	-0.00063	-0.00690	-0.01042	0.00133	0.00209	-0.00158	0.00198	-0.00328	-0.00426
Q11	0.00187	-0.01364	-0.03067	-0.04728	0.01008	-0.00742	0.01527	0.01093	0.00427	-0.00637
Q12	-0.01708	-0.01877	-0.00457	0.01941	-0.03845	-0.01934	0.00877	-0.00828	0.00610	0.00416
Q13	0.00270	-0.00012	-0.00012	-0.00036	0.00084	-0.00092	-0.00202	0.00054	0.00067	0.00027
Q14	-0.00113	-0.01486	0.00257	-0.00463	-0.00513	-0.00063	-0.00122	-0.00050	0.00093	-0.00139
Q15	-0.00365	0.13429	-0.00200	-0.00319	0.00280	-0.00140	0.00007	0.00015	-0.00048	-0.00016
Q16	0.02961	-0.02482	-0.03040	0.01719	-0.00067	-0.01964	0.00470	0.00863	-0.00890	0.00707
Q17	0.04592	0.00110	0.02897	-0.01663	0.01232	-0.00319	0.00672	0.00367	-0.00500	0.00039
Q18	-0.02686	0.01133	-0.01384	-0.00884	-0.00380	-0.00439	-0.00441	-0.00556	0.00643	-0.00036
Q19	-0.04831	0.01421	-0.01663	-0.01713	0.00062	-0.00352	-0.00784	0.00533	-0.01368	-0.01179
Q20	0.00260	0.00772	0.00033	0.00416	-0.00144	0.00013	0.00046	-0.00006	-0.00031	-0.00018
Q21	0.00298	-0.00136	-0.00116	-0.00210	-0.00265	-0.00036	-0.00067	-0.00018	0.00006	0.00007
Q22	0.00226	0.00328	0.00128	-0.00113	-0.00142	-0.00277	-0.00036	-0.00133	0.00045	0.00022
Q23	0.03555	-0.03049	0.08751	-0.02107	-0.01647	-0.00390	-0.00372	-0.02496	-0.00077	0.00199
Q24	-0.04896	-0.02315	-0.03841	0.02341	-0.01321	0.04894	0.00393	0.01979	-0.01707	0.00255
Q25	0.00318	0.04799	0.00538	-0.00991	0.04103	0.03002	0.02933	0.00010	-0.01410	0.00017
Q26	0.01509	0.06459	0.03366	0.02783	0.00295	0.00757	0.00504	-0.00186	0.03037	0.01030
Q27	0.02226	-0.01806	0.01616	-0.02145	-0.01229	0.00416	0.00896	-0.00289	0.00859	0.00520
Q28	-0.01563	-0.06640	-0.01755	-0.03420	0.03996	0.03085	0.01272	0.00694	-0.01578	0.00011
Q29	0.10427	-0.01011	0.02453	0.01047	-0.03336	-0.04377	0.02403	-0.00692	0.00184	0.00508
Q30	0.00262	0.01369	0.00329	0.00728	-0.00451	0.00155	0.00305	0.00324	0.00101	0.00100
Q31	0.03524	0.02998	0.01110	0.05090	-0.01067	-0.08352	0.00164	0.00412	-0.00627	0.00370
Q32	0.08071	-0.03133	-0.01491	0.03836	0.00164	0.00441	0.01069	0.00582	-0.01372	-0.00276
Q33	0.01091	0.00906	-0.02156	0.01203	0.01225	-0.01888	-0.01153	-0.00301	-0.00228	-0.00764
Q34	0.02935	0.00427	0.02132	-0.01868	0.03251	0.01311	0.02954	-0.00260	0.00468	0.00283
Q35	0.01627	0.02082	0.02308	0.01270	-0.02552	-0.01373	0.00703	0.00169	0.00903	0.00921
Q36	-0.00320	0.02064	0.00906	0.00164	0.04666	0.06503	0.00419	0.00127	-0.00289	0.00878
Q37	0.00926	-0.02575	0.02689	0.00164	-0.01808	0.04828	-0.00344	-0.00385	0.00087	0.00323
Q38	-0.04436	-0.01328	0.02076	-0.00492	-0.00099	0.01603	-0.01589	0.01281	0.00731	0.00938
Q39	-0.06570	0.02243	-0.00286	-0.04042	0.01955	0.00486	-0.00999	-0.00706	-0.00164	-0.00202
Q40	-0.01767	-0.00718	-0.04041	0.04585	-0.03518	-0.00800	0.01122	-0.00790	-0.00375	0.00940
Q41	-0.01411	-0.00879	-0.03696	0.03816	-0.02582	-0.00557	0.00960	-0.00030	0.00047	0.00725
Q42	0.07783	-0.00998	0.00686	0.01295	0.04815	0.01162	-0.00593	0.02583	-0.00198	0.00062
Q43	-0.01365	-0.02627	0.01039	-0.04025	-0.02212	0.01006	-0.00781	0.00045	0.02169	-0.00655
Q44	-0.00870	0.00001	-0.00172	-0.00643	0.03854	0.00294	0.00428	-0.00452	-0.00072	-0.00083
Q45	0.00556	0.01133	-0.00459	0.01890	0.00883	-0.00426	0.00405	-0.00078	-0.00944	0.00276
Q46	-0.01076	0.03560	0.00660	0.01683	-0.01197	0.00271	-0.00856	-0.00228	-0.00154	0.00254
Q47	-0.00402	0.00973	0.00052	0.00275	0.00023	0.00204	-0.00211	-0.00045	-0.00016	0.00014
Q48	-0.03639	-0.01684	0.01556	0.01922	-0.04326	-0.00161	-0.00229	-0.01623	0.01058	-0.00041
Q49	0.00149	0.01945	0.00005	-0.00342	-0.00043	0.00007	0.00060	-0.00017	-0.00027	0.00035
AGE	-0.00582	-0.00192	0.02454	0.00832	0.03367	0.00578	-0.00573	0.01511	0.00831	-0.00221
SEX	-0.03633	-0.01254	0.04398	-0.02301	0.02097	-0.00969	-0.00513	0.01559	0.00720	-0.00045

ROTATED STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS
 VARIABLES ARE ORDERED BY THE FUNCTION WITH LARGEST COEFFICIENT AND THE MAGNITUDE OF THAT COEFFICIENT.

	FUNC 1	FUNC 2	FUNC 3	FUNC 4	FUNC 5
Q16	0.80592*	-0.09069	0.07420	0.05180	-0.02310
Q28	-0.51522*	0.42721	0.00432	-0.00456	-0.29196
Q33	0.50165*	0.31331	-0.08950	0.00317	-0.04069
Q14	0.49904*	0.04925	-0.24761	0.18904	-0.07987
Q31	-0.38894*	0.00781	0.09474	-0.16790	-0.01852
Q48	0.37729*	0.26847	0.08891	-0.02326	0.01445
Q26	-0.34705*	0.32936	0.06944	0.20121	-0.16974
Q47	0.29221*	-0.06791	0.23225	-0.26709	0.27346
Q6	0.25420*	-0.14240	-0.12462	-0.11544	-0.17335
Q3	-0.07960	0.44076*	0.06968	-0.38217	-0.13734
Q7	-0.06095	0.42209*	-0.14652	0.01581	0.01853
Q15	0.18675	0.38834*	0.07888	-0.08292	0.00270
Q17	0.04579	0.37968*	-0.34658	-0.17903	0.14170
Q2	-0.12275	-0.36589*	0.21550	0.10897	0.21120
Q1	0.00231	-0.28544*	-0.00324	0.08895	0.14866
Q5	-0.23122	0.25419*	-0.17039	-0.11502	-0.15814
Q24	0.00190	0.47161	0.63058*	-0.04554	-0.02965
Q29	0.02102	-0.13788	0.63005*	0.00902	-0.10438
Q39	0.14787	-0.14471	0.46513*	0.19495	0.16658
Q44	-0.00680	0.12842	0.44880*	0.09136	0.09040
Q37	-0.01704	-0.06716	0.34970*	-0.20461	0.09048
Q35	-0.03531	-0.22956	0.31687*	0.03244	0.13226
Q43	0.19905	0.16506	-0.30008*	0.11657	-0.22598
Q11	0.37052	-0.16925	0.11100	0.38943*	-0.10764
Q9	-0.03319	0.11080	0.24088	-0.38464*	-0.17935
Q30	0.06186	-0.14622	-0.13627	0.36249*	-0.10953
Q36	-0.09724	0.12106	-0.18474	-0.35948*	-0.16409
Q45	-0.01462	0.14772	-0.03981	0.28487*	0.14853
Q21	-0.24535	-0.12759	-0.17972	-0.27678*	-0.07069
Q42	0.04960	0.07055	-0.21742	-0.26300*	0.18475
Q40	-0.04436	-0.23576	-0.19441	-0.12187	0.44565*
Q4	-0.02564	-0.15904	0.09809	-0.03284	0.43907*
Q20	0.03760	-0.05576	-0.13617	0.06539	-0.42965*
Q49	-0.12620	0.05915	0.03680	-0.02019	-0.36369*
Q27	-0.04117	-0.03689	-0.03813	-0.03332	0.35407*
Q13	0.02586	-0.16106	-0.13328	0.03030	0.33799*
Q41	0.20456	-0.12692	0.11231	-0.19073	-0.28591*
Q19	0.10585	0.18263	0.03979	-0.09295	0.21807*
Q22	0.20614	-0.06506	-0.16402	-0.04459	0.20833*

CANONICAL DISCRIMINANT FUNCTIONS EVALUATED AT GROUP MEANS (GROUP CENTROIDS)

GROUP	FUNC 1	FUNC 2	FUNC 3	FUNC 4	FUNC 5
7	0.95544	1.68739	1.49097	0.03525	-0.99513
8	-1.03798	0.45871	-0.35049	0.65412	1.29667
9	0.26576	-2.12432	0.81408	0.41769	-0.92875
11	-1.41159	0.18922	-0.59375	-2.11123	-0.21765
12	3.81485	-0.41127	0.89316	-1.48117	0.86275
13	-0.30297	0.65238	-2.77348	0.83088	-0.40281

CASE SUBFILE	SEGNUM	MIS VAL	SEL	ACTUAL GROUP	HIGHEST PROBABILITY GROUP P(X/G) P(G/X)	2ND HIGHEST GROUP P(G/X)	DISCRIMINANT SCORES
NONAME	1			7	7 0. 2694 0. 9327	12 0. 0472	1. 4793 1. 9230 1. 6310 -0. 6653 1. 3620
NONAME	2			7	7 0. 1832 0. 9998	12 0. 0002	2. 9696 2. 8111 2. 4495 -0. 0730 -0. 2727
NONAME	3			7	7 0. 4684 0. 9987	12 0. 0013	2. 5514 2. 6649 1. 9946 -0. 5909 -0. 1329
NONAME	4			7	7 0. 4541 0. 9984	12 0. 0008	1. 7231 1. 9529 0. 9776 -0. 5511 -0. 1157
NONAME	5			7	7 0. 1383 1. 0000	7 0. 0000	1. 7669 0. 2772 3. 0229 0. 4379 0. 0387
NONAME	6			7	7 0. 1492 0. 9028	12 0. 0958	2. 4128 0. 6469 3. 9556 -0. 5732 -0. 4327
NONAME	7			7	7 0. 6217 0. 9998	8 0. 0002	0. 1952 4. 5633 3. 0022 0. 4500 0. 3361
NONAME	8			7	7 0. 0001 0. 9999	8 0. 0001	0. 6371 0. 2824 1. 8506 0. 8306 -0. 3177
NONAME	9			7	7 0. 5441 0. 9932	12 0. 0038	2. 3839 0. 9171 1. 2780 -0. 3360 -0. 1583
NONAME	10			7	7 0. 8024 0. 9932	13 0. 0027	0. 5862 2. 2738 0. 2221 0. 0595 -0. 4805
NONAME	11			7	7 0. 5627 0. 9727	9 0. 0269	0. 4732 2. 7943 0. 9970 1. 0220 1. 1153
NONAME	12			7	7 0. 3376 0. 9438	9 0. 0344	-0. 4488 0. 4829 2. 7508 -0. 6088 -0. 4800
NONAME	13			7	7 0. 4648 0. 9985	11 0. 0014	0. 1052 0. 0641 2. 4148 -0. 6673 -0. 4800
NONAME	14			7	7 0. 8568 0. 9464	11 0. 0394	0. 1418 1. 1982 1. 1695 -0. 9114 -0. 7863
NONAME	15			7	7 0. 6390 0. 8753	11 0. 1108	0. 4327 1. 2759 1. 0015 -0. 5101 -0. 4234
NONAME	16			7	7 0. 4719 0. 8996	9 0. 0759	1. 0748 0. 5212 1. 0464 -0. 7495 -0. 7729
NONAME	17			7	7 0. 9088 0. 9981	12 0. 0006	1. 4957 1. 5466 0. 8395 -0. 5924 -0. 6329
NONAME	18			7	7 0. 4282 0. 9988	11 0. 0001	1. 9732 1. 9732 0. 4242 -0. 6668 -0. 6887
NONAME	19			***	7 0. 4483 0. 8055	7 0. 1703	0. 8419 1. 0178 0. 3171 -0. 0037 -0. 4560
NONAME	20			7	7 0. 3730 0. 9751	8 0. 0204	1. 7781 2. 4975 0. 2515 0. 5642 -0. 4935
NONAME	21			7	7 0. 3601 0. 7005	12 0. 2969	1. 1196 1. 8719 1. 8719 -0. 3519 -0. 5000
NONAME	22			7	7 0. 1013 0. 5040	11 0. 4101	-1. 5558 0. 8687 0. 6394 -0. 1911 -0. 1983
NONAME	23			7	7 0. 3995 0. 9994	9 0. 0005	1. 6083 1. 8322 1. 7188 -0. 3904 -0. 3904
NONAME	24			7	7 0. 7207 0. 8756	9 0. 0716	1. 0655 0. 4749 0. 3441 -0. 0585 -0. 7506
NONAME	25			7	7 0. 3610 0. 8554	8 0. 0718	-1. 3268 1. 5898 1. 0774 0. 0427 -0. 2829
NONAME	26			***	8 0. 3458 0. 4871	13 0. 3288	0. 9348 0. 4143 -0. 6376 0. 9989 1. 0651
NONAME	27			7	7 0. 0677 0. 9791	9 0. 0203	0. 5337 0. 7995 2. 5327 0. 7397 -0. 9518
NONAME	28			13	13 0. 7096 0. 6705	8 0. 3125	0. 0248 1. 3791 -1. 3404 0. 8902 0. 0916
NONAME	29			13	13 0. 9712 0. 9300	8 0. 0659	-0. 7364 1. 1857 -2. 3036 0. 6081 -0. 0242
NONAME	30			13	13 0. 8411 0. 9464	8 0. 0492	-1. 2062 -0. 3446 -2. 3288 1. 0299 -0. 5045
NONAME	31			13	13 0. 0116 1. 0000	8 0. 0000	1. 6510 2. 6907 -3. 0560 1. 8460 -0. 1178
NONAME	32			13	13 0. 9317 0. 9993	8 0. 0005	-0. 3920 0. 2016 -3. 6379 0. 6855 -0. 9958
NONAME	33			13	13 0. 5626 0. 9997	8 0. 0003	1. 3677 1. 3677 -3. 9121 1. 2827 -0. 1027
NONAME	34			13	13 0. 8223 0. 9081	8 0. 0729	-1. 2797 1. 2733 -1. 9657 0. 4760 -0. 6710
NONAME	35			13	13 0. 4123 0. 9986	11 0. 0014	-0. 2521 1. 3876 -3. 8137 0. 4459 -0. 7342
NONAME	36			13	13 0. 3529 0. 9894	9 0. 0058	-0. 3788 -0. 7280 -3. 3320 0. 4043 -0. 1139
NONAME	37			13	13 0. 8815 0. 9468	9 0. 0527	-0. 5344 -0. 2379 -3. 5819 1. 5017 -0. 4491
NONAME	38			13	13 0. 6881 0. 8335	11 0. 1087	-0. 3211 0. 4049 -2. 5543 -0. 7561 -0. 2671
NONAME	39			13	13 0. 9581 0. 9501	8 0. 0462	0. 9573 0. 2102 -2. 7592 0. 5568 1. 9225
NONAME	40			13	13 0. 8266 0. 8068	8 0. 1918	-0. 9622 0. 2491 -2. 4809 0. 6830 0. 7861
NONAME	41			13	13 0. 6205 0. 9969	8 0. 0031	-1. 1045 1. 5219 -3. 7113 1. 7985 0. 1490
NONAME	42			13	13 0. 5998 0. 5707	8 0. 2201	-1. 4068 0. 1493 -1. 5308 0. 0533 -0. 5946
NONAME	43			13	13 0. 9783 0. 9975	8 0. 0024	0. 4233 0. 9549 -3. 1018 1. 0581 -0. 3582
NONAME	44			13	13 0. 6843 0. 6948	8 0. 1623	-0. 0099 0. 7252 -1. 3759 -0. 1955 -0. 4665
NONAME	45			13	13 0. 9737 0. 9943	8 0. 0052	0. 4151 -3. 1623 0. 1623 0. 4427 0. 0016
NONAME	46			13	13 0. 6659 0. 9979	8 0. 0013	-0. 3960 -0. 4108 -2. 7477 1. 4475 -0. 7072
NONAME	47			0	0 0. 5487 0. 9985	7 0. 0014	0. 2956 -1. 7771 0. 6613 0. 1121 -0. 8534
NONAME	48			0	0 0. 8694 0. 9609	8 0. 0188	-0. 2793 -1. 8919 -0. 1701 1. 1165 -0. 4332
NONAME	49			***	11 0. 5585 0. 9747	9 0. 0240	-0. 5490 -1. 2931 -0. 6676 -0. 3631 -0. 1805

Summary of Discriminant Classification Results

CASE SUBFILE	SEGNUM	MIS VAL	SEL	ACTUAL GROUP	HIGHEST PROBABILITY GROUP P(X/G) P(G/X)	2ND HIGHEST GROUP P(G/X)	DISCRIMINANT SCORES				
NONAME	50			9	0 7936 0 9985	11 0 0009	0 8890	-2 4640	0 4486	-0 8290	-1 3690
NONAME	51			9	0 5529 0 9981	12 0 0016	1 6937	-2 6621	2 0767	-0 3830	-0 7003
NONAME	52			9	0 5254 0 9148	12 0 0768	1 5824	-1 8051	2 1406	-0 8841	-0 3930
NONAME	53			9	0 8375 0 9958	7 0 0025	-0 6476	-1 6062	1 6708	-0 7744	-1 2740
NONAME	54			9	0 4641 0 9999	7 0 0001	0 9233	-2 6641	2 3498	1 2246	0 0413
NONAME	55			9	0 4887 0 9998	8 0 0002	-0 1769	-2 3488	2 0678	1 7143	-1 8957
NONAME	56			9	0 7489 0 9928	11 0 0063	0 3349	-2 4373	0 7302	-1 1640	-0 6640
NONAME	57			9	0 6394 1 0000	12 0 0000	1 3977	-2 2971	0 2111	0 5015	-1 5345
NONAME	58			9	0 5193 0 9998	8 0 0002	-0 1054	-2 4916	1 6259	0 8925	-0 2203
NONAME	59			9	0 7267 0 9759	13 0 0213	-0 5149	-1 2223	-0 3643	2 2296	1 1744
NONAME	60			9	0 4798 0 9994	12 0 0005	1 1376	-2 3598	0 6263	-1 0543	-1 0399
NONAME	61			9	0 1556 0 9978	8 0 0013	0 2013	-2 1344	1 9652	0 5697	1 2361
NONAME	62			9	0 3482 0 6413	8 0 0497	0 1817	-1 3724	1 0280	0 4060	1 3009
NONAME	63			9	0 7548 1 0000	8 0 0000	-0 3641	-2 2324	1 3901	1 2189	-1 1397
NONAME	64			9	0 7847 0 9955	7 0 0026	-0 2023	-1 4843	0 4079	0 5757	-2 2042
NONAME	65			9	0 6159 0 8875	7 0 1103	0 2921	-2 6888	1 4102	1 0187	-1 8099
NONAME	66			9	0 2557 0 9970	7 0 0030	1 4093	-2 0923	2 0528	1 1338	-2 8350
NONAME	67			9	0 8649 0 9996	7 0 0003	1 0118	-2 4051	1 4849	0 9717	-0 7728
NONAME	68			9	0 3852 0 9250	11 0 0422	-1 7868	-2 2152	0 8156	-0 2348	-0 1468
NONAME	69			9	0 7508 0 9970	11 0 0027	-0 2726	-2 7846	-0 1490	-0 4654	-1 4149
NONAME	70			9	0 9308 0 9916	7 0 0060	0 3709	-1 3690	0 8622	1 2215	-1 2604
NONAME	71			9	0 4847 0 9980	8 0 0020	0 1693	-2 2676	0 2889	1 3487	-0 4873
NONAME	72			9	0 1409 0 9998	7 0 0002	0 0254	-2 3840	1 1844	0 6619	-3 7516
NONAME	73			9	0 7937 0 9749	7 0 0178	0 9156	-1 1255	0 0295	0 3037	-1 5092
NONAME	74			9	0 4965 0 6828	9 0 3055	0 9105	-0 0505	0 7406	-2 2378	-1 8421
NONAME	75			9	0 1966 0 9985	7 0 0008	0 7322	-1 9829	1 8975	-0 8095	-1 4754
NONAME	76			9	0 5093 0 9998	11 0 0001	0 3856	-2 7764	0 0141	0 4848	-0 6354
NONAME	77			9	0 0750 0 8887	12 0 1104	2 9777	-2 3663	1 3356	1 5078	-0 1368
NONAME	78			9	0 3721 0 9323	8 0 0542	-1 3774	-2 4781	-0 5893	0 6613	-0 2085
NONAME	79			9	0 6283 0 5887	8 0 2763	-0 3940	-0 9515	0 0698	0 1355	-0 0364
NONAME	80			9	0 4236 0 9747	8 0 0132	-1 1697	-0 9700	1 0549	1 3612	-1 7063
NONAME	81			9	0 8955 0 9975	7 0 0015	0 0739	-1 8313	1 7491	1 2588	-0 7784
NONAME	82			9	0 4706 0 9988	11 0 0007	0 0007	-2 3268	-0 3337	0 0417	-2 6607
NONAME	83			9	0 9429 0 9958	11 0 0026	-0 2464	-2 4343	0 7385	-0 3655	-0 4354
NONAME	84			9	0 8634 0 8793	13 0 0967	-0 7753	-0 5969	-1 0838	0 7342	0 8866
NONAME	85			9	0 7531 0 9472	7 0 0303	-0 1309	-0 9292	-0 0932	1 7080	0 0000
NONAME	86			9	0 7663 0 7480	11 0 1908	-1 4354	-0 5194	-0 2871	-0 0023	0 2877
NONAME	87			9	0 7406 0 7404	13 0 1299	-0 6985	-0 0934	-1 5295	0 0609	-0 7592
NONAME	88			9	0 5849 0 7304	8 0 2658	0 4148	1 8106	0 8410	0 6013	0 6500
NONAME	89			9	0 8464 0 9059	11 0 0916	-1 4323	-0 5795	-0 3609	-0 6039	0 8133
NONAME	90			9	0 8716 0 9972	13 0 0019	-1 5063	-0 2811	-0 5123	0 0831	-2 2226
NONAME	91			9	0 5347 0 9967	11 0 0016	-2 0805	-0 9474	-0 5713	0 8966	2 6117
NONAME	92			9	0 5029 0 9018	13 0 0748	-1 7034	-1 1499	-1 1604	1 2414	0 7498
NONAME	93			9	0 5678 0 9971	13 0 0023	-0 9905	-0 2479	-0 2426	2 3098	0 0832
NONAME	94			9	0 7421 0 9467	9 0 0455	-1 3208	-0 3581	-0 6385	1 3483	0 5762
NONAME	95			9	0 9677 0 9659	11 0 0264	-0 8964	-0 5285	0 3397	-0 0023	1 3436
NONAME	96			9	0 2772 0 9451	11 0 0507	-2 1681	-0 2833	0 4854	0 3318	-1 4774
NONAME	97			9	0 1415 0 8827	8 0 1144	-2 7549	-0 7904	-3 3803	0 7864	0 9671
NONAME	98			9	0 6871 0 9977	9 0 0008	-0 1694	-0 1110	0 1249	0 5845	2 6285

CASE SUBFILE	SEQNUM	MIS VAL	SEL	ACTUAL GROUP	HIGHEST PROBABILITY GROUP P(X/G) P(G/X)	2ND HIGHEST GROUP P(G/X)	DISCRIMINANT SCORES				
NONAME	99			8	0.7731 0.7640	11 0.1877	-0.1991	0.6593	-0.1785	-0.5957	0.8641
NONAME	100			8	0.8240 0.9688	13 0.0302	-1.6988	0.9961	-1.3158	1.1834	1.7872
NONAME	101			8	0.4349 0.9756	9 0.0150	-1.8501	0.1848	1.2191	1.5969	0.4253
NONAME	102			8	0.5523 0.9971	7 0.0017	-2.1434	1.1949	0.8904	1.4561	1.1344
NONAME	103			8	0.2164 0.6119	9 0.2443	1.3782	-0.5833	-0.4821	0.5890	0.9613
NONAME	104			8	0.8788 0.8752	11 0.0869	-0.9987	-0.0220	-1.1425	0.2994	1.3948
NONAME	105			8	0.0399 0.6542	13 0.3430	-0.5674	0.9066	-1.3121	0.3716	0.6206
NONAME	106			8	0.0106 0.9246	13 0.0741	0.0490	0.9681	-2.1270	0.0896	3.2373
NONAME	107		***	9	0.2440 0.9388	13 0.0264	1.8288	-1.3424	-0.5717	1.4550	-0.1240
NONAME	108			8	0.7153 0.6680	11 0.1818	-1.3979	1.2167	-0.9508	0.0651	1.1482
NONAME	109		***	11	0.2936 0.6266	8 0.3675	-1.9068	-1.2087	-0.3037	0.2437	1.5418
NONAME	110			8	0.5733 0.9989	13 0.0007	-0.9865	0.0441	0.1404	0.2454	2.3933
NONAME	111		***	7	0.0983 0.7229	8 0.2765	-0.3437	3.3573	1.2530	1.7569	1.1903
NONAME	112			8	0.5376 0.9478	11 0.0353	-1.7252	2.0763	0.3701	0.5559	0.9556
NONAME	113		***	13	0.5586 0.9868	8 0.0130	-1.9904	0.5839	-2.7598	1.0789	-0.8550
NONAME	114			8	0.7969 0.9646	11 0.0278	-1.4297	1.5459	-0.3777	0.0500	1.3281
NONAME	115		***	13	0.2212 0.6201	8 0.3797	-1.9014	1.1295	-1.8975	0.5560	3.3583
NONAME	116			8	0.2970 0.5413	7 0.3780	1.0443	0.8452	-0.3187	0.6968	1.4104
NONAME	117			8	0.4004 0.7665	13 0.2168	0.7266	1.4732	-1.2629	0.2841	1.4247
NONAME	118			8	0.2664 0.9996	11 0.0002	-1.7886	0.6162	1.5137	1.0041	2.7953
NONAME	119			8	0.7586 0.8540	11 0.0976	-1.6654	-0.5095	-0.2290	0.1902	0.4285
NONAME	120		***	11	0.6772 0.7003	8 0.2909	-1.9077	0.5580	-0.8151	0.9667	0.7748
NONAME	121			8	0.1161 0.8584	7 0.1408	-0.7174	1.3987	-2.2173	1.7582	1.4679
NONAME	122			8	0.3053 0.9998	13 0.0001	-1.6015	0.3253	-0.2353	0.9940	3.6516
NONAME	123			8	0.3925 0.5137	13 0.4132	0.4686	-0.7468	-1.3684	0.7702	0.6462
NONAME	124			8	0.8260 0.9973	11 0.0017	-0.9268	-0.2540	-0.1213	0.4566	2.5426
NONAME	125			8	0.9877 0.9439	13 0.0495	-0.9128	0.4714	-1.1094	0.6104	1.4083
NONAME	126			8	0.5533 0.9900	7 0.0077	-0.6205	0.9434	0.7989	0.6914	1.7847
NONAME	127			8	1.2330 0.7255	13 0.2744	0.8648	0.7915	-2.7273	1.5910	2.7115
NONAME	128			8	0.9580 0.9958	11 0.0021	-1.9071	0.5352	0.0024	1.0467	1.4212
NONAME	129			8	0.2540 0.9311	11 0.0630	-2.1871	-0.8051	1.1007	-0.4171	1.9246
NONAME	130			8	0.9600 0.8656	13 0.1209	-0.5562	0.9019	-0.9139	0.6658	0.7622
NONAME	131			8	0.3753 0.9723	11 0.0275	-2.8759	0.0792	0.5678	-0.0682	1.9730
NONAME	132			1	0.5094 0.9912	7 0.0082	3.3763	0.5327	-0.1021	-0.0053	0.0384
NONAME	133		***	7	0.5376 0.9640	12 0.0359	2.5284	1.9753	1.4900	-1.1891	-0.8320
NONAME	134			1	0.6327 0.9970	7 0.0028	3.2688	-0.3263	1.3822	-0.2516	-0.6863
NONAME	135			1	0.4396 1.0000	7 0.0000	4.8582	0.4598	1.3689	-0.8008	1.8597
NONAME	136			1	0.8980 0.9999	7 0.0001	4.1560	0.0775	1.8992	-1.2143	1.4517
NONAME	137			1	0.2143 1.0000	7 0.0000	3.9502	-0.3447	1.2204	-0.9984	3.0201
NONAME	138			1	0.1916 1.0000	9 0.0000	4.9470	-0.1004	-0.1066	0.4269	0.2557
NONAME	139			1	0.9319 1.0000	9 0.0000	4.1202	-1.2784	0.8577	-0.3775	1.5495
NONAME	140			1	0.8379 0.9998	9 0.0002	3.8885	-1.2954	0.1855	0.6069	1.0305
NONAME	141			1	0.4587 0.9363	9 0.0633	2.5271	-2.0508	0.5462	-1.2880	0.4668
NONAME	142			1	0.8818 1.0000	7 0.0000	3.7405	-0.1106	-0.2748	-0.8193	1.2885
NONAME	143			1	0.2389 0.9999	9 0.0001	4.2358	-1.4524	0.9128	0.3326	1.2024
NONAME	144			1	0.4739 0.9893	7 0.0054	3.8960	-0.1327	0.2318	-0.0000	0.4294
NONAME	145		***	11	0.0000 0.8096	11 0.1750	3.8263	-0.5031	-0.3140	0.5956	3.3210
NONAME	146			11	0.3333 1.0000	8 0.0000	1.2895	0.9101	-0.7654	0.6335	1.5612
NONAME	147			11	0.8231 0.9866	8 0.0094	-0.7509	0.3032	-1.5868	0.4072	0.5956

CASE SUBFILE	SEGNUM	MIS VAL	SEL	ACTUAL GROUP	HIGHEST PROBABILITY GROUP P(X/G) P(G/X)	2ND HIGHEST GROUP P(G/X)	DISCRIMINANT SCORES				
NONAME	148			11	11 0.7701 0.8856	9 0.0578	-0.2665	-0.4943	-0.5779	-1.3148	-0.5776
NONAME	149			11	11 0.7972 0.9962	8 0.0022	-2.3808	-0.0916	-0.8799	-1.7118	-1.2674
NONAME	150			11	11 0.3611 0.9333	8 0.0557	-2.8640	-0.4310	-0.5265	-0.8790	-0.6686
NONAME	151			11	11 0.8165 0.9960	8 0.0021	-1.2120	-1.1371	-1.1916	-2.3761	-0.1579
NONAME	152			11	11 0.9956 0.9862	8 0.0112	-1.3914	-0.1542	-1.0402	-1.9168	-0.0330
NONAME	153			11	11 0.5039 0.9992	9 0.0005	-2.2746	-1.3799	-0.0195	-2.9679	-0.2947
NONAME	154			11	11 0.1907 0.6161	12 0.2233	1.2545	-0.2616	-0.4848	-1.8243	-0.0667
NONAME	155			11	11 0.9082 0.9256	8 0.0723	-2.2051	-0.0524	-0.5246	-1.3308	-0.2725
NONAME	156			11	11 0.0392 1.0000	8 0.0000	-2.7355	1.1463	-0.6133	-4.9411	-1.2266
NONAME	157			11	11 0.3855 0.6671	13 0.2778	-0.0799	1.2171	-1.9918	-1.5535	0.1828
NONAME	158			11	11 0.1592 0.9980	8 0.0012	-2.0779	2.5224	0.3785	-3.1107	0.1218
NONAME	159		***	11	13 0.4814 0.8010	11 0.1769	-0.0364	-0.2402	-2.6654	-1.0472	-0.1158
NONAME	160			11	11 0.9045 0.9360	8 0.0609	-1.5470	-0.5949	-0.4765	-1.6222	-0.6109
NONAME	161			11	11 0.8445 0.9948	8 0.0045	-1.9289	1.4756	-0.8669	-2.2894	-0.1471
NONAME	162			11	11 0.0536 0.6532	9 0.3098	-0.0604	-1.2156	2.0119	-2.5951	0.0393
NONAME	163			11	11 0.4108 0.9069	8 0.0748	-1.5984	1.5257	-1.8155	-1.8727	1.0750
NONAME	164			11	11 0.6477 0.9937	7 0.0033	-0.9285	1.3530	-0.4044	-2.8723	-0.2027
NONAME	165			11	11 0.8380 0.9985	7 0.0005	-0.6048	0.0762	-0.6430	-2.7291	-1.2336

***Not correctly classified

CLASSIFICATION RESULTS -

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP					Group Identification				
		7	8	9	11	12	13				
GROUP 7	27	25 92.6%	2 7.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	Group 7 Horticultural Workers			
GROUP 8	48	2 4.2%	39 81.3%	1 2.1%	2 4.2%	0 0.0%	4 8.3%	Group 8 Nurses			
GROUP 9	37	1 2.7%	1 2.7%	34 91.9%	1 2.7%	0 0.0%	0 0.0%	Group 9 Chefs			
GROUP 11	21	0 0.0%	1 4.8%	0 0.0%	19 90.5%	0 0.0%	1 4.8%	Group 11 Electricians			
GROUP 12	13	1 7.7%	0 0.0%	0 0.0%	0 0.0%	12 92.3%	0 0.0%	Group 12 Forestry Workers			
GROUP 13	19	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	19 100.0%	Group 13 Secretaries			

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 89.70%