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# **THE RELATIONSHIP OF OCCUPATIONAL STRESS AND PERSONAL TYPOLOGIES AT DIFFERENT PHASES OF ORGANISATIONAL RENEWAL.**

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**Abstract**

One of the difficult questions that has only been hinted at so far in research concerns the reason why the stress-illness relationship manifests itself in such different forms in different individuals. Sources of pressure at work evoke different reactions from different people.

Most of the research in the past has focused on personality and behavioural differences between high and low stressed individuals. Studies done until now were concerned mainly with the differences between Type A and Type B personalities and the relationship with stress. There are predictions on the stress reactions of different MBTI types but not much on what causes the stress (Dean, 1997). In addition, little has been done to study the Myers-Briggs Type Indicator (MBTI) and the relationship with occupational stress in a restructuring environment.

Hurst, Rush & White (1991) have attempted to point out the importance of studying individual differences within the management team. They proposed a Creative Management (CM) model as an extension of the Strategic Management (SM) model to include the relationship of the Myers-Briggs personality typologies (MBTI) to different phases of organisational renewal. Individuals with specific typologies prefer one phase of renewal to another. In the present study, the relationship of personal typologies and occupational stress at different stages of organisational renewal were examined.

A questionnaire consisting of the Eysenck Personality Questionnaire (Revised) (EPQ-R), the MBTI, the Occupational Stress Inventory (OSI) and some demographical questions was completed by 130 respondents from different organisations, mostly managers. It was hypothesised that occupational stress is different for the different functioning phases of the CM model and, according to the personality type there is an ideal functioning phase. Individuals operating in ideal functioning phases should have less stress. It was found that there were some differences in occupational stress between functioning phases of the management model but there was no clear relationship between stress and ideal or non-ideal functioning levels for individuals.

The findings were discussed in terms of the CM model and directions for future research.

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# 1. INTRODUCTION

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## 1.1 Background

Occupational stress has been researched for a number of years but still the effects of stress are increasing. Fisher & Cooper (1990) describe stress as a concept that contains a variety of circumstances and reactions. Research done in the past focused on physical stresses such as heat, noise, glare and other stresses related to environmental extremes. Today mental and emotional stress factors dominate research. People's behaviours, thoughts and emotions related to their work are studied to increase productivity and profits, and thereby create even more opportunities to fulfil the needs of the ever-growing population of the world. According to Arnold, Cooper & Robertson *"Stress in the workplace has become the black plague of the century"* (1995, p. 375). Global competition, corporate downsizing and reorganisation, new management philosophies, increased workforce diversity, new technologies and many more, are all elements that contribute to change.

All over the world societies are changing. Kiernan (1996) suggests that the human struggle for freedom, dignity and a better life is continuous. Organisations face changes such as the accelerating power of the information and communications technologies. The world economy is now based on knowledge-value, information and innovation, as opposed to the previous manufacturing economy that exploited natural resources (Kiernan, 1996). This changing environment and setting leads to a tremendous amount of stress and associated mental and physical health disorders. There are more issues, more problems and more challenges managers have to think about and to act on than ever before (Albrecht, 1996).

These in turn lead to serious ailments such as heart disease, social problems, alcoholism and drug abuse, family problems such as unhappy marriages, divorce, spouse and child abuse (Keita & Hurrell, 1994; Arnold, Cooper, & Robertson, 1995). To the individual, and society as a whole, the costs are extraordinary.

The costs of stress to the industry are on the increase as well. It has been estimated that nearly 10 percent of United Kingdom GNP is lost each year due to job generated stress in the form of absenteeism, labour turnover, lost productivity, recruitment and selection costs, as well as medical expenses (Arnold et al., 1995; Auerbach & Gramling, 1998). Billions of dollars are lost each year in the United States, according to Beehr & Baghat (1985). No accurate estimate of the actual cost can be made due to the different definitions for occupational stress, as well as the fact that there is no clear research that would allow accurate estimates (Beehr, 1995).

Cartwright & Cooper (1994) state that the direct cost of occupational stress can be measured humanistically and financially. This does not make it an easy task. A financially healthy organisation will maintain and rely on a workforce characterised by good physical, psychological and mental health. A wide range of issues including factors intrinsic to the job, such as corporate culture, managerial style of work organisations and lay out, which impact on employee health and well-being are of importance. These factors, including the effectiveness of existing intervention strategies need to be investigated (Cooper & Cartwright, 1994). This would reduce employee stress and the impact on occupational practises and human resource policies.

A study, which involved sixteen countries, found New Zealand to be the fourth highest in the category of office workers reporting high levels of job stress (Bennett & Rigby, 1995). In New Zealand the Health and Safety in Employment Act (1993) requires that organisations should identify and eliminate potential hazards in the workplace. According to Jillings (1996), the newest indirect cost that New Zealand faces is that of stress-related workers' compensation. This motivates more research on an otherwise well-researched topic.

Cooper & Cartwright (1994) are of the opinion that the stress that individuals experience is not just caused by the changing environment, time pressures and work overload but also by lack of recognition from employers. Employees are not empowered to perform tasks as given to them. They are often expected to work on a 'need to know' basis, to function and fulfil tasks as given to them, with instructions on how to perform the task and what the end result should be. Creativity and individuality are not allowed, nor the power to make the decisions necessary to perform these simple tasks. There is no tolerance for mistakes and rework. According to Cooper & Cartwright (1994), organisations do not provide individuals with the autonomy to do their jobs.

Today, managers are quite aware of the fact that employees in their organisations have needs, and that this actually influences the functioning of the organisation as a whole. Miller (1999) states that the ideas can be seen in the general attitude of managers today. Human needs still do not always take precedence in the actual day-to-day functioning, often because of market forces and competitiveness. Organisations should manage employees differently, treat them with respect and value their autonomy and contributions. Only this would enable society to improve the psychological well being and health of workers in the future (Cartwright & Cooper, 1994).

## **1.2 The Rationale and Objective of the Study**

One of the difficult questions, that has only been hinted at so far in research, concerns the reason why the stress-illness relationship manifests itself in such different forms in different individuals (Arnold et al., 1995; Auerbach & Gramling, 1998). Sources of



pressure at work evoke different reactions from different people and some are better able to cope with these stresses, whilst others wither at the mere possibility. According to Margerison (1982), some workers are psychologically predisposed to stress, and not able to cope or adapt to stress provoking situations. Margerison (1982) is of the opinion that differences in this regard may be due to various factors, which he refers to as personality, motivation and being able to deal with specific problems, age related factors, and awareness of one's own strengths and weaknesses. He suggests that it would be useful to examine the characteristics of the individual that research evidence indicates are predisposed to stress. Most of the research in the past has focused on personality and behavioural differences between high and low stressed individuals, mainly differences between Type A personalities and Type B personalities and the relationship with stress (Anderson, Lane, Taquchi, Williams & Houseworth, 1988; Cooper, 1982; Friedman, Rosenham & Carrol, 1958; Howard, Cunningham & Rechnitzer, 1987; Jenkins, 1971; Kirkcaldy & Martin, 2000; and Rosenham, Friedman & Jenkins, 1967). Little has been done to study other options such as the Myers and Briggs Personality Typologies (Myers, 1982) and the relationship that this has with occupational stress. Studies to date are not clear on what causes the stress with these types, although predictions are made on how behaviour is influenced (Dean, 1997).

The other factor that seems to influence the stress–personality relationship is the constantly changing environment. Organisations have pressures to improve performance on all levels because of the competitiveness of the world we live in. Individuals are less likely to become the focus within the organisation compared to productivity, growth and costs. Assets are important factors in organisations and management tends to focus on these, thereby increasing the stress for all. Kiernan (1996) states that the new corporate world requires entirely different survival skills. These changes do not occur in isolation. The changes in the strategic focus of organisations affect the culture of the organisation, the structure and the skills of the executives in the organisation. The influence of stress and personality in this process cannot be denied. They also state that organisations will only manage change if they are able to fit people skills to the business situation. People skills could possibly include knowledge of individuals or managers, how they function, what their strengths are, or in what category they find themselves to function optimally, and if utilising them to the fullest what the influence on stress would be? The future success or failure of an organisation hinges on how the gap between the market-led requirements and the organisation's adjustments to new demands is bridged (Kiernan, 1996).

In the process of study and discussion with the supervisor, the researcher came across an interesting model by Hurst, Rush & White (1991) that focussed on the changing environment and organisational renewal, but incorporated cognitive preferences in the compilation of the Creative Management (CM) model. Although stress as such was not

mentioned, a stress study based on the CM model could provide a line of interesting research and outcomes. Information attained could be used to facilitate new stress management strategies.

The CM model compiled by Hurst et al. (1991) assigned a broader perspective to the traditional management models by building a model of the cognitive preferences for top management as a function of organisational renewal. Hurst et al. (1991) argue that the conventional model does not allow human potential to be utilised to the full. The CM model proposes that a manager's skills and potential are partly a function of his or her cognitive preference. The study uses Myers and Briggs Personality Typologies (Myers-Briggs Type Indicator (MBTI), Myers, 1982; Myers & McCaulley, 1985) as a consistent framework for understanding and predicting cognitive preferences of the individuals. Each individual, according to his or her cognitive preference, could contribute to the different levels within the CM model depending on their potential strong areas. The question is whether occupational stress occurs in these phases and how it manifests itself with different individuals.

This leads to questions on the relationship of personal typology to occupational stress at different phases of organisational renewal. The primary objective is to ascertain how the feelings and expectations of individuals with specific typologies may experience, and how they may cope or manage stress at different phases of organisational renewal, but not at others.

The present study also aims to ascertain if there are different stress levels at the different phases of the CM model and which personal typologies predict occupational stress at different phases of organisational renewal. The type of stress and differences in levels of intensity is important and the relationship between people in their appropriate roles and their levels of stress.

### **1.3 Importance of the Study**

This research could possibly accomplish and create improved and efficient managers, management strategies and teams within the organisation. Barr, Stimpert and Huff (1992) suggest that top managers' mental models must keep pace with changing environments. Organisational renewal is only possible when top managers consider changes in their beliefs during periods of major environmental change. The CM model provides an opportunity for top managers to manage these activities and win the battle of organisational renewal.

The study also provides an opportunity to study and map personality types within the organisational context. Personality studies are often medical studies, not necessarily by psychologists. The mapping procedure gives an understanding of individual behaviour within the context of the organisation. Thus it is a map of where they are, where they are

going and where they want to be. Current assessment processes have many limitations and further research could lead to possible solutions for these by producing additional perspectives on personality and behaviour.

New information on occupational stress and the interaction with personality within the renewal and change climate hopes to enhance learning within organisations. New approaches to business are essential.

The costs of stress to individuals, families and industries are so enormous that more information on this issue could shape recruitment policies, mentorship programmes, career development programmes and employee assistance programmes to provide guidance and support to individuals, and thereby generate healthy individuals and profitable organisations that change and renew.

## 2. LITERATURE REVIEW

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### 2.1 Organisational Change and Renewal

"Organisational change" is probably the buzzword in organisations and companies of the past century, and it would truly be considered a challenge to find an organisation these days that is not currently in some or other process of change or renewal. At the organisational level, change research has emphasised various issues including the need for organisations to adapt to the market and all the possible opportunities and threats with which they are confronted within the organisation's environment. At an individual level, researchers have argued that people must first perceive the need for change before the organisation will respond to environmental change (Neck, 1996).

Resistance to change might depend to a large degree on how a person perceives and thinks about the change (Neck, 1996). Neck, Stewart & Manz (1995) refer to the relative new concept of Thought Self-Leadership (TSL). They describe the concept as the individual self-management of his/her internal dialogue. According to this information, human beings can change their inner attitudes. Senge (1994) refers to the same principles but he calls it personal mastery. He considers personal mastery to be one of the core disciplines of the organisation.

Personal leadership and/or personal mastery or thought self-leadership is the process of influencing oneself. Perceptions of employees are a primary component underlying resistance factors in organisational change. There is evidence (Manz & Neck, 1998; Neck, 1996; Neck et al., 1995) that the principles and the application of self-leadership techniques and cognitive strategies can enhance performance in an organisation.

The way diverse employees mentally perceive stimuli, process information and construct their own sense of reality will have an impact on the effectiveness of the changing organisation (Manz & Neck, 1998). Business organisations of the past were built to function in much more secure and predictable environments. The above principles indicate that those people who have the ability to apply personal leadership or self-leadership or, as Senge (1994) states, "*personal mastery*" in their lives will have a head start. Through the principles of personal leadership and the cognitive strategies associated with this principle, people and organisations will be able to take charge of their situation and not only be reactive to challenges and change.

Neck (1996) is of the opinion that research of organisational change has always focussed on the relationship between senior level employees and the organisational change. According to him, change research at an individual level addressed cognition like mental and/or the thought processes of employees at the top level in the organisation. Senge

(1990) further states that there is a connection between personal learning and organisational learning.

Meyer & Kieras (1997) support the concept of social-cognitive learning theory and state that this approach to psychology has more support than any other theoretical framework. Manz & Neck (1998) refer to the fact that the facilitating of self-leadership skills help people to deal with increased autonomy and the establishment of participative systems.

### **2.1.1 The Social-Cognitive Learning Theory:**

Social-learning theory explains human behaviour in terms of a continuous reciprocal interaction between cognitive, behavioural and environmental determinants (Latham & Saari, 1979). It specifically acknowledges that human thought, affect, and behaviour are influenced by observations as well as by direct experiences.

The social-cognitive learning theory views behaviour as something that one can learn. Meyer et al. (1997) refer to the fact that the human's ability to self-regulate and purposefully self-control is reflected in the concept of willpower, mastery and competence. The theory provides, in terms of therapy, different and improved cognitive styles, and the improvement of self-effectiveness at individual level.

Meyer et al. (1997) noted the popularity of the social-cognitive learning theory and explained that this approach encompasses the major academically psychological approaches of behaviourists, gestalt and cognitive psychology.

### **2.1.2 Salutogenic Strengths**

Struempfer (1995) states that psychology has been operating mainly in a paradigm of pathogenic thinking. According to him the salutogenic paradigm is an effort to fill this gap in not describing health as the absence of illness, but to understand the origins of health and wellness (Kossuth, 1998). According to the salutogenic paradigm, stressors can be experienced in a positive manner while the inefficient management of stressors and stimuli may inhibit psychological health (Viviers, 1998; Viviers & Cilliers, 1999). The personality orientation profile of the salutogenic functioning person is a person who handles life and work stressors effectively and functions optimally in his/her daily existence (Viviers, 1998). Kossuth (1998) mentioned that salutogenic strengths are answering the question of how to manage tension and to prevent it from leading to stress.

The salutogenic paradigm emphasises the maintenance and enhancement of health and wellness, irrespective of the stressors experienced on a permanent basis (Kossuth, 1998). Antonovsky (1991) indicates that the central concept in salutogenesis is the sense of coherence (the inner strength) that a person develops over time. The sense of coherence is established by the way a person understands how the stimuli in the

environment are perceived as logical and fitting into a coherent format and how the person can manage these stimuli and how the person perceive the meaningfulness of these stimuli.

Salutogenesis encompasses the inherent variables, which act as mechanisms to enable people to cope (Viviers & Cilliers, 1999). According to Struempfer, Gouws & Viviers (1998) salutogenesis is supported by the concepts of sense of coherence, personality hardiness and learned resourcefulness.

On the organisational level, the primary focus will be on related processes to these two paradigms, usually referred to as self-management and self-leadership. Manz & Simms (1980) introduced the construct of self-management.

## **2.2 Models of Management**

Management models are not new to the world of work. Munsterberg (1913) stated that understanding psychology is one of the most important roads to success for businessmen as industrial and commercial work is very much in contact with mental life. The earliest approaches were scientific management and classical organisational theory. The scientific side of management only started at the turn of the century. These were all early indicators of what was to come. Moorhead & Griffin (1989) state: "*Organisational behaviour began to emerge as a scientific discipline as a result of the Hawthorne studies*" (p. 30). It was only after 1930 that management changed their views on the relationship between the individual and the workplace and management models started to incorporate the individual as part of the equation.

### **2.2.1 Strategic Management (SM) Model**

Strategic Management is defined by David (1999) as "*the art and science of formulating, implementing and evaluating cross-functional decisions that enable an organisation to achieve its objectives*" (p. 5). As the definition implies, strategic management focuses on integrating management, marketing, finance, production, research, and computer information systems to achieve organisational success.

The strategic management process (David, 1999) consists of three stages, of which the first refers to strategy formulation. This also refers to developing a mission, identifying the external possibilities and threats, determining strengths and weaknesses, and establishing objectives and strategies and then selecting the appropriate one.

The second stage is strategy implementation, which refers to annual objectives set by organisations, devising policies, motivating employees and allocating resources so that these can be executed. This means that the organisational culture has to be adapted to meet the demands, redirecting marketing efforts, preparing budgets, developing, and linking employee compensation to organisational performance. This is the action phase



of the SM model. Managers need to have good interpersonal skills in this phase (David, 1999).

Strategic Evaluation is the final stage in strategic management. Three crucial evaluation activities are to review external and internal factors that are the bases for current strategies, measuring performance and taking corrective actions (David, 1999; Moorhead & Griffin, 1989). The strategic management process is a dynamic and continuous process. A change in one can affect or necessitate a change in one or more of the other phases. The strategic management process can be best studied and applied by using a model. The framework illustrated in Figure 1 is a widely used model of the strategic management process.

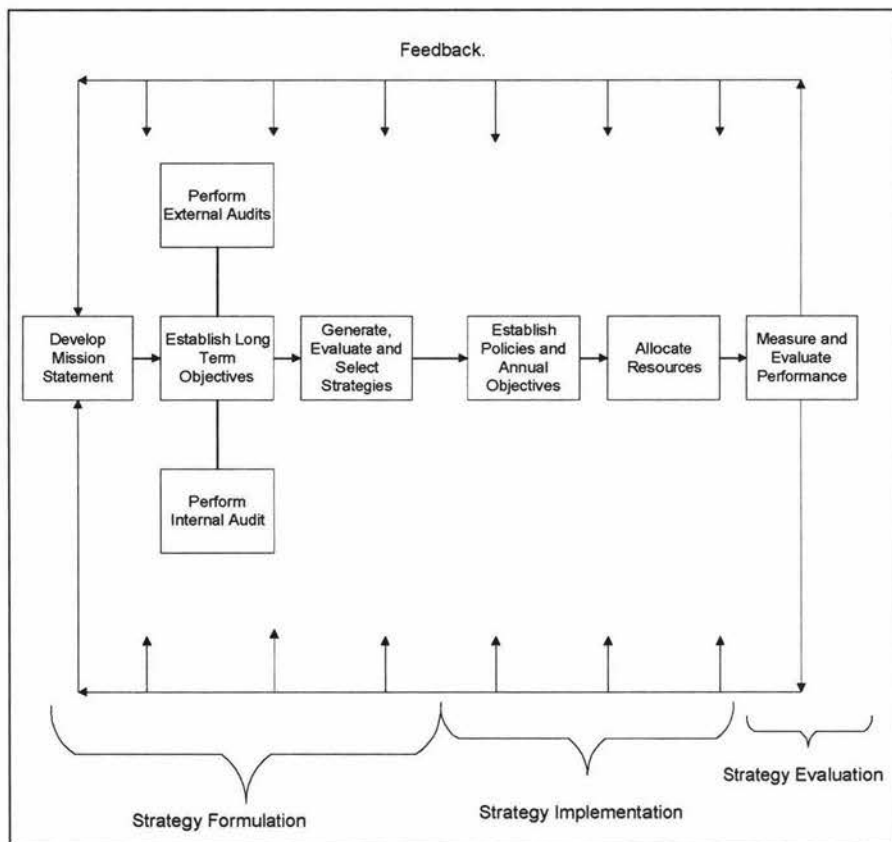


Figure 1. The Strategic Management (SM) Model.

Note: Adapted from David (1988).

The SM process allows managers to maintain and improve existing operations effectively. However, it does not provide a conducive environment for new ideas or lateral ideas and innovation to surface.

Management models up until now have focused mainly on strategic plan, evaluate and implement principles, as referred to in the Strategic Management (SM) Model (Hurst et al., 1991). This left management team members who were focused on the intuition,

sensing and feeling cognitive preferences, as explained by the Myers-Briggs Typologies, (Myers, 1982) to be less popular recruits. These actions caused companies to appoint mainly "ideal" candidates as managers, thus candidates that had the judging, perceiving and thinking combination of cognitive preferences as described by the Myers-Briggs Typologies (Myers, 1982). In the traditional strategic way of thinking, these "ideal" candidates replaced the old founder members of the organisations that initially came up with the original ideas and vision (Hurst et al., 1991). This left a vacuum in the organisations and companies who battled to deal with changes and adapting to new business needs and clients. Hurst et al. (1991), realised that these old founder members and "intuition, sensing and feeling personalities", according to the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985), had a definite function and that people are equally important, if not more so, than process. They build a model referred to as the Creative Management (CM) Model. The CM model provided for each cognitive preference (according to the MBTI) to be incorporated in the management and renewal process of the organisation.

### **2.2.2 The Creative Management (CM) Model**

Hurst et al. (1991), attempt to point out the importance of studying individual differences and preferences within the management team of an organisation. (See Figure 2.) They focus on the individual preferences, such as the contribution that the specific individual could make to the organisation and the individual's special skill or talent that could be utilised to the advantage of the organisation. This gives the individual the opportunity to contribute to the process and reach self-actualisation. The researchers attain a broader perspective on management strategies by building a model, called the Creative Management (CM) Model (Hurst et al., 1991). It explores the relationship of personal typologies, as described in the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985), to the different phases of organisational renewal. Individuals with specific typologies prefer one phase of renewal to another. The writers (Hurst et al., 1991) find the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) to be useful in studying individual behaviour within the organisational context. They state *"We do feel that Jung's conception of cognitive types does provide a useful way for managers to appreciate observable, individual behaviours and their contribution to the process of organisational renewal"* (p. 250).



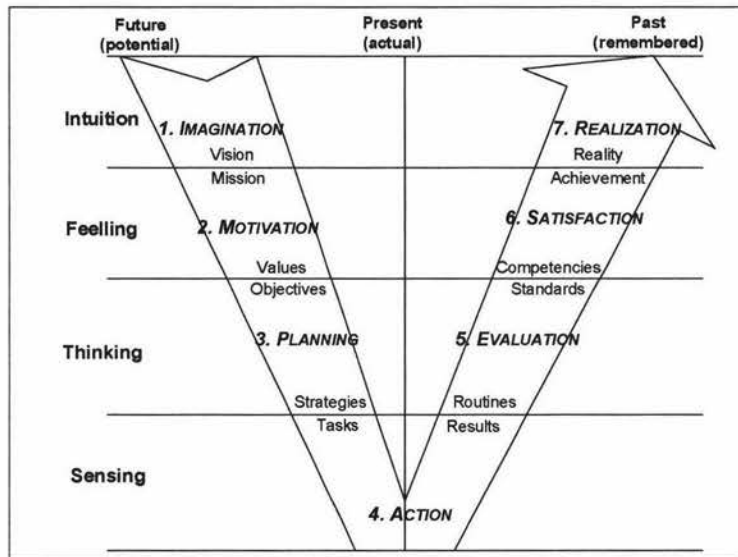


Figure 2. The Creative Management (CM) Model

Note: Adapted from Hurst, Rush & White (1991).

The CM model states that organisations will require a diverse group of senior staff to enable the organisation to adapt to the changing environment. Figure 2 illustrates seven repetitive, but not necessarily sequential, functioning levels. If subjective time is considered, according to Hurst et al. (1991) a new idea is transformed from a lateral thought through the different phases into an action, to at last become a remembered past. This is probably also how the learning takes place within the organisation as the ideas eventually become a remembered past.

Margerison (1982) conducted a study by mapping career transitions of managers in a very similar way by means of the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985). The Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) is explained briefly in Table 2 (p. 19). Margerison (1982) explains the differences of the different personality attributes and maps the process that he calls a mental map of whom they are and where they are and what they want to do. (See Figure 3.) He suggests that each individual has a consistent way of thinking and acting and although their views change, the overall behaviour pattern does not often change dramatically. Stricker & Ross (1964a, 1964b & 1966) found the Indicator to have the same reliability as better-known personality inventories including the 16 PF test (Catell, Saunders & Stice, 1957). This mapping process, just as the CM model provides a database in which to share and compare ideas, is also a framework within which to understand some of the dilemmas involved in matching personal skills and aptitudes with the job at hand (Margerison, 1982).

Margerison's (1982) map is divided into 4 quadrants. The innovators are found to be occupying the top left quadrant, the developers occupy the top right quadrant, the

organisers, bottom left, and lastly the co-ordinators the bottom right quadrant. According to Margerison: *“It is interesting to note how people become more tolerant and understanding of other people's behaviours when they are aware of the explanation that emerges for the mapping procedure”* (1982, p. 250).

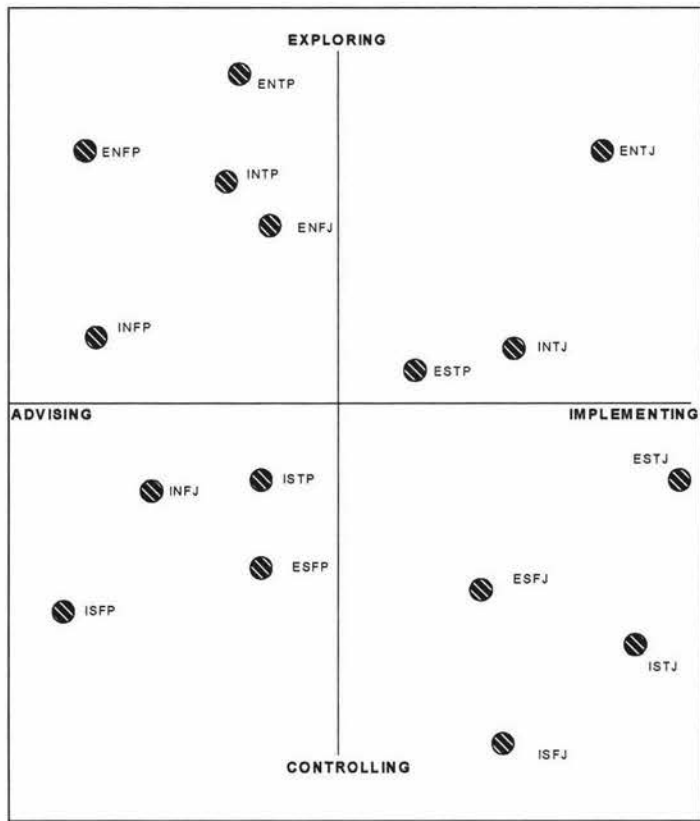


Figure 3. Mental mapping of personality profiles

Note: Figure adapted from Margerison (1982).

According to Margerison (1982) the jobs that people do and the world of work do change radically every day and that often causes a mismatch between job demands and the individual's established pattern of working. The Myers-Briggs Typologies (Myers, 1982) refers to four dimensions: Introversion (I) as opposed to Extraversion (E), Intuition (N) as opposed to Sensing (S), Feeling (F) as opposed to Thinking (T), Perceiving (P) as opposed to Judging (J). Margerison (1982) maps these personality types according to the four quadrants i.e. innovators, developers, organisers and co-ordinators. His model also involves mapping the different personality types on a continuum with the advising function left of the x-axis and to the right and opposite of that, the implementing function. On the y-axis, he sets up the exploring function and, to the opposite side the controlling function. Figure 3 refers to possible combinations of these preferences and where they would be most likely to occupy.

Integrating the above mentioned with the CM model would probably result in a model illustrated in Figure 4. These models of Hurst et al. (1991) and Margerison (1982)

correspond in their findings. Margerison just exemplifies the different combinations of the Jung typologies by predicting the specific location of each typology on the CM model. This information could lead to a better understanding and expansion of the CM model, as it currently exists.

In order to get a better understanding of how this integrated model works the ISTJ personality type is briefly explained in context of the combined model as illustrated in Figure 4. The ISTJ type is according to Giovanni, Berens & Cooper (1987) often referred to as the traditionalist or stabiliser. Their type behaviour suggests that they enter a new job or work situation with the need to know what the rules and regulations are. They do their best to keep things stable and do not like change. They would probably prefer to keep to adhered traditions and find change disruptive and frustrating. The CM model refers to this as the sensing dimension and indicates that these individuals would more likely put emphasis on facts, and details and concrete knowledge. Hurst et al. (1991) refers to this phase as the action phase of the CM model, thus the phase where implementation of the new vision or radical idea takes place and strategies and tasks become routines and results. Margerison (1982) plots this personality type as somewhere in between the implementing and the controlling dimension in the mental mapping procedure, as illustrated in Figure 3.

Another example would be the INFP type which features, according to Margerison (1982) in the innovation quadrant, or according to Hurst et al. (1991) in the intuition phase of the CM model. They would probably gather information and look at integration of meaning, possibilities, imagination and creativity. This is the imagination and realisation phase according to the CM model where a vision, or sometimes mission, becomes a remembered past and a sense of achievement is experienced. Margerison (1982) plots the INFP type as more towards advising than exploring, as illustrated in Figure 3.

There is, however, a slight contradiction in these two models with, for example the INFJ and INTJ types. Giovannoni et al. (1987) identifies the INTJ's as being the innovators, the visionaries and therefore, theoretically according to Hurst et al. (1991), in the intuition phase of the CM model. Margerison (1982) however, has found, for example the INTJ's to be more suited to the thinking dimension of the CM model as the INTJ is plotted closer to the implementing axis than the exploring axis, as illustrated in Figure 3.

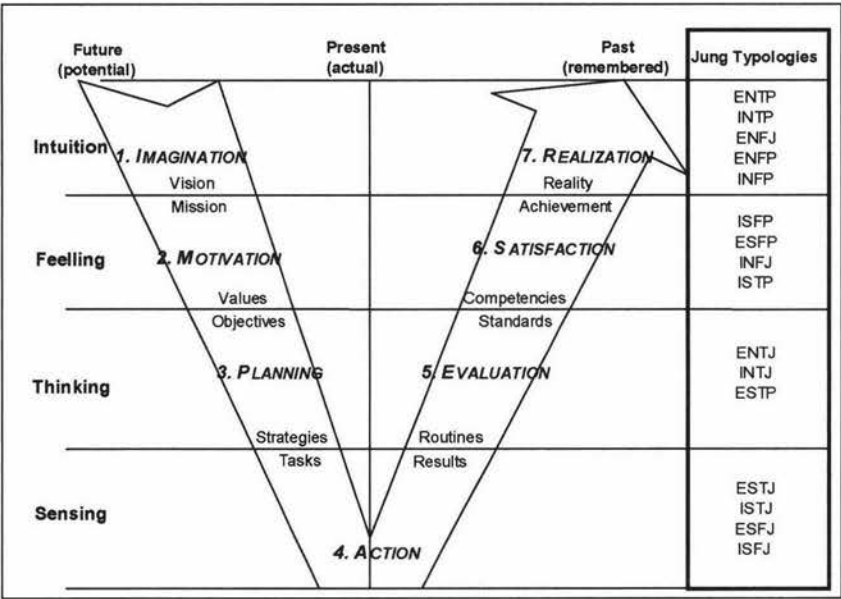


Figure 4. Mental mapping of personality profiles integrated with the Creative Management Model

The mental mapping of Margerison (1982) could be utilised to simplify the interpretation of results in this study and to enhance an objective point of view outside of the CM model.

### 2.3 Personality and Individual Differences

Various theorists define personality differently. (See Table 1). Chaplin (1968) states that other theorists emphasise the temperament as the core of the personality, but in popular use it is referred to as a social stimulus value, and despite all the differences personality is regarded as *"an integration of traits that can be investigated and described in order to render an account of the unique quality of the individual"* (p. 334). It is also referred to as including both fundamental behavioural predispositions such as emotionality, activity and sociability, commonly referred to as temperament (Buss & Ploman, 1984), and more complex organising and integrative systems that include cognitive and motivational components (Rutter, 1987). Personality traits are assumed to be relatively stable over time and to be relatively consistent across situations. The researchers, Arnold et al. (1995), also define it as the distinct traits and characteristics used to compare and contrast individuals.

Table 1. Key characteristics of five theoretical traditions in psychology.

Approach	Key Characteristics					
	Thinking/ Reasoning	Self- Actualisation	The Unconscious	Biologically Based Needs/Drives	Personal Change	Self Determination
Psycho- analytical (Freud)	x	x	✓	✓	x	x
Trait	✓	x	x	✓	x	0
Behaviourist (Skinner)	x	x	x	x	✓	x
Phenomenological (Rogers)	0	✓	0	0	✓	✓
Social Cognitive	✓	0	0	x	0	✓

Note: ✓ = Emphasised, x = De-emphasised or considered rare, 0 = Acknowledged but not emphasised. Table based on Arnold, Cooper & Robertson (1995).

Moorhead & Griffin (1989) state that humans are similar in many ways. Their biological systems function similarly. Physically and psychologically, people are different. This is referred to as individual differences, of which personality and attitude are two components. Individual differences are the characteristics that define us as being different from other individuals, i.e. race, sex, etc. This could be a physical or psychological difference. Personality and attitude are components of individual differences. The models and assessment scales applicable will be discussed in the following sections.

## 2.4 Models of Personality

Main approaches to personality are the psychoanalytical approach, the trait views, behavioural approach, phenomenological approach and social cognitive approach (Arnold et al., 1995). (See Table 1.)

There are many ways in trying to make sense of individual differences. Characteristics of an individual influence and are influenced by various factors in the workplace. According to Arnold et al. (1995), a critical component of individual differences is a person's personality. They define it as the distinct traits and characteristics used to compare and contrast individuals. A factor such as situation is of importance; i.e., the same person may act or react differently depending on the situation. Personality is often viewed as determinants, stages and traits. Parkes (1994) states that other studies review maturity-immaturity principles, locus of control, authoritarianism, self-regarding and attitude. This seems to be of importance where the dispositional refers to the influence of affect, cognition and intention, and the situational refers to the person's social context.

Arnold et al. (1995) suggest only one kind of approach to individual differences as representative and measurable. This approach is the trait factor analytic approach. The relative importance of people and situations in determining behaviour is an established

issue within psychology. There are many historical differences in opinion, but modern psychology allows for both the person as well as the situation as variables which have an influence on behaviour.

## **2.5 Assessment of Personality**

The assessment of personality and coping are usually done by questionnaires. Parkes (1994) stated that field research usually requires measures, which meet psychometric requirements of internal consistency, reliability and validity. They are to be short, relevant, understandable, and free from response bias effects. Internal consistency would improve with increasing the number of items but there would be less time to use a variety of measures. Both psychometric and practical issues are of importance. Self-report measures, as compared to projective tests, are more likely to meet those criteria. Parkes (1994) states that the standard questionnaires often used might be acceptable in certain environments, such as clinical and hospital settings, but less appropriate in an occupational environment and therefore the confidentiality issue has to be communicated clearly.

### **2.5.1 Eysenck Personality Questionnaire (EPQ)**

Psychoanalytic theories and other theories of personality are often criticised because they lack scientific precision, and satisfactory definition of primary concepts. These theories often do not produce testable hypotheses. One of the critics is Eysenck (Eysenck & Wilson, 1978) who has developed an alternative approach to personality based on scientific methods and statistical analysis.

Hans Eysenck was a British psychologist based at the Institute of Psychiatry of the University of London until his death in 1997. He first began to develop the EPQ in the 1950s. The original scale items considered only neuroticism, that was the scale known then as the Maudsley Personality Inventory (MPI). A person with high neuroticism is anxious, worried, moody, and unstable, whereas a person with low neuroticism is calm, even-tempered, carefree, and emotionally stable. He was convinced that these nervous individuals tend to suffer more neurotic problems than others do. He also suggested that this group suffered sympathetic hyperactivity, which refers to a more responsive sympathetic nervous system than others, and it meant that these individuals are terrified by even very minor incidents. They were thus prime candidates for the various neurotic disorders (Boeree, 1998).

Eysenck next included items that related to extraversion, which then became the Eysenck Personality Inventory, (EPI). Extraverts are thought to be 'people-oriented'; they thrive on socialising and are active, outgoing and optimistic. They are often popular, and rather unreliable. In contrast, introverts prefer their own company, avoid social gatherings and are quiet and unsociable. They are perceived as introspective, reserved and reliable.



By this, Eysenck refers to something similar to Jung in his explanation of the extraversion-introversion scale, but the physiological explanation is a bit more complex. Someone who was extraverted had strong inhibitions, according to Eysenck, and that helped them in trauma situations. According to Eysenck the brain would become numb and the person would remember very little of what happened, thereby returning to everyday activities without any delay. The introvert would have poor inhibitions thereby being highly alert, remembering what happened and reacting by not wanting to indulge in such activities again. The interaction of the two dimensions means that highly introverted individuals could over-respond to stimuli and avoid situations that could cause panic, or learn behaviours that holds of their panic such as obsessive-compulsive disorders, maybe. The extravert on the other hand might ignore and forget things that overwhelm them and they engage in the classic defence mechanisms such as denial (Boeree, 1998; Eysenck & Eysenck, 1968).

These basic elements, called traits, represent tendencies for behaving in certain ways in certain situations (Arnold et al., 1995). These are two independent dimensions and most people are not extreme in one or the other. According to Eysenck and his followers, there is evidence that extraversion and neuroticism may be genetically determined. For example, extroverts are thought to have a low level of cortical arousal (that is they are dependent on the outside world for cortical stimulation) whereas introverts have high cortical arousal without external stimulation and hence do not need to seek out strong sensory experiences. His theory includes influences of inherited, neurological differences as well as environmental influences. He is a behaviourist who considers learned habits of great importance, and considers personality differences as growing out of genetic inheritance. He is also primarily a research psychologist. His methods involve a statistical technique called factor analysis. This technique extracts a number of dimensions from large masses of data (Boeree, 1998).

In 1976, Eysenck added a third dimension called psychoticism and the EPQ was born. A person with high psychoticism is troublesome, uncooperative, hostile, cold, callous and ruthless, with some showing signs of schizophrenia and being socially withdrawn. A person with low psychoticism is altruistic, socialised, empathic, and conventional (Eysenck & Eysenck, 1994). Psychoticism is described as the third dimension, which only emerged at a later stage. It implied that the individuals had qualities that were commonly found among psychotics and that the person may be more susceptible, depending also on the environment. Some of these behaviours were recklessness, disregard for conventions and emotional expression to the extreme (Boeree, 1998).

The EPQ also contains a Lie scale that is designed to indicate the extent to which the individual is being 'honest' or is trying to create a false impression by providing socially desirable responses.

Furthermore, the factors of extraversion, neuroticism, and psychoticism appear to be universal. The main measuring instruments associated with Eysenck's theory are the Eysenck Personality Inventory and the Eysenck Personality Questionnaire (EPQ) that measure the factors extraversion, introversion and psychoticism. The EPI (Eysenck & Eysenck, 1968) is a standardised measure of extraversion, emotional stability and socialisation. The trait of impulsivity was originally under the super factor of extraversion in the Eysenck Personality Inventory (EPI), but later it was moved to psychoticism in the Eysenck Personality Questionnaire (EPQ) (Eysenck & Eysenck, 1994). What happened was that impulsivity correlated quite well with extraversion but even better with psychoticism (Eysenck & Eysenck, 1994). Some researchers, such as Gray (1981), disagree with this removal from extraversion and strongly believe that impulsivity, as well as anxiety, should be treated as uniquely important. Figure 5 illustrates the original dimensions on which Eysenck based his theories (Eysenck & Eysenck, 1994).

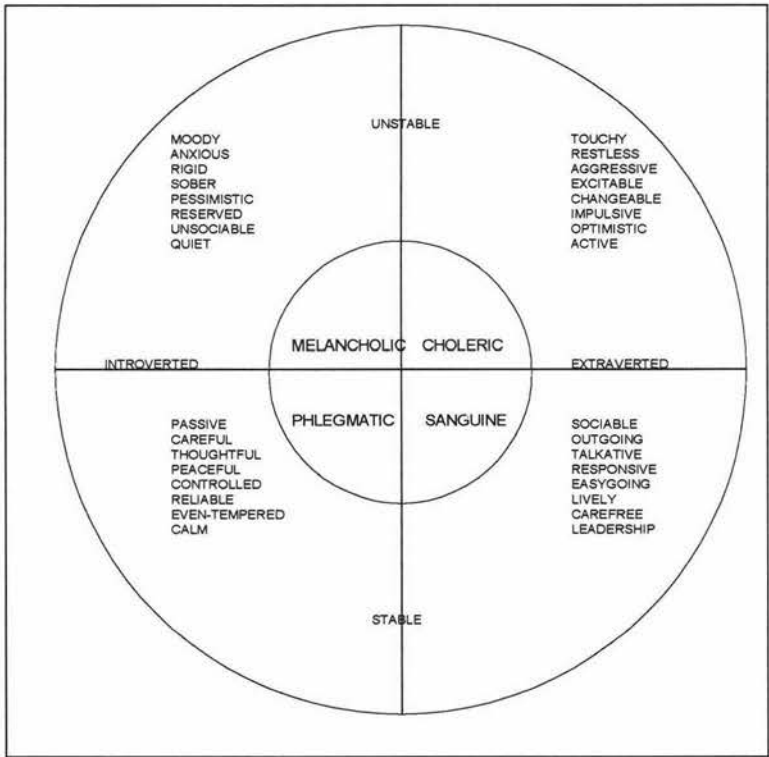


Figure 5. Relationship of extraversion/introversion and neuroticism/stability to earlier personality schemes.

Note: Adapted from Eysenck & Eysenck (1994).

### 2.5.2 Myers-Briggs Type Indicator (MBTI)

The Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) has different subsections which evaluate the individual such as personal, work situations and self-assessment. It has been used extensively as a measure of an individual cognitive preference on four functions: intuition, sensation, thinking and feeling. The test provides a



useful way of appreciating observable, individual behaviours and their contribution to the process of organisational renewal (Hurst et al., 1991).

Table 2. Major factors of Jung's typology, as operationalised by Myers-Briggs Type Indicator (MBTI).

<b>E</b> EXTRAVERT PREFERENCE	<b>I</b> INTROVERT APPROACH
Preference to live life in contacts with others and things	Prefers to be more self contained and work things out personally
<b>S</b> SENSING PREFERENCE	<b>N</b> INTUITION PREFERENCE
Puts emphasis on facts, details and concrete knowledge	Puts more emphasis on possibilities, imagination, creativity and seeing things as a whole
<b>T</b> THINKING PREFERENCE	<b>F</b> FEELING PREFERENCE
Puts emphasis on analysis using logic and rationality	Puts emphasis on human values, establishing personal friendships, decisions mainly on beliefs and likes
<b>J</b> JUDGING PREFERENCE	<b>P</b> PERCEIVING PREFERENCE
Puts emphasis on order through reaching decisions and resolving issues	Puts emphasis on gathering information and obtaining as much data as possible

Note: Table adapted from Margerison (1982).

The Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) is based on Jung's typologies. In his study of the adult life he compiled personality types that are based on the following components i.e. two contrasting basic attitude types, the extrovert and the introvert; the four psychological functions of thinking, feeling, perceiving and intuition as well as the attitudes and functions combined to form different psychological personality types (Smit, 1991). Du Toit (1987) indicates that these attitudes of extraversion and introversion can not exist in the mind simultaneously, although an individual could at different times act extrovert or introvert, one of these two will always dominate throughout the individual's life.

The Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) refers to four dimensions: Introversion (I) as opposed to Extraversion (E), Intuition (N) as opposed to Sensing (S), Feeling (F) as opposed to Thinking (T), Perceiving (P) as opposed to Judging (J). The different types are explained as follows (Clarke, 1999; Du Toit, 1987; Giovannoni et al., 1987; Smit, 1991):

On the first dimension, the introvert preference refers to individuals who prefer to be independent and socially reserved. They prefer to investigate their own world and have a creative internal life. The introvert manifests as an asocial, reserved and distant person lost in his or her own thoughts. They prefer their own judgement and are not easily influenced by others. The E's are drawn outward to people and objects. Their orientation is towards the external world. Extroverts invest lots of time and psychological effort in causes and objects. They are dependent on others for their existence and functioning. N's prefer to gather information and look at integration of possibility and meaningful relationships amongst these. Intuition is an immediate experience and the source is not

known. It is a function that requires no reasoning because the person knows intuitively that something is wrong. Intuition and perceiving is not based on reasoning and it is often seen as the irrational function.

S's prefer gathering information by observing and using the other senses. All information gathered is by means of the five senses and the awareness of the experience by stimulation of the senses. F's make decisions by weighing values on conciliation and harmony with others. This is an evaluation function. According to the feeling that something evokes, whether it is pleasant or unpleasant, an idea would be accepted or rejected. Feeling and thinking are often regarded as the rational functions because a decision is made based on reasoning and evaluation.

T's are relying on logic, analysis and evidence. Thinking is the process by which the individual tries to understand the world in which he/she lives. It is an intellectual function directed at understanding things in our world. Perceiving and judging are functions used to differentiate between rational and irrational functions. In rational functions (thinking and feeling), judging is used to make decisions. In irrational functions a perception is used, usually a sensual perception or observation of an internal, unaware perception or intuition. P's are open and flexible, adaptive, welcome perspectives and new information issues but find it difficult to decide and are non-committal. J's are decisive, firm and sure and setting goals and planning operations or organising activities and sticking to them are a priority for them. The combinations of attitudes and functions do not exist in equal relationship to each other and it is often found that one attitude and one function would be dominant e.g. an extrovert with thinking or an introvert with thinking, etc.

The scales are of importance. The extraversion-introversion scale (EI) gives an indication of the strongest attitude or dominant attitude. The thinking-feeling scale (TF) gives an indication of the individual's stronger rational functions. The sensing-intuition (SN) scale gives an indication of the strength of the irrational functions, whilst the judging-perceiving scale (JP) is seen as the help scale that compares the relative strength of the strongest rational function with that of the strongest irrational function. Briggs and Myers made an important contribution by identifying 16 personality types that could be formed with the four functions and four orientations (Lawrence, 1982).

The present author was unable to find any studies which examined the relationship of the Myers-Briggs Typologies (Myers, 1982) and occupational stress.

## **2.6 Occupational Stress**

Many people are familiar with the term stress. In reality, stress is a complex term that is often misunderstood. Terms that are used quite commonly include burnout, worry, strain and stressors. It is therefore important to define it and relate it to the individual in the workplace (Moorhead & Griffin, 1989). Walter Cannon (1935) as cited in Carrol (1992)

regarded it as "a disturbing force, something which upsets the person's equilibrium" and that "stress refers to the disruption of a person or those events or situations that challenge a person's psychological and or physiological homeostasis" (p. 3). Lazarus & Cohen (1977) offered a helpful taxonomy divided in broad classes of stressors varying in magnitude of challenge, persistence and number of people affected. These categories are: cataclysmic such as natural disasters; personal, negative life events, such as death of a close family member; and, third, relatives or daily hassles, omnipresent or background stressors. Of this last category Lazarus et al. (1977) state that what they lack in magnitude they make up for in persistence and frequency. This last category is seen as chronic instead of acute.

Chaplin (1968) defines stress as "*a state of strain whether physical or psychological*" (p. 449) whilst Beehr & Baghat (1985) define stress as a cognitive condition in which the person confronts a problem or situation, which is uncertain, and the outcomes are of high importance. The uncertainty of the situation is usually very long in duration too.

The word "*stress*" is often misused and used out of context. As previously mentioned, Fisher & Cooper (1990) describe stress as an umbrella concept embracing a variety of circumstances and reactions. Early research focuses mostly on physical stresses such as heat, noise, glare, etc. These stresses usually arise from environmental extremes but it seems that mental and emotional stress factors dominate the world today.

Jex, Beehr & Roberts (1992) differentiate between stressors and strains. They state that stressors are something in the workplace that cause discomfort for the person, whilst strains refer to the individual's reaction to the discomfort.

Researchers define stress very differently. In this study the term stress will be used as defined by Miller (1999) who defines stress as a process in which aspects of the environment, referred to as stressors, create a strain on the individual that lead to negative psychological, physiological, and organisational outcomes.

Beehr (1995) suggests that occupational stress has been studied from a variety of disciplines and personal preferences. Occupational stress is a very subjective term. To define the term is very difficult. Beehr & Franz (1987) categorised four areas and approaches to the stress definition: medicine; clinical psychology; engineering psychology and organisational psychology (Refer Table 3).

Table 3. Four approaches to occupational stress

Approach	Typical Stressors	Typical Outcome	Typical Primary Target Of Treatment
Medical	Physical	Physical Strain	Individual
Clinical/Counselling Psychology	Psychological	Psychological Strain	Individual
Engineering Psychology	Physical	Job Performance	Organisation
Organisational Psychology	Psychological	Psychological Strain	Organisation

Note: Table adapted from (Beehr & Franz, 1987)

These approaches to occupational stress can cause confusion and disagreements among researchers. The term occupational stress does not really help researchers to understand the phenomenon better because the different disciplines, and even researchers within the same disciplines, interpret the word very differently. It is a very subjective issue (Beehr, 1995; Ivancevich & Matheson, 1980).

Coping on the other hand, refers to specific processes that a person fits into place for dealing with stress (Lazarus & Folkman, 1984) Coping involves cognitive, behavioural and emotional responses. Coping may or may not be characteristic of a person, or consistent across stressful situations or functional roles. Coping is for the purpose of this study defined as “...*the characteristic manner in which the individual deals with his social and physical environment, particularly as he mobilise his resources to handle stress*” (Chaplin, 1968, p. 104).

### 2.6.1 Sources of Stress

Stressors in the workplace, but also stressors from outside of the workplace, cause occupational stress. Sources of stress are very much related to the theory behind it, thus the model that the particular researcher supports. It is difficult to define the exact and comprehensiveness of the sources of stress but by discussing the models and theory that lies behind it. By discussing it, at least a picture of the phenomenon as it is known, can be established. Stressors that could influence an individual are displayed in Table 4.

Table 4. Sources of stress

Sources of Stress	Examples
Intrinsic factors to the workplace	time pressure work load role ambiguity environmental factors physically uncomfortable factors
Extrinsic factors to the workplace	family environmental factors marriage physically uncomfortable factors
Factors related to personality	trait anxiety locus of control environmental person-fit model attitude Type A and Type B personalities

Arnold et al. (1995) illustrates the sources, the influences on the individual, as well as the results of prolonged exposure to the sources of stress.

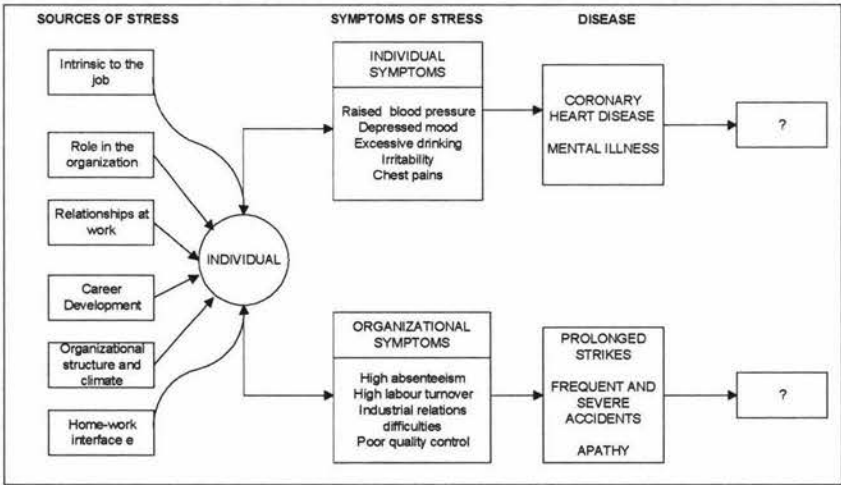


Figure 6. Dynamics of work stress and clinical conditions.

Note: Figure adapted from Arnold, Cooper & Robertson (1995)

Popular self-help literature defines it differently. In a national report on killing executive stress, eight executive anxieties and their anodynes were summarised (The Main Report Editors, 1984):

### **Box 1    Eight Executive Anxieties**

- Losing one's top position in the firm – losing your job;
- Total failure of the firm;
- Personal financial failure;
- Personal health;
- Youth, age and family;
- Creeping senility, retirement and death;
- Unnecessary worry over mistakes;
- Criticism and hypersensitivity.

Research on stress and cognition are complex. Factors of importance are individuals, groups, organisations and other interactions. Stress is vulnerable to both subjective and objective issues. This further complicates the attempt to develop an adequate model. Several models exist, some are specifically referring to job stress or occupational stress, whilst others refer to stress in general. A few models of stress will be chosen for discussion and evaluation. These models have not been selected as being less or more important than any other models that exist. Stress models are categorised into three areas, those which treat stress as a stimulus, a response, and as transaction (Heaney & Van Ryn, 1990).

## **2.7      Models of Occupational Stress**

Several models of occupational stress have been cited in the past. Zaltman, Pinson & Angelmar (1973) presented 16 standards for evaluating good theory. Eulberg, Weekley & Bhagat (1988) reviewed models of occupational stress by means of only seven criteria. They start by stating that work related stress has an influence on certain happenings in the organisation, such as withdrawal, performance, satisfaction and commitment. They also found stress related to psychosomatic disorders such as heart disease and related psychiatric disorders.

**Box 2****Seven Criteria for Evaluating Models of Occupational Stress**

- **Clarity:** the extent to which the model is explained in very precise terms;
- **Internal consistency:** no logical contradictions or inconsistencies;
- **Falsifiability:** is the model empirically testable?
- **External Consistency:** is the model compatible with a large segment of research evidence and theory?
- **Comprehensiveness:** is the model able to generate a hypothesis not specifically predicted and also hypotheses about the phenomena?;
- **Parsimony:** referring to skimpiness, poorly defined, multiple feedback loops and vaguely identified interactions, but also the economy involved;
- **Originality:** the model's potential to generate new, creative, and useful research.

**2.7.1 Stimulus Models**

Holmes & Rahe (1967) view stimulus models as a psychological demand leading to personal strain and they focus on the unexpected role of environmental factors such as major life events. Stimulus models state that a build up of stressful life events lead to illness. An example of this is the stressful life event model as developed by Holmes & Rahe (1967).

**2.7.1.1 The Stressful Life Events Model**

Zung, Jesse, & Covenar (1980) prove through various examples that stressful life changes can result in psychiatric and physical disease. Alexander, French & Pollock (1968) stated that patients with similar character patterns tended to develop certain diseases after certain types of trauma. Individual cases have not been studied in depth and life scale events measure only horizontal and cross-sectional aspects of a person's life stress and do not include long standing and chronic difficulties which the person may have. They do not list the people who had dramatic life changes and who did not fall ill. Little evidence exists for psychological characteristics or attributes to particular illnesses. Psychological characteristics may provide a general, not a specific, vulnerability to illness. Rahe & Arthur (1978) try to explain this by a scheme. The scheme is to precept the event, psychological defences, psycho-physiological response, response management, illness behaviour and illness management. Their suggestions to better understand the relationship are to look at the emotions, psychoanalytical defences and coping abilities.

Although not everyone agrees, personality seems to play a major role in how a person perceives his or her work environment, evaluates it and responds to it (Moorhead &



Griffin, 1989). Lazarus (1966) said that an event would only be considered stressful if the individual perceives it as such. Coping strategies, or as Freud called them “*defence mechanisms*”, explain to us why some yield in the face of stressful situations and why others do not. Part of explaining this is that some individuals have a repertoire of positive psychological coping strategies and that stress precedes illness when there is vulnerability or diatheses for it. The psychological antecedents reported in order of frequency were resentment or hostility, frustration or rejection, depression or helplessness and anxiety (Luborsky, Docherty & Penick, 1973; Minter & Kimball, 1980). They suggested that mood changes were sensitive barometers to change in the biological state and that a psychologically vulnerable person is also biologically vulnerable. Both of these studies document illness well.

Jacobs, Spilken & Norman (1969) and Jacobs & Spilken (1971) conclude that people with maladaptive coping mechanisms will experience more crises and failure and will respond to life crises with symptoms more overtly neurotic than the symptoms they manifest at times of lesser life stress. Meyer, Golle & Weitemeyer (1968) have attempted to show a relationship between psychiatric disorders and somatic disorders. Sainsbury (1960) retrospectively found that patients with psychosomatic disorders scored high on neurotic as measured by the Maudsley Personality Inventory (MPI).

## 2.7.2 Response Models

The most cited example of the response model is Selye’s general adaptation syndrome. The stimulus and response models differ. Figure 7 illustrates this difference effectively.

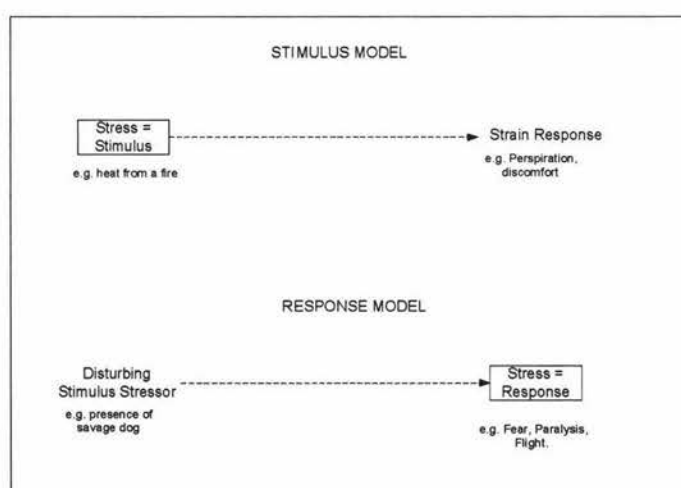


Figure 7. Stimulus and response models of stress

Note: Figure adapted from (Selye, 1956).



### 2.7.2.1 Selye's General Adaptation Syndrome

The term stress has been used by Cannon (1914) in medicine and psychology but it was Hans Selye who revolutionised the medical field with his proposal of non specific bodily reactions to many types of demands made upon it (Beehr & Baghat, 1985). Selye (1956) differentiated between "good" sources of stress, called eustress (getting married) and "bad" sources of stress, referred to as distress. Many of his examples tended to refer more to the physical effects that stressors had on the body than the psychological effects. He identified a syndrome and called it the GAS syndrome or general adaptation syndrome. The syndrome refers to three stages: the alarm reaction, resistance and exhaustion. The alarm phase is described as the phase where the person may feel some degree of panic, may wonder how to cope and calls upon the arms of the body to be ready. Phase 2 refers to the resistance phase where the person would call upon all his/her resources to be able to resist the negative effects of the stressors. Moorhead & Griffin (1989) suggest that, depending on the person, each would differ in regards to the stresses they can tolerate and deal with. Therefore, in many cases the stress would stop at phase 2. Prolonged exposure to the stressors or lack of resources emotionally or physically may lead to exhaustion. At this stage, the individual gives up. Selye (1956) also refers to it as the physical breakdown of the body due to excessive demands. He focused on biological stressors and the demands it made on the body of the individual.

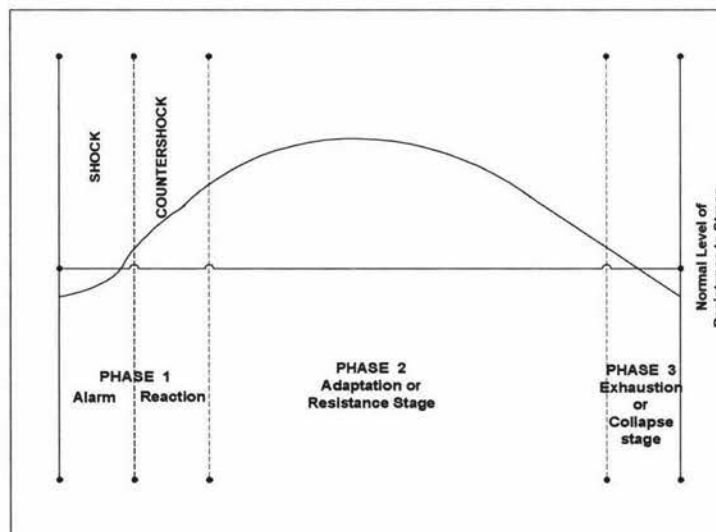


Figure 8. The General Adaptation Syndrome

Note: Figure adapted from Selye (1956).

### 2.7.3 Transaction Models

The transactional models do not focus on the stimulus or the response reaction but on the product of the interaction between the person and the environment, in this case very relevant to the work environment.

French & Caplan (1980) summarise their view as follows:

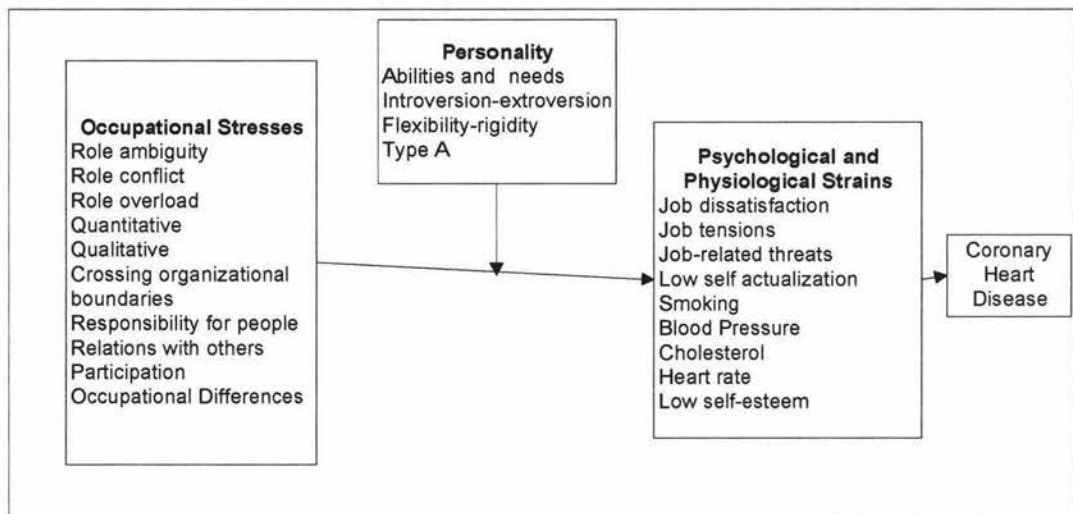


Figure 9. An outline of a theory about how occupational stress affects individual strains contributing to heart disease

Figure adapted from French & Caplan (1980).

#### 2.7.3.1 The Person-Environment Fit Theory & Model

Van Harrison (1978) refined this model of French, Rogers & Cobb (1974). The person-environment (P E) fit model is widely cited. This model suggests that a lack of fit between the person and his or her environment leads to stress because of the unmet demands of the individual or the job. Responses to this stress would include activities that reduce the misfit, and improves the probability for the needs to be satisfied. According to Cooper & Marshall (1978), many models rely heavily on the person-environment fit and role congruity. There are also various facet-analytical approaches. Most models, as mentioned before differ in defining stress.

Eulberg et al. (1988) evaluate this model as follows, by means of the seven criteria as mentioned previously. The person-environment fit model explains empirical results well but cannot make predictions. The misfit concept is not always clearly defined. A misfit would result in stress and that is considered a negative result. Ability and motive is not considered. Clarity is a real issue, as the model is very broad. Internal consistency is not high as job stress is described as the result of needs that are not met, either by the environment or by the person concerned, and thus some inherent contradictions exist. The model is falsifiable, as not all segments are testable. The focus of the model is more towards a conceptual framework than an empirical testable model. The person-environment fit model relies heavily on the individual and human behaviour perspective and therefore it is seen as quite consistent externally. The model has demonstrated its

comprehensiveness. No specific lists of variables exist and therefore generalisations are possible when empirical testing is conducted. It is reasonably parsimonious because it is not cluttered with too many moderating factors and indirect links. The model is original, as the research on this model at first seemed to open a lot of new information. Later research built on this model did not come up with any original trends (Eulberg et al., 1988).

#### 2.7.3.2 Beehr and Newman's Facet model of job stress

Beehr (1995) suggests that the Beehr-Newman model be developed as a result of research on occupational stress before 1978. Beehr (1995) designed this model to incorporate all previous models and theories on the subject. This model illustrates occupational stress as the relationship between job stressors and individual strains, where the job stressors are represented by the organisational consequence facet and the individual strains by the human consequence facet. The process facet is referred to as the intervening step. Not all facets of the model have been studied sufficiently.

Eulberg et al. (1988) evaluate this model as follows, in terms of the seven criteria as mentioned previously. Beehr & Newman (1978) refer to the facet analytic approach and illustrate some of the pitfalls of trying to incorporate too many factors into one framework. The inclusiveness of the list makes it impossible to specify specific relationships. The internal consistency might not be the most appropriate measure for the model. The model is very broad and therefore a few contradictions could be generated. This is a non-falsifiable model. The amount of hypotheses that could be generated by this model are numerous. Because of this, inherent contradictions could be created amongst the hypotheses. The facet analytical approach is consistent with the existing literature and could be regarded as externally consistent. The model compromises in other areas of metatheoretical criteria. All the different possibilities within this model really complicate it and parsimony is definitely a concern. Beehr & Newman (1978) do include original issues in their model. Time factors become important for the first time with this model, although much research is still needed on this issue (Eulberg et al., 1988).

## **2.8 Assessment of Occupational Stress**

Research covers several possible models for occupational stress. French (1976) viewed the work-stress phenomenon as the result of a misfit between the individual and the environment. French (1976) suggested occupational stress as the job characteristics that pose a threat to the individual. He defined strain as behaviour deviating from that which is usual for the individual in other situations. Most models agree that occupational stress has consequences for the individual and affects work performance.

All models of stress reviewed different items of importance and distinctions in perceiving and experiencing stress. Coping behaviour was also discovered to be of importance in

the measurement of stress. Exhaustive research by Newman & Beehr (1979) was also included to define the facets underlying the domain of coping resources. Osipow & Spokane (1992) attempt to incorporate years of research on occupational stress into one conceptual model. They identify as underlying factors to the model: the occupational stress, occupationally induced strain, and coping resources available. Jillings (1996) suggests the use of the Occupational Stress Indicator (OSI) (Cooper, Sloan & Williams, 1988) to collect data. The OSI was the result of years of study and includes most well researched factors identified as important in the measurement of the occupational stress phenomenon (Robertson, Cooper & Williams, 1990).

### **2.8.1 The Occupational Stress Indicator (OSI)**

The OSI questionnaire was developed by Osipow & Spokane (1992) to measure occupational stress across different occupational levels and environments, and to provide an incorporated model based on sources of stress in the work environment, the psychological strains of individuals as a result of stressors, and the coping resources available (Cooper, Sloan & Williams, 1988). It has the following subsections (Osipow & Spokane, 1992):

The Occupational Roles Questionnaire was constructed to measure six of the stress-causing work roles as identified and defined by McLean (1974) such as Role Overload (RO), Role Ambiguity (RA), Role Insufficiency (RI), Role Boundary (RB), Responsibility R, and Physical Environment (PE).

The Personal Strain Questionnaire measures Vocational Strain (VS), Psychological Strain (PSY), Interpersonal Strain (IS) and Physical Strain (PHS).

The Personal Resources Questionnaire measures factors derived from Newman & Beehr (1979) that indicate coping behaviour, Recreation (RE), Self-Care (SC), Social Support (SS) and Rational/Cognitive Coping (RC).

## **2.9 Personality and Stress**

Several studies have been done on the relationship of some aspects of individual differences, personality and occupational stress. Aspects of individual differences in relation to occupational stress studied included gender, race, trait anxiety, and locus of control, environmental person-fit model, attitude, and Type A and Type B personalities. Most of the research in the past has focused on personality and behavioural differences between high and low stressed individuals. Studies done until now were concerned mainly with the differences between Type A personalities and Type B personalities and the relationship with stress (Berry, 1998).

Parkes (1994) chose to summarise personality as a moderator of stress-outcome relations in a different way. She states that individual differences in personality have

implications for occupational well-being and performance. Parkes (1994) identifies the following dimensions of personality as moderators of relations between work stress and health outcomes:

### **2.9.1 Locus Of Control**

Parkes (1994) suggests that locus of control measures the extent to which the person believes that the results of events are directly related to their personal effort and ability rather than by outside influence. Rotter (1966) developed this scale to determine the locus of control of students and this scale was later improved. Internal locus of control is associated with lower occupation stress, better mental health and higher job satisfaction. They were also found to exhibit higher satisfaction in terms of organisational processes and personal relationships and show superior physical and mental health. Internals perceived less stress associated with working climate, managerial role and career motivations (Kirkcaldy & Martin, 2000).

### **2.9.2 Hardiness**

Hardiness refers to the resistance resources that a person has, that enable him/her to remain healthy in spite of a stressful life and work situation.

### **2.9.3 Type A Behaviour**

Type A behaviour is characterised by impatience, hostility, irritability, job involvement, competitiveness and achievement striving according to Parkes (1994). Major research started with the work of Friedman, Rosenham & Carrol (1958) as well as Rosenham, Friedman & Jenkins (1967) in the early 1960's. They related certain behavioural patterns with Coronary Heart Disease (CHD). They found individuals with certain behavioural traits had a higher risk of Coronary Heart Disease (CHD) because of stress. These individuals were later referred to as Type A classified individuals. Type A behaviour was characterised as being extremely competitive, striving for achievement, aggressive, hasty, impatient, restless, hyper alert, being under the pressure of time and responsibility (Jenkins, 1971). They also found individuals with this behaviour to be over committed to their work and other aspects of their lives were often neglected (Cooper, 1982). Type B referred to the exact opposite. These studies found a higher incidence of Coronary Heart Disease (CHD) amongst Type A than Type B. Many of the methodological weaknesses of this approach were overcome by the Western Collaborative Group Study (Rosenham et al., 1967). They did studies on a national sample of over 3400 men. In terms of the study, Type A individuals had significantly more incidence of Coronary Heart Disease (CHD). Howard, Cunningham & Rechnittzer (1987) found the Type A individual to have less interest in exercise and more of them were also smokers. In the face of stress, a person could adopt characteristic, behavioural strategies. Not all of these personality characteristic strategies offer effective protection; some may render individuals especially



vulnerable, as is the case with Type A behaviour. According to this research Coronary Heart Disease (CHD) was also the most commonly suffered by those in low status occupations. Shekelle et al. (1985) found Type A work not associated with risk of Coronary Heart Disease (CHD) at an average of seven years following. The results have been regarded as particularly damaging to the Type A hypothesis. Age was not controlled for though. Still strong evidence for Type A exists according to other researchers (Anderson, Lane, Taquchi, Williams & Houseworth, 1988). Type A's were also found to experience more stress in dealing with family and friends and the home-work interface. They were more stressed by emotions than by time pressures (Kirkcaldy & Martin, 2000).

To use an example other medical studies found gender mostly males, and black men have higher hypertension thus stress. Physical strain increases their blood pressure while stress increases white men's blood pressures (Anderson et al., 1988; Falkner & Kushner, 1989). Alternatively, this could be explained as a result of lack of psychological coping strategies and hard physical work, lack of education, also increased by the respondents' perception that because they are black, it hindered them. This implies a possibility, as with Coronary Heart Disease, for this phenomenon to be related to the low socio-economic level and low status occupations according to Anderson et al. (1988). It might also be the result of a discrepancy between how they view themselves and the externally represented status, on the other hand. Feeling like this could cause conflict. Suppressed hostility caused hypertension amongst blacks and whites. So the possibilities are endless and few of these aspects function in isolation. Parkes (1994) also questions the ill-defined nature of the Type A construct and whether a continuum or personality typology would better represent individual differences in this regard. Studies conducted with the Type A construct usually involved quite large numbers of participants (as above) and were done longitudinally and cross-sectionally and therefore it is still regarded as relevant and useful.

#### **2.9.4 Neuroticism**

According to Parkes (1994) that refers to a personality trait that reflects emotional vulnerability, pessimism and a general tendency to react negatively to life and work stressors. Neuroticism was discussed in detail in section 2.5.1 (Boeree, 1998).

#### **2.9.5 Dispositional Optimism**

This refers to a measure of optimism in generalised outcome expectancies.

Each of these traits is, according to Parkes (1994), associated with a particular pattern of coping and Type A behaviour and locus of control are referred to as coping styles.

Skodol (1998) studied personality and coping as stress-attenuating or amplifying factors. The research examines individual differences amongst people experiencing stress, in an attempt to understand why some experience distress or disability and others display toughness regardless of hard times (Rutter, 1985). Skodol (1998) suggests that personality traits, and/or coping processes, will either diminish or magnify the emotional impact of stressful experiences. Results of the study implies that people may be relatively consistent with coping strategies used with similar problems at different times, but little consistency exists with stressors across life situations or role domains such as work, health and marriage. Skodol (1998) also suggests that a large majority of studies that show coping effects indicate that maladaptive coping contributes to adverse outcomes rather than adaptive coping buffering against stress. There continues to be surprisingly few sound empirical studies documenting the assumption that adaptive coping strategies can reduce the effects of a stressful experience. They also find personality traits or coping mechanisms that involve mental withdrawal to be harmful. Perceived self-efficacy in coping may be the most emotionally protective factor in a stressful situation according to Skodol (1998). The result of a twenty-year study at over thirty sites and with people of all ages and socio-economic backgrounds found individual differences only had a small part to play in the reactions to occupational stressors. This is contradictory to the beliefs that psychologists hold today and it needs to be challenged.

Additional studies are needed on the relationship of personality traits as measured by the prevailing models of personality to coping styles. According to Skodol (1998), personality disorders should also be integrated theoretically and empirically into models of the personality, coping, and life stress equation. The effects of personality traits and disorders of coping styles on the occurrence of stressful life events and on recovery from adverse mental health outcomes are of importance as well.

## **2.10 Management Models, Personality, Stress and Coping**

Higher thinking processes require a variety of cognitive processing abilities according to Hogarth (1987) such as problem solving, creativity, memory, judgement and decision making. Shanteau & Dino (1993) did research on the reactions of individuals exposed to stress. They theorised that individuals under stress would show signs of a narrowing of focus and pigeonhole responding. This would be at odds with the cognitive processes necessary for effective high-level thinking. The effects of environmental stressors on complex cognitive functioning were investigated. It was found that environmental stressors indeed produced psychological effects on the creativity of the subjects. Other cognitive processes such as judgement and decision-making were not affected. The researchers say that this could be explained by repetitive and well-used skills which were unaffected by environmental stress. This study was done in an environmental research chamber but could possibly hold true for subjects that worked in uncomfortable



surroundings, for example shift workers. The question is how psychological stressors would influence this.

According to literature, **demographical issues** such as age, gender, occupation and restructuring and the correlation with stress would influence the coping process. It is assumed that women will experience more stress because of the continuing demands on women in society and the home-work interface. Women are still more involved in the raising and care of children and performance of household duties than men, although less so than a decade ago (Jick & Mitz, 1985; Narayanan, Menon & Spector, 1999). Kirkcaldy & Martin (2000) did a study amongst nurses in a hospital environment and found older nurses to have more stress. No significant differences in gender were observed in this study though.

Stress could also be different for different occupations. Engineers for example were found to be stressed by wasted time and interpersonal conflict whilst role conflict and role ambiguity were rarely reported (Narayanan, Menon & Spector, 1999). Some companies empower their employees and equip them to do their work at all levels within the organisation, whilst others bury their employees in unnecessary and time-consuming paperwork that wastes time and leaves them frustrated and unproductive (Kaufman & Beehr, 1986). The compilation of the management team does seem to be a very important factor to consider. Prahalad & Bettis (1986) stated that the quality of business and diversification does not seem to determine success or failure as much as the quality of management does. Also companies involved in restructuring would possibly have more stressful environments as innovation creates tension and is often experienced as challenging and uncomfortable (Hosking & Anderson, 1992).

Possible personality aspects that influence stress levels and coping are trait anxiety, locus of control, attitude, Type A and Type B personalities, maturity-immaturity principles, creativity, authoritarianism, self-regard and attitude, hardiness, neuroticism and dispositional optimism, self-efficacy and psychological antecedents i.e. resentment or hostility, frustration or rejection, mental withdrawal, depression or helplessness and anxiety (Luborsky, Docherty & Penick, 1973; Minter & Kimball, 1980; Parkes, 1994; Schaubroeck & Ganster, 1991, Shanteau & Dino, 1993; Skodol, 1998).

Weick (1979) elaborated the cognitive map as an outcome of behaviour sequence referring to selection, enactment and retention. According to Hosking & Anderson (1992) these cognitive maps serve as schemes for negotiation among parties involved in the restructuring of the company where the new shared images are actively in the making. Coping styles according to Dewe, Cox & Ferguson (1996), appear to be connected to the trait like combination of cognition and behaviours expressed and/or described somewhat independently of the situation. Jung's conception of cognitive types does provide a useful

way to identify observable, individual behaviours and their contribution to the process of organisational renewal as previously stated (Hurst et al., 1991).

***Personalities classified according to the MBTI***, could possibly predict the following in relation to stress based on theory (Giovannoni et al., 1987):

Sensing-judging personalities are identified as stressed by abandonment, exclusion and disrespect for authority. They would probably find a constantly changing environment and organisational renewal quite stressful, especially as they find disobedience and anything which threatens the common bond particularly offensive. They like to take responsibility, and thrive on appreciation and direction from authority.

Sensing-perceiving personalities are identified as stressed by wordiness, uneventful routine and restraint. This type would probably enjoy the challenge of the changing organisation and the possibility of new tasks and responsibilities. They are most productive in an open atmosphere or a structured one that allows competition with freedom and opportunity, variation and change.

The intuition-feeling personalities are identified as stressed by the impersonal and the resistant and need interpersonal relationships, significance and positive feedback. This type would probably rescue or play the role of nurturer. They suffer, according to theory, sometimes unbearable isolation in situations where their needs are not met. A divided, argumentative, competitive atmosphere offends them.

The intuition-thinking types are, according to theory, their own worst critics and are often stressed by a fear of incompetence, loss of control and helplessness. They would probably enjoy the innovative changing environment if they have a participative role to play and feel that they have input in controlling the outcome. Rigid, routine, dull environments offend them and often drive them away. They do their best in situations that stimulate them intellectually and allow them to have control over their learning and express their ideas.

***Personalities classified according to Eysenck*** could probably predict that an individual with high neuroticism i.e. anxious, worried, moody and unstable would also be more prone to stress, whereas a person with low neuroticism i.e. calm, even-tempered, carefree and emotionally stable would be less prone to stress. He also stated that introverts would be more cautious in nature and thus probably more prone to stress (Boeree, 1998).

Certain personality types should thus measure higher on stress purely due to type or nature that they belong to.

Hurst et al. (1991) argue that the ***creative management model*** can enhance the growth and renewal process within organisations. An organisation that matches the model of

Hurst et al. (1991) should therefore be successful in its growth and renewal process and adapt to change with ease. The organisations that were included in this study do not necessarily apply the model as suggested by Hurst et al. (1991). As said previously, organisations tend to focus on appointing just certain personality types. Therefore, the model match would not necessarily be applicable. The question is, however, whether a model match has an influence on the stress of the individual. It should have a significant influence because an individual functioning within an ideal environment as determined by his personality type should have less stress.

## **2.11 Problems in the Study of Personality, Coping and Stress**

Skodol (1998) noted a number of problems in research into the study of personality, coping and stress. Studies were retrospective, potentially confounding the measurement of the outcome of psychological distress with the measurement of the personality for coping. Few studies take into account pre-existing conditions, thus denying the possibility of psychopathology. It allowed respondents to identify the most significant stressors, or coping with life stress in general, thus introducing heterogeneity of the stressors. College students are used often as participants, which casts doubt on the generalisability of findings and relevancy to clinical psychopathology. Cross-sectional studies give the misleading impression that coping is a static, as opposed to a dynamic, process. Stable personality predisposition and situational coping attempts are not measured independently and the relative contributions of each to the outcome are not determined. Studies that investigated personality factors have been limited for the most part to traits related to neurotics and not a full array of personality dimensions or new constructs such as hardiness. Most studies of coping have not considered the relationship of other potential mediators of variables, such as availability of social support on coping efforts, and have not investigated characteristics of the stressful situation itself that might make certain coping strategies potentially more adaptive and others less so.

## **2.12 Summary**

The literature review described theoretical constructs to explain the phenomenon of occupational stress, personality and the changing organisation. Previous work was reviewed and attempts were made to motivate this research and to show how this study will be a logical extension of previous efforts.

Organisational change and renewal were discussed and there is evidence (Neck, 1996; Neck et al., 1995; Manz & Neck 1998) that the application of self-leadership techniques and cognitive strategies can enhance performance in the organisation. Theory on personal mastery, self-management, the social-cognitive learning theory and salutogenic strengths were discussed. Meyer et al. (1997) states that self-management is based on motivation, personal mastery and skills. The social-cognitive learning theory provides the

possibility of improving cognitive styles and thus better self-management. Through the principles of personal leadership and cognitive strategies applied, people and organisations can be empowered to manage situations instead of just reacting to it. According to Struempfer, Gouws & Viviers (1998) salutogenesis are supported by the concepts of sense of coherence, personality hardiness and learned resourcefulness. Neck (1996) states that research on organisational change could focus on research at individual level to address cognition, mental and thought processes of managers instead of the relationship between managers and change.

Models of management until now do not fully incorporate change and renewal. For example, the SM model focuses mainly on strategic planning, evaluating and implementing plans. Hurst et al 's. (1991) Creative Management (CM) Model provides for cognitive preferences (according to the MBTI) to be incorporated in the management and renewal process of the organisation. It explores the relationship of personal typologies, as described in the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985), to the different phases of organisational renewal. Individuals with specific typologies prefer one phase of renewal to another.

Models of personality were discussed. Personality traits were found to affect job performance (Moorhead & Griffin, 1989). The trait factor analytic approach is considered the most relevant. There are many historical differences in opinion, but modern psychology allows for both the person as well as the situation as variables to have an influence on behaviour. Personality traits are often measured by means of psychometric tests. The theoretical constructs for the EPQ-R, and the MBTI (Myers & McCaulley, 1985) were discussed in the literature. The tests provide a useful way to appreciate observable, individual behaviours and their contribution to the process of organisational renewal (Hurst et al., 1991).

Stress has consequences for the individual as well as the organisation. Sources of stress are very much related to the theory behind it and, by discussing it, at least a picture of the phenomenon, as it is known, can be established. Models discussed were the stressful life event model, the GAS syndrome of Selye, the P E fit model and Beehr and Newman's facet model. Most models agree that occupational stress has consequences for the individual and affects work performance. Osipow & Spokane (1992) attempt to incorporate different models on occupational stress into one conceptual model, measured by the Occupational Stress Indicator (OSI) (Cooper, Sloan & Williams, 1988). This test is used in this study to measure stress on different occupational levels and environments.

Demographical issues such as age, gender and levels of occupation and the correlation with stress could influence the coping process. It is predicted that the participants will have high levels of job stress because New Zealand was found to be the fourth highest in

the category of office workers reporting high levels of job stress (Bennett & Rigby, 1995). Women will experience more stress than men, and younger individuals will experience more stress than their older/middle-aged counterparts (Kirkcaldy & Martin, 2000). Employees who are empowered to make decisions and be creative in their work will have less stress because managerial style, corporate culture and layout impacts on the individual's stress level according to Cooper and Cartwright (1994).

Personality aspects that could possibly influence stress levels are trait anxiety, locus of control, environmental person-fit model, attitude, and Type A and Type B personalities, maturity-immaturity principles, creativity, authoritarianism, self-regard and attitude, hardiness, neuroticism and dispositional optimism, self-efficacy and psychological antecedents such as resentment or hostility, frustration or rejection, mental withdrawal, depression or helplessness and anxiety (Luborsky, Docherty & Penick, 1973; Minter & Kimball, 1980; Parkes, 1994; Schaubroeck & Ganster, 1991, Shanteau & Dino, 1993; Skodol, 1998). In the present study a select few of these personality variables will be examined.

Personalities classified according to the MBTI predict (Giovannoni et al., 1987) sensing-judging personalities will be stressed by change, sensing-perceiving personalities stressed by uneventful routine, intuition-feeling personalities will be stressed by the impersonal and the intuition-thinking types will be stressed by a fear of incompetence, loss of control, helplessness. Personalities classified according to Eysenck predict that that the introverts and individuals with high neuroticism would be more prone to stress (Boeree, 1998). Certain personality types should thus measure higher on stress, just due to their nature.

Hurst et al. (1991) hypothesise that organisations tend to appoint only certain personality types, for example the judging, perceiving and thinking combination of cognitive preferences as described by Myers-Briggs Type Indicator. There are probably not many organisations that apply the creative management model in their selection process when appointing managers for the management teams of their organisations. This leads to organisations that do not change and renew effectively. Diversity in selection and appointment should have a significant influence because an individual functioning within an ideal environment, as determined by his or her personality type, should have less stress.

Skodol (1998) suggests that personality traits, and/or coping processes, will either minimise or magnify the impact of stressful experiences. The present study examines the hypothesis that occupational stress is different for the different functioning phases of the management model; and, according to the personality type, there is an ideal phase within the CM model where individuals function more effectively. Individuals operating in ideal functioning phases should have less stress.



### 2.12.1 Hypotheses

According to literature, demographical factors could magnify or reduce stress in the workplace. Women will experience more stress because of the continuing demands on women in society (Jick & Mitz, 1985; Narayanan, Menon & Spector, 1999). Younger individuals (Kirkcaldy & Martin, 2000) could also experience more or less stress depending on their cognitive preference. Restructuring would possibly lead to stressful environments as innovation creates tension, challenges and discomfort for some (Hosking & Anderson, 1992). Managerial style, corporate culture and layout impacts on the individual's stress level according to Cooper and Cartwright (1994).

Skodol (1998) suggests that certain personality traits could contribute to the impact of stressful experiences. Eysenck predicts that an individual with high neuroticism i.e. anxious and introversion would be more prone to stress (Boeree, 1998). Giovannoni et al. (1987) predict sensing-judging personalities will be stressed by change, sensing-perceiving personalities will be stressed by uneventful routine, intuition-feeling personalities will be stressed by the impersonal and the intuition-thinking types will be stressed by a fear of incompetence, loss of control and helplessness.

The above refers to the possible factors, according to the literature, that could contribute towards the stress of individuals. The different functioning phases in the CM models indicate several possible relationships. Some factors, according to the literature, would contribute to increased levels of stress on all levels of the CM model. Other factors (demographical and personality) would, in relation to the phases and processes in the CM model, either magnify or reduce the occupational stress. Table 5 attempts to predict possible outcomes for these demographical and personality factors in relation to the CM model.

Table 5. Functioning levels in the CM model with possible factors that could contribute towards stress of the individuals

CM Level (Hurst et al., 1991)	Function Description (Hedges, 1993; Hurst et al., 1991 & Giovannoni et al., 1987)	Possible Influencing Factors (Demographic & Personality) on Stress (Hedges, 1993)
1 (Information gathering, future, prospecting.)	<b>Intuition:</b> The individual sees the whole in relationships and patterns, either via a physical phenomena or ideas. They handle this with metaphors and symbols. They are imaginative and reflective, often ignore instruction and jump impulsively. They tend to be integrative and ingenious and see what others do not. They are inventive and like change and variety, believe in the future and that decisions should be based on it. Espouses new ways of working at things, new ideas, and disregards practical details. The individual sees unrealised potential within the stream of events that surround them.	Age - Younger individuals are more futuristic and impulsive, and have less boundaries that prohibit their thought processes and creativity thus less prone to stress.  Restructuring - individuals with this preference will have less stress on this level because innovation and imagination is part of restructuring.

CM Level (Hurst et al., 1991)	Function Description (Hedges, 1993; Hurst et al., 1991 & Giovannoni et al., 1987)	Possible Influencing Factors (Demographic & Personality) on Stress (Hedges, 1993)
2 (Information evaluation, past, preserving.)	<b>Feeling:</b> The feeling function makes judgements or decisions subjectively by personally weighing values and choices and how they matter to others. Feeling is concerned with people and values. They handle these with force of personality. They tend to be enthusiastic and insightful, consider harmony in human relationships and are affected by others needs. They inspire peers and subordinates and bring people together. They make decisions with the heart, show their feelings and often work for a boss and people in a company. They try to preserve human relationships and reward with recognition and praise. They respond to a challenge and sponsor new ideas, share information, power and resources.	Sex - Women tend to consider feelings more often than men do, and therefore experience less stress than men on this phase.  N - Individuals with a high level of anxiousness or neurotic and introverted persons would experience more stress on this phase.
3 (Information evaluation, analysing, future and past.)	<b>Thinking:</b> The thinking type makes judgements or decisions objectively, impersonally considering courses of events and where decisions may lead. They make decisions with the head. They deal with these with regulations and language. They tend to be reliable and orderly and match goals to resources and results. They organise people, co-ordinate and are good at analysing. They react emotionally just as the feeling type would but less likely to show feelings. They work for a firm or a company and often take a firm stand on issues. They may feel that feeling types are muddle headed. They balance novel with routine and reward when outcome exceeds plans.	Age: Older individuals would probably experience less stress in this phase because they have more life experience and should be able to deal with these aspects with ease.  Sex: Men would probably make decisions more objectively than women would in certain circumstances and therefore their stress would be less on this phase.
4 (Information gathering, reflecting, present.)	The <b>sensing</b> function is often realistic, practical and sensible. Sensing deals with the physical stimuli, action and reaction, in the here and now. Concerned with activities and events, they follow instructions, notice detail and are literally minded. They believe experience is important and decisions should be based on it. They deal with the actual and enjoy the present. Handles tasks with spontaneity and action and tend to be adaptable and practical by matching skills to tasks. Attention to practical details. Makes things work. Describes what has occurred in concrete terms. Results are their own award. Facts are important and they do not often look for possibilities. They like to do things and usefulness is important. They often loose sight of the big picture. They may see the intuitive type as somewhat impractical.	Non-management - Non-managers are often concerned with activities where they have to follow instructions and therefore they would have less stress on this phase.  Restructuring - Individuals with this preference will have increased levels of stress within a changing environment because facts are of more importance to them than possibilities.  Introversion - They would experience more stress on this phase, as they do not need any external sensory stimulation, as internally sensory stimulation with introverts is high.

The fact that certain personality and demographical factors that influence stress are different for the different phases implies the possibility that stress will be different for the



different functioning phases of the CM model. The **first set of hypotheses** examines occupational stress being different for the different functioning phases of the CM model.

The **second set of hypotheses** examines the relevancy of ideal functioning phases for different personality types. Personality traits were found to affect job performance (Moorhead & Griffin, 1989). There are many historical differences in opinion, but modern psychology allows for both the person, as well as the situation, as variables which have an influence on behaviour.

Margerison (1982) maps the different personalities. He suggests that people have consistent ways of thinking and acting; views change but overall behaviour does not change dramatically. According to Margerison (1982), there is an ideal functioning phase where individuals function more effectively. Individuals with specific typologies should prefer one phase of renewal to another. Hedges (1993) again, makes certain suggestions on work satisfaction for the different MBTI personality types. Table 6 identifies possible phases where the individual, according to their personality, is less likely to perform and more prone to stress.

Table 6. The factors that could influence stress related to the MBTI personality types and the CM functioning levels

MBTI Personality Types	MBTI Functions	Ideal Phase in the CM Model (Hurst et al., 1991 & Margerison, 1983)	Phase in the CM Model of Possible Stress (Adapted from Hedges, 1993 & Hurst et al., 1991)	Reason for Possible Stress (Adapted from Hedges, 1993)
ENFJ	The intuiting function.	Phase 1: <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future and/or Phase 7: <b><u>Realisation</u></b> by perceiving patterns in past decisions, actions, events, and representing a strong sense of history and tradition.	Phase 4: <b><u>Action</u></b> by making things work and getting results.	Practical work and work that isolates them, will be depressing.
INFJ	The feeling function.	Phase 2: <b><u>Motivation</u></b> of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation and/or Phase 6: <b><u>Satisfaction</u></b> by celebrating your organisation's competencies and achievements and rewarding people with recognition.	Phase 5: <b><u>Evaluation</u></b> of routine operations and standards.	These individuals are often more controlling than advising. Isolated and routine, mundane tasks would frustrate them.

MBTI Personality Types	MBTI Functions	Ideal Phase in the CM Model (Hurst et al., 1991 & Margerison, 1983)	Phase in the CM Model of Possible Stress (Adapted from Hedges, 1993 & Hurst et al., 1991)	Reason for Possible Stress (Adapted from Hedges, 1993)
ENFP	The intuiting function.	Phase 1: <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future and/or Phase 7: <b><u>Realisation</u></b> by perceiving patterns in past decisions, actions, events, and representing a strong sense of history and tradition.	Phase 5: <b><u>Evaluation</u></b> of routine operations and standards.	Routines and details tie them down.
INFP	The intuiting function.	Phase 1: <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future and/or Phase 7: <b><u>Realisation</u></b> by perceiving patterns in past decisions, actions, events, and representing a strong sense of history and tradition.	Phase 5: <b><u>Evaluation</u></b> of routine operations and standards.	They are not good at repetitive, practical and mundane work.
ENTJ	The thinking type	Phase 3: <b><u>Planning</u></b> and thinking strategically; planning to implement the ideas and goals and/or Phase 5: <b><u>Evaluation</u></b> of routine operations and standards.	Phase 2: <b><u>Motivation</u></b> of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation and/or Phase 6: <b><u>Satisfaction</u></b> by celebrating your organisation's competencies and achievements and rewarding people with recognition and praise for their contributions.	They do not like it when plans change and would speak out forcibly if necessary. They should learn to consider other people's feelings.
INTJ	The thinking type	Phase 3: <b><u>Planning</u></b> and thinking strategically; planning to implement the ideas and goals and/or Phase 5: <b><u>Evaluation</u></b> of routine operations and standards.	Phase 2: <b><u>Motivation</u></b> of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation.	They have good ideas but fall down on practical details and being warm and outgoing.

MBTI Personality Types	MBTI Functions	Ideal Phase in the CM Model (Hurst et al., 1991 & Margerison, 1983)	Phase in the CM Model of Possible Stress (Adapted from Hedges, 1993 & Hurst et al., 1991)	Reason for Possible Stress (Adapted from Hedges, 1993)
ENTP	The intuiting function	Phase 1: <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future and/or Phase 7: <b><u>Realisation</u></b> by perceiving patterns in past decisions, actions, events, and representing a strong sense of history and tradition.	Phase 4: <b><u>Action</u></b> by making things work and getting results or Phase 5: <b><u>Evaluation</u></b> of routine operations and standards.	They are not good at routine tasks and making things work, or any practical work.
INTP	The intuiting function	Phase 1: <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future and/or Phase 7: <b><u>Realisation</u></b> by perceiving patterns in past decisions, actions, events, and representing a strong sense of history and tradition.	Phase 4: <b><u>Action</u></b> by making things work and getting results or Phase 5: <b><u>Evaluation</u></b> of routine operations and standards.	They are not particularly good at practical issues and routine tasks.
ESTJ	The sensing function	Phase 4: <b><u>Action</u></b> by making things work and getting results.	Phase 1 <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.	Airy-fairy ideas are not their thing.
ISTJ	The sensing function	Phase 4: <b><u>Action</u></b> by making things work and getting results.	Phase 1: <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.	They do not like work that requires imagination or generating new ideas.
ESFJ	The sensing function	Phase 4: <b><u>Action</u></b> by making things work and getting results.	Phase :1 <b><u>Imagination</u></b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.	They prefer to do things instead of thinking about things, and are often prepared to do the administrative routine tasks.

MBTI Personality Types	MBTI Functions	Ideal Phase in the CM Model (Hurst et al., 1991 & Margerison, 1983)	Phase in the CM Model of Possible Stress (Adapted from Hedges, 1993 & Hurst et al., 1991)	Reason for Possible Stress (Adapted from Hedges, 1993)
ISFJ	The sensing function	Phase 4: <b>Action</b> by making things work and getting results.	Phase 1: <b>Imagination</b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.	ISFJ's prefer to do things instead of trying to come up with new ideas and concepts.
ESTP	The thinking type	Phase 3: <b>Planning</b> and thinking strategically; planning to implement the ideas and goals and/or Phase 5: <b>Evaluation</b> of routine operations and standards.	Phase 4: <b>Action</b> by making things work and getting results.	They lose interest in carrying things through.
ISTP	The feeling function.	Phase 2: <b>Motivation</b> of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation and/or Phase 6: <b>Satisfaction</b> by celebrating your organisation's competencies and achievements and rewarding people with recognition and praise for their contributions.	Phase 3: <b>Planning</b> and thinking strategically; planning to implement the ideas and goals and/or Phase 4: <b>Action</b> by making things work and getting results.	ISTP's do not often set goals.
ESFP	The feeling function.	Phase 2: <b>Motivation</b> of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation and/or Phase 6: <b>Satisfaction</b> by celebrating your organisation's competencies and achievements and rewarding people with recognition and praise for their contributions.	Phase 1: <b>Imagination</b> by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.	These individuals are not good at abstract reasoning.
ISFP	The feeling function.	Phase 2: <b>Motivation</b> of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation and/or Phase 6: <b>Satisfaction</b> by celebrating your organisation's competencies and achievements and rewarding people with recognition.	Phase 5: <b>Evaluation</b> of routine operations and standards.	ISFP's do not evaluate information in an objective way.

The table illustrates the ideal phase for each personality type according to the literature and the phase where stress is most likely to occur. The second hypothesis examines personality type and occupational stress as related, depending upon the phase of organisational renewal. It suggests that individuals operating in their preferred phase have less stress than at the other phases of organisational renewal.

### 3. RESEARCH METHODOLOGY

#### 3.1 Introduction

This chapter gives an overview of the sample or participants, the methods and materials used, the critical issues considered in the data collection, the reliability and validity of measures used, as well as the data processing procedures. The chapter aims to give an account of the procedures used in this research to enable replication and verification thereof.

#### 3.2 The Participants

The sample consisted of 130 respondents of which 85 (65%) were managers in the following private and public sectors of New Zealand: Audit New Zealand, Transit New Zealand, EIT College (Hawke's Bay), Healthcare Hawke's Bay, Healthcare Whakatane, Air New Zealand (Auckland), WestpacTrust (Hamilton), District Councils (Hastings), Deloitte Touche Tohmatsu (Auckland), Bloxam, Burnett and Oliver Consulting Engineers, HTC Infrastructure Management, and Massey University (Albany). All the participation in the research was voluntary. Of the 130 participants 68 (52%) were women and 61 (47%) were men. Ages ranged from 26 to 62 years of age with an average of 44 years (SD=10.21). (See Figure 10.) The majority (90%) of the respondents were New Zealand Europeans or Pakeha (Table 7) , and were involved in business (28%) or education (27%) (Figure 11).

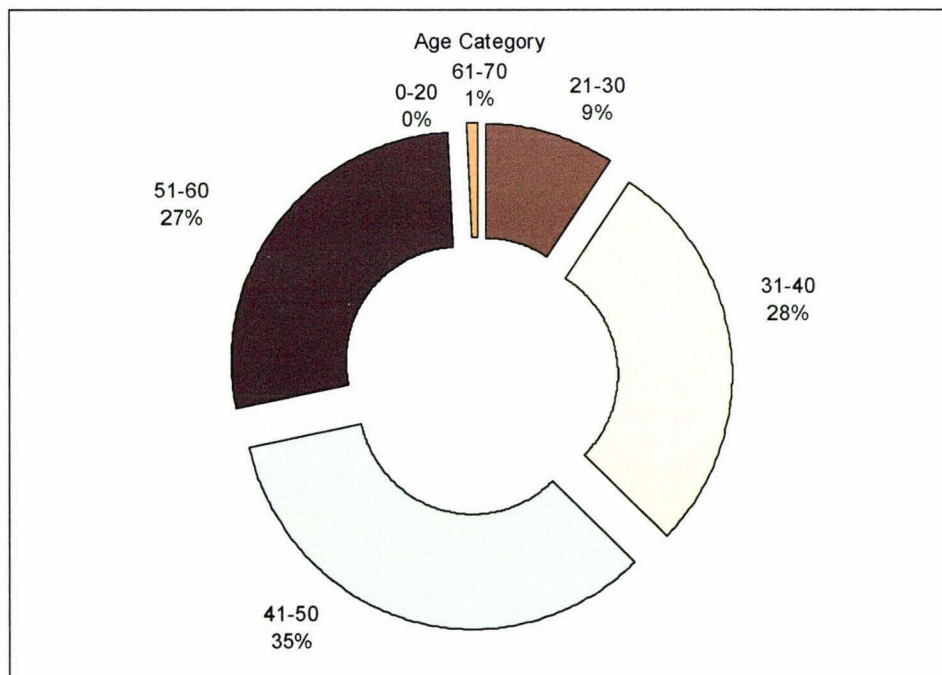


Figure 10. Age distribution of respondents participating in study.

Table 7. Summary distribution of respondents in study

Classification	Frequency	Percentage
<b>Gender (n = 130)</b>		
Men	61	47
Women	68	52
No Response	1	1
<b>Ethnic Group (n = 129)</b>		
Maori	1	1
European/ Pakeha	116	90
Asian	7	5
Other	5	4

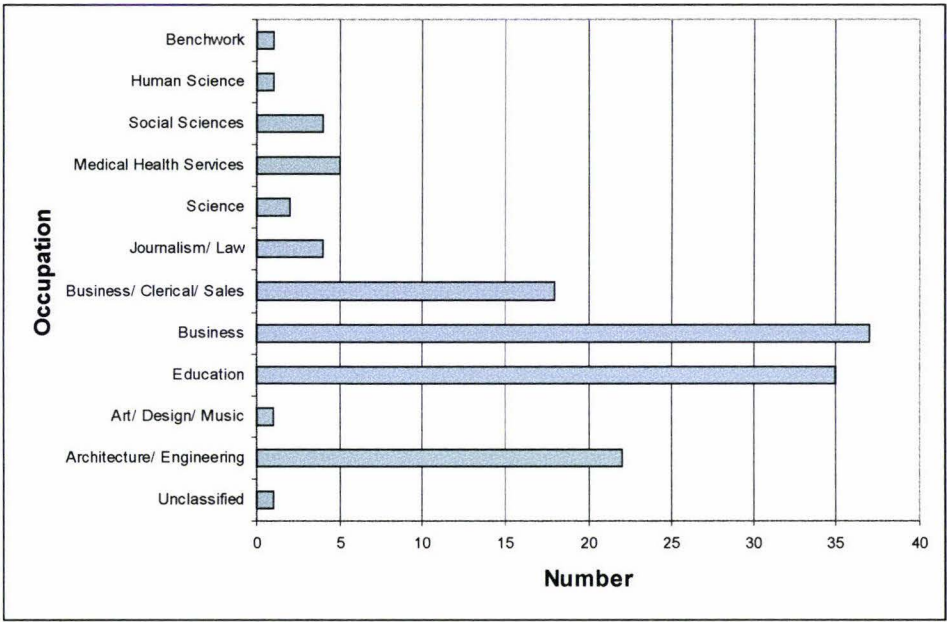


Figure 11. Occupational summary of respondents.



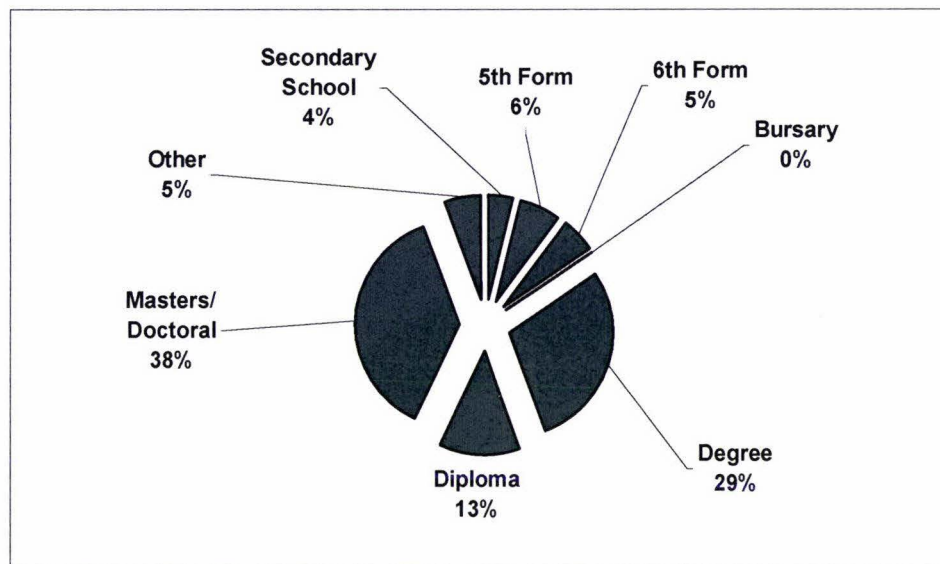


Figure 12. Summary of qualification distribution amongst respondents.

### **3.3 Method**

#### **3.3.1 Factorial Design**

The objective of the factorial design is to determine the scope of the data collection (i.e. number of sets of data needed). Furthermore the factorial design also ensures that the critical parameters for the research are comprehensively sampled (Smit, 1983). It would not be possible to incorporate all the aspects of the demographical composition in the factorial design, and for the purpose of this study only the demographical items considered relevant to this study were used in the design matrix and in the demographical questionnaire.

According to literature, demographical issues such as age (Kirkcaldy & Martin, 2000), gender (Jick & Mitz, 1985; Narayanan, Menon & Spector, 1999), management and restructuring, and the correlation with stress, would influence the coping process. Prahalad & Bettis (1986) stated that the quality of business and diversification does not seem to determine success or failure as much as the quality of management does. Also companies involved in restructuring would possibly have more stressful environments as innovation creates tension and is often experienced as challenging and uncomfortable (Hosking & Anderson, 1992). According to Hosking & Anderson (1992) individuals have cognitive maps, which serve as diagrams for negotiation among parties involved in the restructuring of the company. Coping styles, according to Dewe, Cox & Ferguson (1996), appear to be connected to the trait-like combination of cognition and behaviours expressed and/or described somewhat independently of the situation, and therefore the

functioning phases as set out in the CM model (Hurst et al., 1991) are included. Table 8 depicts the outcome of the factorial design.

Table 8. Factorial design for the research (n = 130)

<b>Demographical Factor</b>	<b>Categories</b>	<b>Number of categories</b>	<b>Distribution within class</b>
Sex	Men / Women	2	47/52
Management	Yes / No	2	85/15
Functioning Phases	Phase 1-7	7	See Figure 15
Restructuring	Yes / No	2	112/25
Age	≤/ >40	2	47/83
Total number required	<b>2*2*7*2*2</b>	<b>112</b>	

Later sections will discuss the procedures for analysis of data. A total of 130 individuals completed questionnaires. Results obtained from the questionnaires were not representative for all the functioning phases of the CM model. Sex was the only factor that was evenly distributed amongst the categories. The distribution between the other factors are corresponding with the study topic (e.g. the majority of respondents involved were managers). The functioning phase of the individual, as determined by the CM model, was an unknown factor to the researcher while commencing the sample taking, thus resulting in certain functioning levels of the CM model being better represented than others.

### **3.3.2 Procedures of Data Collection**

The data were collected by means of an anonymous questionnaire consisting of the EPQ-R, the MBTI, the OSI, seven rating scales to determine the current level of functioning in terms of the CM model and some demographical questions (Appendix A). In order to examine the internal consistency of each of the scales for the EPQ-R and the OSI, Cronbach's alpha was computed (Guy, Edgley, Arafat & Allen, 1987).

Before the commencement of the research, the questionnaire was given to a small group of approximately five peers, graduate students in psychology and staff members. The researcher approached each reviewer individually, explained the nature of the project, left the questionnaire with him or her and provided a freepost envelope to mail it. The pilot study was used to assess the format of the information sheet and questionnaire. The outcome of this ensured that participants understood all material given. Each questionnaire had a different code number but was not associated with any identification.

It was estimated that 112 individuals would be needed for the study (Smit, 1983). The three tests were stapled together to form a single questionnaire. The researcher explained the research to the potential participants and provided them with an



information sheet (Appendix A). Completion of the tests by the pilot group did not raise any concerns, questions or suggestions for changes.

Participation was totally voluntary with no consequence for non-participation. Participants also had the right to decline participation at any time throughout the research.

Participants were informed that the nature of the research was to assess occupational stress and the relationship with personality. No consent form was necessary. Volunteers provided their names and contact details to arrange meetings in which the participants would complete the questionnaire in small groups or in their own time and returned to the researcher at a later stage. Each participant was provided with a freepost envelope to self-address and deposit in a box separate from the one in which they deposit there completed questionnaires. A summary of the results was posted to them.

#### 3.3.2.1 Demographical Questions

Demographical questions were asked to provide background information, but also to assist in compiling a more complete evaluation of possible factors that might contribute to increased levels of stress, and to determine at what phase of organisational renewal the different companies were most likely to be (Jillings, 1996). The questions provided information on age, gender, education level and information on the participant's employer contributing to the study at hand. The level of organisational renewal in which a participant perceived that he/she was functioning, was determined by having the participant select one of the following categories:

- Phase 1: **Imagination** by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.
- Phase 2: **Motivation** of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation.
- Phase 3: **Planning** and thinking strategically; planning to implement the ideas and goals.
- Phase 4: **Action** by making things work and getting results.
- Phase 5: **Evaluation** of routine operations and standards.
- Phase 6: **Satisfaction** by celebrating your organisation's competencies and achievements; rewarding people with recognition and praise for their contributions.
- Phase 7: **Realisation** by perceiving patterns in past decisions, actions and events and representing a strong sense of history and tradition.

The descriptions of these levels were ascertained by agreement by two psychologists (D. Clarke & H. Bennett, personal communication, 2000). Note in the discussion section that some participants may have perceived the levels incorrectly, adding to the source of error, so that if wrongly classified, the personality and occupational stress variables would be associated with the wrong level.

#### 3.3.2.2 Eysenck Personality Questionnaire (EPQ)

The EPQ-R (Eysenck & Eysenck, 1994) is a standardised measure of extraversion, emotional stability and socialisation. Although not the focus of the study, it will be used as a back up in an attempt to explain differences if no significant ones are found with the MBTI.

The test consists of 117 items. Norms were based on groups of students, teachers and other willing and varied participants (Eysenck & Eysenck, 1994). The sub-scales are Extraversion (E), Neuroticism (N) and Psychoticism (P).

The validity and the reliability for the EPQ are discussed in the test manual (Eysenck & Eysenck, 1994). The reliability, or the alpha coefficient, and the test-retest reliabilities of all the scales are above 0.75, which indicate acceptable levels (Guy et al., 1987). Validity of the P-scale seemed to create most problems before it was improved. In spite of the problems, the scale seemed to behave consistently and predictably, therefore the validity seems to be acceptable now (Eysenck & Eysenck, 1994).

#### 3.3.2.3 Myers and Briggs Typologies

The Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) has the following subsections: personal, work situations and self-assessment.

The MBTI (Myers & McCaulley, 1985) has been used extensively as a measure of an individual cognitive preference on four functions: intuition, sensation, thinking and feeling. The test provides a useful way to appreciate observable, individual behaviours and their contribution to the process of organisational renewal (Hurst et al., 1991).

The MBTI (Form G) is used with adults and high school students in education, counselling, career guidance and situations requiring teamwork. The test is self-administered and has 126 items. The test is theoretically derived and based on dichotomous personality dimensions. These form types are determined by combinations of poles, as exhibited on each of the dimensions.

The reliability and validity of the MBTI is discussed in the manual (Myers & McCaulley, 1985). The internal reliability coefficient alphas range between 0.70 and 0.80. Test-retest reliabilities are given as well as inter-correlation for scales. The scales were found to be essentially independent (Yapp, 1995).

This test was found useful in determining which of the 16 personality types each person belonged to and what cognitive preference dominated.

#### 3.3.2.4 Occupational Stress Indicator (OSI)

The OSI questionnaire was developed to measure occupational stresses that would apply across different occupational levels and environments. It measures sources of



stress in the work environment, the psychological strains experienced by the individuals as a result of work stressors, the coping resources, and the individual consequences or the effects of stress (Osipow & Spokane, 1992).

The OSI consists of 167 test items or questions and can be self-administered. The items are rated on a 5-point Likert-type rating. The test was administered successfully with technical, professional and managerial workers employed in schools, service organisations and large manufacturing settings. Norms were based on these types of settings. It was designed as groups measure (Cooper, Sloan & Williams, 1988; Osipow & Spokane, 1992). The OSI has the following dimensions:

The Occupational Roles Questionnaire (ORQ), which measures sources of stress by means of sub-scales. The sub-scales are Role Overload (RO), Role Ambiguity (RA), Role Insufficiency (RI), Role Boundary (RB), Responsibility (R), and Physical Environment (PE).

The second dimension is the Personal Strain Questionnaire (PSQ) and measures individual strain by means of sub-scales referred to as the Vocational Strain (VS), Psychological Strain (PSY), Interpersonal Strain (IS) and Physical Strain (PHS) sub-scales.

The third dimension is the Personal Resources Questionnaire (PRQ). It measures coping resources available to deal with types of stress as measured by the other two dimensions. The sub-scales are Recreation (RE), Self-Care (SC), Social Support (SS), and Rational/Cognitive Coping (RC) (Cooper, Sloan & Williams, 1988; Osipow & Spokane, 1992).

The OSI reliability and validity are outlined in the literature and the OSI Manual (Cooper & Cartwright; Cooper et al., 1988; Osipow & Spokane, 1992). Internal consistency was done for all scales and the alpha coefficients were all above 0.70 for the different sub-scales, implying acceptable internal consistency. The validity was calculated by means of four dimensions and face validity was found to be very high (Cooper et al., 1988).

However, doubt exists for some of the other validity measures, but overall it is still designed to be a test based on an integrated and combined model, and could therefore provide useful information on the stress phenomenon.

### **3.4 Data Processing**

For this study Microsoft Access was used for data capturing, storing and manipulation.

The following sections give a summary of the database design within the software. Figure 13 illustrates the layout of the database.

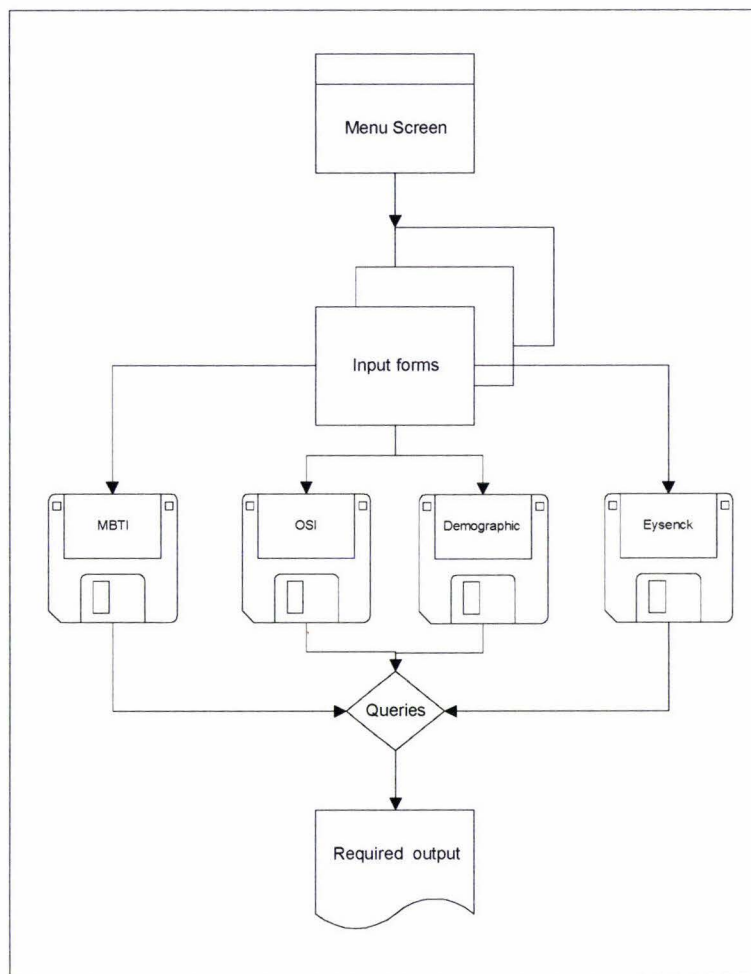


Figure 13. Structure of the database used for the study.

### **3.4.1 Data Capturing in Electronic Format (Input forms)**

Input forms were used to capture the data separately for each measuring scale (i.e. Demographic, EPQ-R, MBTI and OSI) to enhance the speed and accuracy of data entering. Tools making this possible include the use of drop-down boxes and selection boxes. After entering the data on the input forms it was directly stored in the appropriate data table against the field identifier (i.e. respondent number). Figure 14 illustrates an example of one input form (demographical information).



Figure 14. Demographical input form used in the database

### 3.4.2 Data Storing in Electronic Format (data tables)

Each measuring scale was separately stored in data tables. A relational database was created, linking the different tables with a common denominator (respondent number). The link was utilised to ensure that all data fields were retained for matching respondent numbers.

Apart from the raw data tables there were other table types created including transformation and lookup tables. Lookup tables are supporting tables for the input forms. The main function of these tables is to change text fields into numeric fields (e.g. male records are changed into a numeric value = 1). Transformation tables were used to transform raw ratings for scales into scores used for classification purposes (e.g. transforming MBTI ratings into personality scores based on gender differences).

### 3.4.3 Data Combination and Export facilities

All the statistical analyses were completed using the SPSS statistical application (SPSS, Inc., 1999), and done on a combined database (demographic, EPQ-R MBTI, and OSI). In order to export the data into the required format query tables were used for the combination and transformation of data tables. The queries were subsequently used for exporting the data in the required format for use in the SPSS application.

## 4. DATA ANALYSIS AND RESULTS

### 4.1 Descriptive Statistics

The following section includes all the data analysis and testing of hypothesis as reported in the objectives. The data analysis was done by using raw scores, unless otherwise indicated. Levene's test for the equality of variances was applied for appropriate statistical tests of significance of differences between groups.

Figure 15 shows the distribution of the participants' current level of functioning. Of the 130 respondents, 60 (47%) of the respondents focused on making things work (phase 4 of the CM model) in their companies and work environments, whilst only 21 (16%) saw themselves as motivators (phase 2 of the CM model) and 16 (12%) as strategic planners (phase 3 of the CM model). Unfortunately, 15 (12%) did not respond or could not select one area as more important, or possibly did not understand the question.

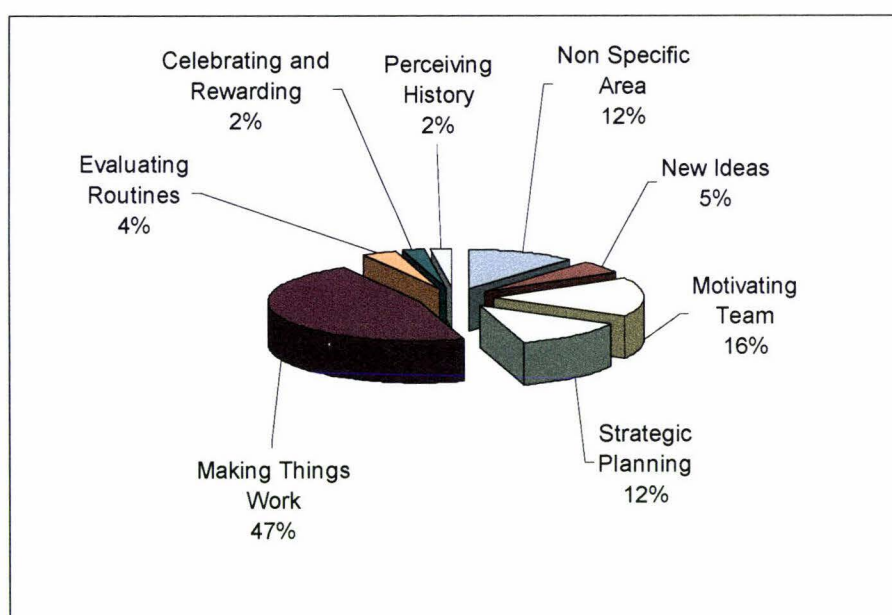


Figure 15. Distribution of functioning phases for respondents.

Figure 16 displays the focus of management, concerning the level of functioning compared to the non-management group. The majority of the sample were managers and thus mostly older than 40 years (64%). Managers and non-managers do not have the same distribution in terms of functioning level. Most of the respondents (40 of the 130, or 31%) who identified themselves as being in management positions indicated their focus to be on making things work (phase 4 of the CM model) compared to the 20 (15%) respondents in non-management positions in the same field of functioning. Both groups indicated their main focus to be making things work. The second most popular option was to motivate the team (phase 2 of the CM model) amongst managers (18, or 14%) whilst the non-managers (12, or 9%) did not specify a specific area. The distribution



shows a lack of managers in strategic planning (phase 3 of the CM model), motivating the team and generating new ideas (phase 1 of the CM model).

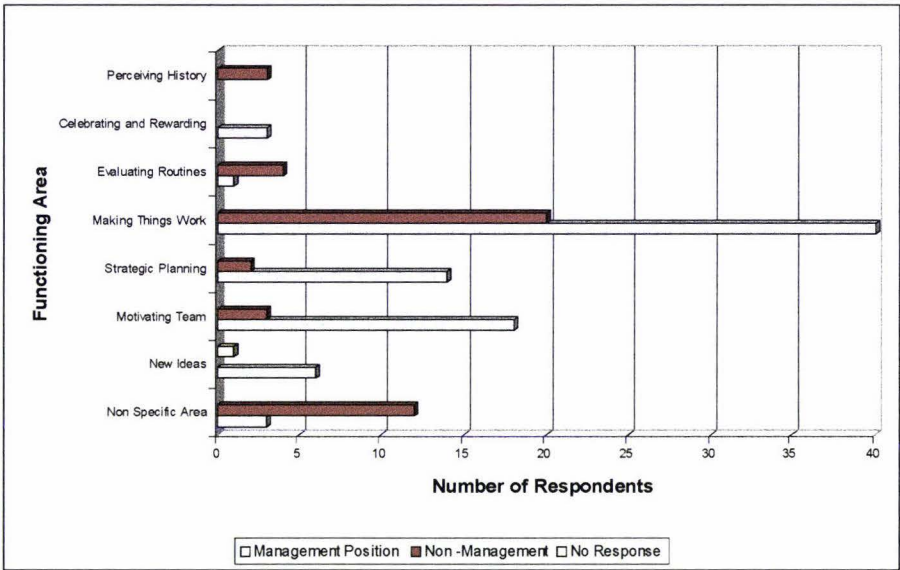


Figure 16. Comparison of functioning phases between management and non-management.

#### 4.1.1 Statistics for Occupational Stress Inventory (OSI)

The means, standard deviations and ranges of scores for the OSI and the dimensions Occupational Stress (ORQ), Personal Strain (PSQ) and Coping Resources (PRQ) are depicted in Table 9, while the descriptive statistics for the individual sub-scales are depicted in Appendix B. The distributions of data are relatively normal, based on the skewness. The errors of the mean also indicate that the mean values were within confidence intervals, therefore suggesting that the sample mean is representative of the population mean.

The ORQ is the factor of the OSI that measures the extent of occupational stress amongst the participants. Means for all the sub-scales of the occupational stress (ORQ) factor i.e. Role Overload (RO), Role Insufficiency (RI), Role Ambiguity (RA), Role Boundary (RB), Responsibility (R) and Physical Environment (PE), were less than 39, within the normal ranges (Osipow & Spokane, 1992).

The PSQ is the factor of the OSI that measures the extent of personal strain amongst the participants. For all the sub-scales, Vocational Strain (VS), Psychological Strain (PSY), Interpersonal Strain (IS) and Physical Strain (PHS), mean scores are less than 39, also within normal ranges (Osipow & Spokane, 1992).

The factor on the OSI that measures coping resources of participants is the PRQ. The sub-scales are Recreation (RE), Self-Care (SC), Social Support (SS) and Rational or Cognitive Coping (RC). Mean statistics for the different sub-scales indicate that both RE

and SC are significantly low, whilst SS and RC are within mild deficits concerning coping skills (Osipow & Spokane, 1992).

**Table 9. Descriptive statistics for the OSI test**

<b>Scales</b>	<b>Subscales</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Error</b>	<b>Std. Deviation</b>	<b>Skewness</b>	<b>Alpha value (<math>\alpha</math>)</b>
ORQ	6	81	192	142.71	1.95	22.93	-.126	.63
PSQ	4	46	154	84.67	1.80	21.19	0.70	.84
PRQ	4	68	175	130.57	1.49	17.46	-.362	.58

**Note:** N = 138, Standard error skewness = .206

All the factors show internal consistency in this scale. Factors ORQ (measuring occupational stress), PSQ (measuring personal strain) and ORQ (measuring coping resources) have values above 0.6 suggesting adequate consistency or internal agreement (Guy et al., 1987).

From Table 10 women obtained significantly higher mean score than men on the ORQ and on the sub-scales RI, RA, PE and also on the PRQ and on the subscale SC for the OSI. All the factors show satisfactory internal consistency in these scales.

**Table 10. Mean and standard deviations for men and women on the OSI**

<b>Scale</b>	<b>Men (n= 66)</b>		<b>Women (n=71)</b>		<b>t</b>	<b>df</b>	<b>Alpha value (<math>\alpha</math>)</b>
	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>			
RO	29.42	5.64	30.01	7.07	-0.54	132.03	.72
RI	23.35	6.82	26.31	6.18	-2.66**	131.13	.76
RA	23.33	7.12	26.69	8.75	-2.46*	133.05	.82
RB	22.03	7.27	23.68	5.82	-1.46	124.54	.72
R	26.88	5.99	26.31	6.51	0.53	135.00	.67
PE	13.36	2.88	14.61	4.18	-2.04*	124.64	.66
ORQ	138.38	21.36	147.61	22.55	-2.46	135.00	
VS	19.67	4.76	20.93	4.96	-1.52	134.86	.62
PSY	22.30	6.82	22.61	6.55	0.26	133.27	.79
IS	21.67	5.67	22.69	6.75	-0.96	133.64	.73
PHS	19.61	6.83	19.99	8.30	-0.29	133.05	.88
PSQ	83.24	20.27	86.21	22.13	-0.82	135.00	
RE	26.91	5.39	25.70	5.68	1.27	134.94	.62
SC	25.53	6.89	28.93	8.65	-2.55*	131.97	.72
SS	40.74	7.66	41.89	7.20	-0.90	132.57	.86
RC	35.00	5.078	36.92	6.70	-1.90	129.90	.79
PRQ	128.18	16.83	132.73	17.89	-1.53	135.00	

**Note:** \*p<.05, \*\*p<.01

From Table 11 managers obtained significantly lower mean scores than non-managers on the sub-scales RI, RA, RB, and PE on the ORQ, except for R where managers scored higher. Managers also attained significantly lower mean scores than non-managers on the PSQ and the subscales VS, PSY and IS. Managers were significantly higher on RE on the PRQ, which implies that they have more opportunities for recreation than non-managers.

Table 11. Mean and standard deviations for managers and non-managers on the OSI

<i>Scale</i>	<b>Management (n= 87)</b>		<b>Non- Management (n=50)</b>		<i>t</i>	<i>df</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>		
RO	30.07	6.56	29.14	6.15	0.82	135.00
RI	23.37	6.84	27.52	5.38	-3.93**	122.23
RA	21.95	7.48	30.50	6.37	-6.79**	135.00
RB	20.85	6.38	26.42	5.38	-5.20**	135.00
R	29.11	5.56	22.18	4.79	7.39**	135.00
PE	13.49	3.33	14.90	4.02	-2.30*	135.00
ORQ	138.85	23.15	150.66	19.00	-3.06	135.00
VS	18.79	4.72	22.98	3.99	-5.53**	116.78
PSY	21.55	7.01	24.04	5.73	-2.25*	119.33
IS	21.06	6.34	24.18	5.62	-2.89**	135.00
PHS	19.57	7.47	20.20	7.89	-0.46	135.00
PSQ	81.00	21.50	91.40	19.21	-2.84	135.00
RE	27.23	5.58	24.64	5.16	2.69**	135.00
SC	27.25	8.26	27.36	7.63	-0.07	135.00
SS	42.01	6.33	40.16	8.96	1.29	77.50
RC	35.98	5.16	36.02	7.36	-0.04	77.07
PRQ	131.90	15.33	128.18	20.75	1.11	80.07

Note: \*p<.05, \*\*p<.01

#### **4.1.2 Statistics for Myers and Briggs Type Indicator (MBTI) Data**

Table 12 shows the means, standard deviations and range of scores on the scales of the MBTI. The participants were distributed unevenly among the different dimensions.

Participants tended toward the introvert pole of the extraversion-introversion (E-I) dimension, on the sensing pole of the sensing-intuitive (S-N) dimension, on the thinking pole of the thinking-feeling (T-F) dimension and the on judgement pole of the judgement-perception (J-P) dimension. It seems then, that the sample was mostly of type ISTJ (See Figure 17).



Table 12. Descriptive statistics for MBTI data

	Extraversion-Introversion		Sensing-Intuitive		Thinking-Feeling		Judging-Perceiving	
	E	I	S	N	T	F	J	P
Maximum	24	28	33	25	31	19	28	29
Mean	11.21	14.55	12.95	11.58	13.12	7.24	16.34	10.59
SD	6.21	6.62	8.45	3.78	6.97	4.63	7.30	7.19
Skewness	.04	.15	.30	.11	.18	.40	-.58	.65

Note: Total respondents =138, Minimum = 0, Standard Error Skewness - .206

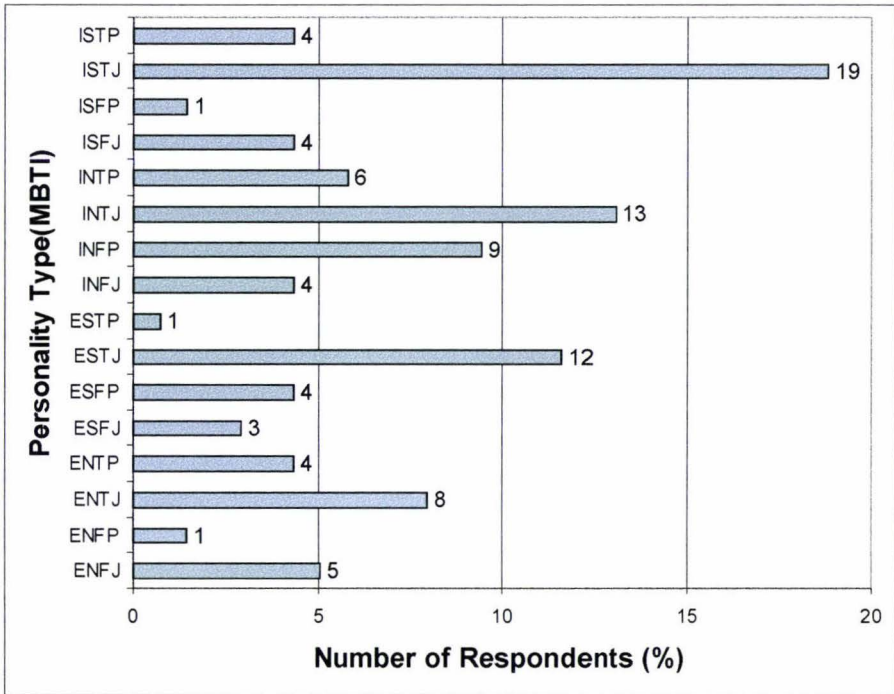


Figure 17. A distribution of MBTI types for the sample

Table 13 shows the comparative data for men and women for the measurement instrument MBTI. There were no significant differences between men's and women's mean scores on any of the scales.



Table 13. Comparing MBTI statistic for men and women

	Extraversion-Introversion		Sensing-Intuitive		Thinking-Feeling		Judging-Perceiving	
	E	I	S	N	T	F	J	P
<b>Men (N = 66)</b>								
Maximum	24	28	33	25	31	19	28	28
Mean	10.48	15.13	13.71	10.98	13.94	6.88	16.00	10.50
SD	6.64	7.03	9.64	7.39	7.70	4.66	8.15	7.88
<b>Women (N=71)</b>								
Maximum	23	26	28	25	28	18	28	29
Mean	11.87	14.01	12.32	12.10	12.38	7.56	16.66	10.70
SD	5.80	6.26	7.21	6.20	6.22	4.63	6.51	6.58
t	-1.31	0.99	0.95	-0.96	1.31	-0.86	-0.53	-0.16
df	135.00	135.00	120.05	135.00	135.00	135.00	124.36	127.00

Note: \*p<.05, \*\*p<.01

From Table 14 on the Sensing-Intuitive dimension, managers have significantly higher mean sensing scores, and significantly lower mean intuition scores, than non-managers.

Table 14. Comparing MBTI statistic for managers and non-managers

	Extraversion-Introversion		Sensing-Intuitive		Thinking-Feeling		Judging-Perceiving	
	E	I	S	N	T	F	J	P
<b>Managers (N = 87)</b>								
Maximum	24	28	33	25	31	16	28	29
Mean	11.70	13.77	14.36	10.41	13.21	6.99	16.40	10.30
SD	6.30	6.56	8.79	6.77	6.64	4.17	7.50	7.28
<b>Non-Managers (N=50)</b>								
Maximum	24	27	28	25	28	19	27	27
Mean	10.34	15.92	10.60	13.56	12.98	7.66	16.24	11.14
SD	6.08	6.62	7.38	6.44	7.63	5.39	7.10	7.13
t	1.23	-1.84	2.56*	-2.67**	0.19	-0.76	0.12	-0.66
df	135.00	135.00	135.00	135.00	135.00	83.00	135.00	135.00

Note: \*p<.05, \*\*p<.01

#### 4.1.3 Statistics for the Eysenck Personality Questionnaire (EPQ-R)

Table 15 refers to the descriptive statistics for the EPQ-R. It shows the means, standard deviations and range of scores on the scales of the EPQ-R. It appears that data distributions are normal (Guy, Edgley, Arafat & Allen, 1987). The error of the mean also indicates that the mean values could be accepted with confidence, therefore suggesting that the sample mean is representative of the population mean.

The mean statistic for psychoticism (P) or sociability is 4.80, for extraversion-introversion (E), 13.03 and for neuroticism (N) or emotional stability 9.0.

**Table 15. Statistics for the EPQ-R (N = 94)**

<b>Factor</b>	<b>Psychoticism</b>	<b>Extroversion</b>	<b>Neuroticism</b>
	<b>P</b>	<b>E</b>	<b>N</b>
Items	30	23	24
Maximum	18	21	22
Mean	4.80	13.03	9.00
Std. Deviation	3.01	4.63	5.20
Skewness	1.23	-0.21	0.59
Alpha value ( $\alpha$ )	.61	.80	.85

As depicted in Table 15 the alpha values for the EPQ-R are above 0.60. This suggests internal consistency for all the factors in this scale, although the P scale tends to be low (Nunnally, 1978).

Table 16 illustrates comparative statistics for men and women based on the EPQ-R. The results illustrate no significant differences in mean scores for men and women for factor P, E and N according to the t-statistics. The results for men and women could therefore be aggregated for further analysis.

**Table 16. Comparing men and women for the EPQ-R**

<b>Factor</b>	<b>Psychoticism</b>	<b>Extroversion</b>	<b>Neuroticism</b>
	<b>P</b>	<b>E</b>	<b>N</b>
<b>Men (N = 50)</b>			
Maximum	12	21	22
Mean	4.76	12.38	8.42
SD	2.82	4.99	5.01
<b>Women (N=39)</b>			
Maximum	10	20	22
Mean	4.67	14.13	9.56
SD	2.63	3.96	5.14
<i>t</i>	0.16	-1.79	-1.06
<i>df</i>	87.00	87.00	87.00

**Note:** \* $p < .05$ , \*\* $p < .01$

Table 17 illustrates similar trends as observed for the managers and non-managers. Non-management obtained significant higher scores on P. The other factors did not differ significantly for the two groups. This indicates that managers measure lower on psychoticism and therefore they would be more sociable than non-managers.

Table 17. Comparing management and non-management statistics for the EPQ-R

Factor	Psychoticism	Extroversion	Neuroticism
	P	E	N
<b>Management (N = 76)</b>			
Maximum	12	21	22
Mean	4.46	13.14	8.75
SD	2.66	4.75	4.89
<b>Non-management (N = 13)</b>			
Maximum	10	21	22
Mean	6.23	13.15	9.92
SD	2.68	3.98	6.16
<i>t</i>	-2.21*	-0.01	-0.77
<i>df</i>	87.00	87.00	87.00

Note: \* $p < .05$

## 4.2 ANOVA Analyses

**Appendix C** depicts the results for the ANOVA analysis for comparing the different functioning levels based on OSI, MBTI and EPQ-R's. The following will summarise the findings from these studies.

The OSI is measured in relation to the variable on the demographic questionnaire referred to as level of functioning. This represents the seven phases of functioning and the participant had to identify predominantly with one of these phases. This is summarised as follows (Hurst, et al, 1991):

### Box 2 Seven Phases of Organisational Renewal

- Phase 1: **Imagination** by generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.
- Phase 2: **Motivation** of a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation.
- Phase 3: **Planning** and thinking strategically; planning to implement the ideas and goals.
- Phase 4: **Action** by making things work and getting results.
- Phase 5: **Evaluation** of routine operations and standards.
- Phase 6: **Satisfaction** by celebrating your organisation's competencies and achievements; rewarding people with recognition and praise for their contributions.
- Phase 7: **Realisation** by perceiving patterns in past decisions, actions and events and representing a strong sense of history and tradition.

The seven phases were compared with each other and, in terms of the ORQ, there was a significant difference. (See Appendix C.) For the PSQ and the PRQ there were no significant differences between the phases. Differences found for the ORQ suggest a relationship between functioning and occupational stress, and will be discussed in subsequent sections. The fact that no significant differences were found for personal strain (PRQ) and coping resources (PSQ) suggests that these factors were common amongst the phases.

The seven phases were also compared for the MBTI. According to results presented in Appendix C, no significant differences were established for the seven paired phases. This suggests that the personality types were equally distributed between the seven functioning levels. This trend is in co-ordinance with reality within the working environment (i.e. all types of personalities found in the different functioning phases). However, it does not fit the management model as depicted by Hurst et al. (1991). The next question that arises is whether there is a difference in stress experienced by individuals operating at their appropriate level of functioning within the organisation (as depicted by the CM model), opposed to individuals operating at an inappropriate level of functioning.

There were also no significant differences among the Eysenck personality traits at the different phases of organisational renewal (Appendix C).

### **4.3 Regression Analysis**

Hurst et al. (1991) attempt a broader perspective on management strategies by building a model, called the Creative Management (CM) Model (Hurst et al., 1991). It explores the relationship of personal typologies as described in the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) to the different phases of organisational renewal. Individuals with specific typologies prefer one phase of renewal to another.

#### **4.3.1 The Relationship Between Personality (MBTI) and Stress (OSI)**

##### **4.3.1.1 The Relationship Between Personality (MBTI) and Stress (OSI) on the total sample**

The regression analysis shown in Table 20 tests the correlation and significance of the different variables in a model that describes stress in terms of the three scales - ORQ, PRQ and PSQ. The total OSI regression is depicted in Table 19. The table indicates the Pearson statistic as well as the significance of each variable. The model match factor in Table 20 refers to a factor created to test this CM model and the correlation to stress. The participants who indicated themselves to be in one of the two possible ideal functioning areas (according to the CM model) are considered a match with the CM model. The model match factor was established by testing whether the individual actually

functioned in the ideal phase according to the CM model, thus the phase of cognitive preference. As an example the model match for Phase 4 was calculated as follows:

$$\text{Modelmatch}_{\text{Phase4}} = \text{If}[\text{Cogn.pref.} = \text{Phase4} \ \& \ \text{funct} = \text{Phase4}, \text{then} = 1, \text{else} = 0]$$

The intent was therefore to test whether the functioning match between actual and ideal has an influence on stress. An analogy for this is to test whether there is a difference in trying to fit round blocks in square holes, compared to round blocks in round holes. Table 18 depicts the number of personality types as classified by the MBTI within different phases of the CM model.

Table 18: Personalities distribution within different phases of this study

Personality type	Number Model Matched	Number Model Missed	Total
<b>Phase 1&amp;7</b>			
ENFP	2		2
ENTJ	1		1
ESTJ		1	1
INTJ	1	1	2
INTP	1	1	2
ISTJ		3	3
<b>Phases2&amp;6</b>			
ENTJ		2	2
ENTP		3	3
ESFJ	1	1	2
ESFP	1		1
ESFP		1	1
ESTJ		5	5
INFJ	2		2
INFP		1	1
INTJ		1	1
ISFJ		1	1
<b>Phase 3&amp;5</b>			
ENFJ		2	2
ENTJ	1	2	3
ESFP		1	1
ESTJ	1	2	3
INFJ		1	1
INFP		1	1
INTJ	3	1	4
ISFJ		1	1
ISTJ	1	3	4
ISTP	1		1
<b>Phase 4</b>			
ENFJ	4		4
ENTJ	4		4
ENTP	2		2
ESFJ	1	1	2
ESFP	2		2
ESTJ	5	1	6
ESTP	1		1
INFJ	1		1
INFP	8		8
INTJ	7		7
INTP	2		2
ISFJ	4		4
ISFP	1	1	2
ISTJ	5	5	10
ISTP	3	2	5

The Pearson statistic refers to the linearity of the correlation where age, restructuring, sensing, feeling, judging and model match are negatively correlated. This depicts:

**For age:** A negative linear correlation implies that the younger participants have a higher level of occupational stress than older participants do.

**For restructuring:** The negative linear correlation indicates that participants who were employed by companies where major restructuring was evident, experienced higher levels of occupational stress (restructure yes = 1, restructure no = 2).

**For sensing:** The negative linear correlation for sensing suggests that higher sensing levels would experience less occupational stress. Note that sensing and intuition are described on a continuous scale and will have opposite trends on the model. It was therefore expected that intuition would have a positive correlation according the Pearson statistic. The same is applicable for the other factors on the MBTI.

The Pearson statistic significance does not necessarily correlate with the significance (t) of the factor coefficient (Beta). However, the objective of this study was not to derive a model predicting the stress, but rather to investigate the factors affecting the stress within the management model. Therefore, it is realised that in some cases factors could be significant according to the t-values, but if it does not have a significant linear trend according to the Pearson statistics, it was not considered in the observations.

The variables with a significant influence are indicated in Table 20. Significant values less than .05 are based on a model significance of a 95% confidence level. Sex, management and sensing are the significant variables indicated for the occupational stress model in this instance.

The variables that indicate a significant influence with the Personal Strain factor (PSQ) of the OSI are management, restructuring, extroversion and sensing.

The variables that indicate a significant influence with the Coping Resources factor (PRQ) of the OSI are extroversion, introversion, judging and perceiving.

Table 19. Summary of regression analysis for the total OSI relationships as a function of MBTI

Item	E	I	S	N	T	F	J	P
Pearson .	-0.19	0.16	-0.18	0.17	0.00	0.06	-0.21	0.23
Significance	0.01	0.03	0.02	0.02	0.49	0.24	0.01	0.00
Std. Beta	-0.32	-0.15	-0.14	0.01	0.30	0.25	-0.03	0.17
t	-1.49	-0.65	-0.75	0.06	1.63	1.39	-0.13	0.67
Sig. Influence	neg	pos	neg	pos			neg	pos

Table 20. Summary of regression analysis for the OSI relationships as a function of MBTI



	AGE	SEX	MGMT	RESTR	E	I	S	N	T	F	J	P	MOD MATCH
<b>ORQ (<math>R^2 = 0.157</math>)</b>													
Pearson	-0.05	0.20	0.24	-0.13	-0.03	0.02	-0.17	0.13	0.07	-0.04	-0.06	0.09	-0.01
Significance	0.30	0.02	0.01	0.08	0.38	0.42	0.04	0.08	0.24	0.34	0.26	0.18	0.45
Std. Beta	0.03	0.20	0.17	-0.14	-0.01	0.00	-0.22	-0.06	0.27	0.13	0.46	0.53	-0.13
t	0.27	2.00	1.63	-1.43	-0.04	0.00	-1.07	-0.32	1.28	0.61	1.20	1.38	-1.34
Sig. Influence		pos	pos				neg						
<b>PSQ (<math>R^2 = 0.200</math>)</b>													
Pearson	-0.06	0.05	0.23	-0.18	-0.22	0.15	-0.17	0.15	-0.06	0.13	-0.11	0.12	0.03
Significance	0.25	0.32	0.01	0.03	0.01	0.06	0.03	0.06	0.25	0.08	0.12	0.10	0.39
Std. Beta	-0.03	0.02	0.17	-0.15	-0.73	-0.56	-0.11	0.03	0.25	0.29	-0.04	0.03	-0.05
t	-0.29	0.24	1.74	-1.63	-2.61	-1.98	-0.55	0.14	1.21	1.41	-0.11	0.09	-0.54
Sig. Influence			pos	neg	neg		neg						
<b>PRQ (<math>R^2 = 0.211</math>)</b>													
Pearson	0.01	0.15	-0.08	0.13	0.34	-0.31	-0.04	0.05	0.01	-0.03	0.24	-0.23	0.07
Significance	0.48	0.06	0.21	0.09	0.00	0.00	0.33	0.29	0.47	0.38	0.01	0.01	0.22
Std. Beta	0.08	0.14	-0.07	0.10	0.46	0.16	0.03	0.10	-0.08	-0.06	0.43	0.20	0.05
t	0.80	1.43	-0.71	1.10	1.65	0.57	0.14	0.51	-0.40	-0.30	1.16	0.54	0.51
Sig. Influence					pos	neg					pos	neg	

#### 4.3.1.2 Occupational Stress (OSI) as a Function of the Seven Phases.

The significant factors on the occupational stress sub-scale (ORQ) are depicted in Table 21. Age is significant for phase 1 and 7 in the CM model thus for imagination (1) and realisation (7), whereas sex and management are significant for motivation (2) and satisfaction (6). Age, management and thinking are significant for planning (3) and evaluation (5).

The significant factors on the coping resources sub-scale (PRQ) are also displayed in Table 21. The factors that influence the CM model significantly are restructuring, extroversion, introversion and judgement for phase 4 of the model, i.e. the action phase, whereas age, management and feeling are significant for the imagination and realisation phases. Management and sensing are significant for the motivation and satisfaction phases of the CM model and sex, extroversion, introversion, judgement and perceiving are significant for the planning and evaluation phases of the CM model.

The personal strain (PSQ) sub-scale of the OSI indicates significant factors as extroversion, sensing and intuition for the action phase of the CM model and sensing, intuition and judgement for the imagination and the realisation phases. Management is indicated as a significant factor for phases 2 and 6 (motivation and satisfaction phases).

It is interesting to note that the occupational stress sub-scale (ORQ) has mostly demographical variables that significantly influence the CM model, whilst the coping

resources sub-scale (PRQ) has a variety of both demographical and personality variables, with the personality variables being slightly more. The personal strain sub-scale has more personality variables than demographical variables that influence the CM model significantly.

It is also notable that management is significant for phases 2 and 6 on all three sub-scales of the OSI.

Table 21. Significant factors for different functioning levels and stress (OSI), according to the Pearson statistics

Functioning Phase	Significant Factors
<b>ORQ</b>	
1,7	AGE
2,6	SEX, MGMT
3,5	AGE, MGMT, T
<b>PRQ</b>	
4	RESTR, E, I, J
1,7	AGE, MGMT, F
2,6	MGMT, S
3,5	SEX, E, I, J, P
<b>PSQ</b>	
4	E, S, N
1,7	S, N, J
2,6	MGMT
3,5	MGMT

Different variables are significant when the individual phases of the functioning dimension are individually modelled. Possible explanations for this difference include:

There are a different number of respondents for the individual phases, which will result in a different statistical composition. (E.g. the majority of respondents function at level 4, therefore the outcome of the total model will be influenced mostly by this phase, see Section 4.1); or,

The relationship of stress between the phases may differ (the stress experienced by respondents functioning on phases 2 and 6 are commonly influenced by the management variable but gender only influences the ORQ sub-scale for phases 2 and 6 significantly). There is a possibility for the latter explanation to be true for the ORQ, as statistical comparisons revealed that there are different stress levels between the functioning phases (See 4.2). It is therefore worthwhile to investigate this possibility in more detail.

The significant trends or correlation of stress established in this section (different phases compared) were compared with the trends established in Section 4.3.1 (all phases combined). All the significant stress factors (variables) of the different functioning levels correlated with the trend observed in Section 4.3.1. (e.g. Section 4.3.1 revealed a positive correlation between sex and ORQ for the combined phases, which is the same trend found for phases 2 and 6 in this section on the ORQ).

Comparisons between functioning levels in terms of significant variables for the ORQ model are summarised in Table 22. Observations from this table include:

All functioning levels have a positive correlation with management, including levels 2, 6, 3 and 5 where the influence on the CM model was statistically significant.

Sex has a positive correlation for all functioning phases except for phases 1 and 7. Since the negative correlation for these phases is not significant, it could be accepted that in general women will have more stress than men, regardless of their functioning phase. A similar conclusion could be drawn for the thinking type individuals who will have more stress, regardless of their functioning level.

Age has a significant influence on the ORQ sub-scale for phases (1, 7) and (3, 5) but also shows opposite correlation. This suggests that older people have more stress for phases 1 and 7 but less stress for 3 and 5. This conclusion is not far removed from reality as older people might feel more comfortable with planning and evaluation functions due to their experience.

Table 22. Summary of significant factors for the functioning phases on the ORQ, according to the Pearson statistics

Item	AGE	SEX	MGMT	T
<b>PHASE 4</b>				
Pearson	neg	pos	pos	pos
Influence Model Sig	no	no	no	no
<b>PHASE 1,7</b>				
Pearson	pos	neg	pos	neg
Influence Model Sig	yes	no	no	no
<b>PHASE 2,6</b>				
Pearson	pos	pos	pos	-
Influence Model Sig	no	yes	yes	-
<b>PHASE 3,5</b>				
Pearson	neg	pos	pos	pos
Influence Model Sig	yes	no	yes	yes

#### 4.3.1.3 Relationship Between Personality (MBTI) and Subscales of Stress (OSI)

Table 23 gives a summary of the Pearson statistics, significance and positive or negative significant factors for the sub-scales of the OSI. The statistical regression for the ORQ

reflects no significant variables for RO. Variables that have a significant influence on the RI sub-scale are sex, management, N and P. These variables are positively correlated for RI. The variables that influence RA significantly are sex and management (positively correlated) as well as restructuring and sensing (negatively correlated). RB are significantly influenced by sex, management, N and P (positively correlated) as well as by restructuring, S and J (negatively correlated). Responsibility as a sub-scale is negatively correlated and significantly influenced by management and I. The last sub-scale of the ORQ is PE. The statistical regression for the ORQ reflects significant variables for the PE. These variables are positively correlated for sex, management and P.

**Table 23. Summary of regression analysis for the ORQ Subscales relationships as a function of MBTI**

Item	Age	Sex	Mgmt	Restr	E	I	S	N	T	F	J	P
<b>RO (<math>R^2 = 0.074</math>)</b>												
Pearson .	0.13	0.08	-0.03	-0.07	-0.11	0.03	-0.14	0.13	-0.07	0.01	-0.08	0.04
Significance	0.07	0.17	0.36	0.21	0.11	0.35	0.06	0.06	0.23	0.47	0.18	0.31
Std. Beta	0.06	0.08	-0.14	-0.07	-0.27	-0.19	0.10	0.29	-0.03	-0.02	-0.02	-0.02
t	0.65	0.83	-1.45	-0.78	-1.22	-0.78	0.50	1.48	-0.15	-0.11	-0.09	-0.07
Sig. Influence												
<b>RI (<math>R^2 = 0.186</math>)</b>												
Pearson	0.08	0.25	0.33	-0.04	-0.01	0.06	-0.14	0.15	0.14	-0.10	-0.08	0.15
Significance	0.18	0.00	0.00	0.31	0.47	0.25	0.06	0.04	0.06	0.13	0.17	0.04
Std. Beta	0.06	0.21	0.25	0.01	0.00	0.00	-0.18	-0.10	0.19	-0.03	0.06	0.20
t	0.66	2.39	2.87	0.12	0.00	0.00	-0.97	-0.54	1.03	-0.15	0.25	0.80
Sig. Influence		pos	pos					pos				pos
<b>RA (<math>R^2 = 0.343</math>)</b>												
Pearson	0.12	0.23	0.52	-0.21	-0.11	0.14	-0.18	0.13	0.10	-0.09	0.00	0.05
Significance	0.09	0.00	0.00	0.01	0.09	0.06	0.02	0.06	0.12	0.16	0.50	0.30
Std. Beta	0.09	0.16	0.43	-0.12	-0.05	0.03	-0.34	-0.26	0.14	-0.05	0.22	0.23
t	1.12	2.08	5.47	-1.64	-0.24	0.17	-2.08	-1.57	0.82	-0.30	0.98	1.03
Sig. Influence		pos	pos	neg			neg					
<b>RB (<math>R^2 = 0.243</math>)</b>												
Pearson	0.08	0.16	0.43	-0.15	-0.05	0.02	-0.24	0.24	-0.06	0.08	-0.19	0.20
Significance	0.16	0.03	0.00	0.05	0.30	0.42	0.00	0.00	0.26	0.19	0.01	0.01
Std. Beta	0.05	0.08	0.36	-0.07	-0.23	-0.28	-0.02	0.12	0.16	0.15	-0.04	0.13
t	0.60	0.91	4.24	-0.94	-1.13	-1.29	-0.13	0.68	0.89	0.85	-0.15	0.55
Sig. Influence		pos	pos	neg			neg	pos			neg	pos
<b>R (<math>R^2 = 0.343</math>)</b>												
Pearson	0.11	-0.01	-0.48	-0.02	0.12	-0.21	0.05	-0.08	-0.00	-0.05	0.05	-0.09
Significance	0.10	0.46	0.00	0.43	0.09	0.01	0.30	0.19	0.49	0.26	0.28	0.14
Std. Beta	0.10	0.03	-0.55	-0.08	-0.28	-0.42	-0.04	0.06	0.08	0.06	0.26	0.17
t	1.30	0.45	-7.04	-1.11	-1.45	-2.06	-0.26	0.37	0.47	0.39	1.14	0.74
Sig. Influence			neg			neg						

Item	Age	Sex	Mgmt Restr	E	I	S	N	T	F	J	P	
PE (R <sup>2</sup> = 0.098)												
Pearson	-0.02	0.18	0.19	-0.08	0.00	0.05	0.02	0.06	-0.03	0.11	-0.08	0.15
Significance	0.39	0.02	0.01	0.19	0.49	0.30	0.43	0.26	0.38	0.09	0.17	0.04
Std. Beta	-0.01	0.16	0.16	-0.04	-0.14	-0.14	0.16	0.08	0.15	0.20	-0.06	0.09
t	-0.10	1.74	1.77	-0.50	-0.61	-0.61	0.83	0.41	0.80	1.04	-0.24	0.34
Sig. Influence		pos	pos									pos

#### 4.3.2 Relationship of EPQ-R and Stress (OSI)

The regression analysis done in Table 24 tests the correlation and significance of the EPQ-R, in a model that describes stress in terms of the three sub-scales ORQ, PRQ and PSQ. The EPQ-R portrays the personality in terms of three dimensions i.e. the extraversion-introversion dimension (E), neuroticism (N) and psychoticism (P). The regression in Table 24 indicates the Pearson statistic as well as the significance of each variable.

The Pearson statistic refers to the linearity of the correlation where the extraversion-introversion dimensions, age and restructuring are correlated negatively for the occupational stress sub-scale of the OSI. This depicts that extroverts ( $E_{\text{correlation}} = -0.02$ ) have lower levels of occupational stress. It is however, a noticeable poor linear relationship. The age ( $AGE_{\text{correlation}} = -0.12$ ) variable implies that the younger participants have higher levels of occupational stress and for restructuring ( $RESTR_{\text{correlation}} = -0.11$ ) that participants who were employed by companies where major restructuring was evident, higher levels of occupational stress were experienced.

The Pearson statistics in terms of P, N and Mgmt are negatively correlated for the PRQ. This indicates that participants with low scores on psychoticism and neuroticism have more coping resources and skills. So have participants who indicated themselves as managers.

The Pearson statistics for E, age and restructuring are negatively correlated for the PSQ. This depicts that extroverts (E) and older participants (AGE) have lower levels of personal strain than their counterparts. Participants who were employed by companies where major restructuring was evident, have higher levels of personal strain too.

The variables with significant influences are depicted in Table 24. Significant values less than 0.05 suggest a model with a one-sided significance within a 95% confidence level. Neuroticism ( $N_{\text{significance}} = 0.01$ ) has a significant influence on the occupational stress sub-scale (ORQ) in this instance.

The variables that indicate a significant influence with the Coping Resources factor (PRQ) of the OSI are extraversion-introversion ( $E_{\text{significance}} = 0.00$ ), psychoticism ( $P_{\text{significance}} = 0.03$ ) and neuroticism ( $N_{\text{significance}} = 0.00$ ).

The variables that indicate a significant influence with the Personal Strain factor (PSQ) of the OSI are extroversion-introversion ( $E_{\text{significance}} = 0.03$ ), psychoticism ( $P_{\text{significance}} = 0.01$ ) and neuroticism ( $N_{\text{significance}} = 0.00$ ).

To summarise the Pearson statistic for both the significant factors, psychoticism (P) indicates a negative correlation for PRQ and a positive correlation for PSQ. For the ORQ the Pearson statistic indicates a positive correlation. This is what could be expected though. When occupational stress and personal strain is high, it is very likely that the individual would have low levels of coping resources and skills on all three sub-scales. The occupational and personal stress or strain would be higher with individuals who rated high on psychoticism but it would be negatively correlated for the coping resources and skills (PRQ). The negative linear correlation for extraversion-introversion (E) suggests that extroverts would experience less occupational stress and personal strain, and have more coping skills. People who measure high on N have high levels of occupational stress and personal strain and have less coping resources and skills.

Table 24. Summary of regression analysis for the OSI relationships as a function of EPQ-R

Item	P	E	N	AGE	SEX	MGMT	RESTR
ORQ (R <sup>2</sup> = 0.110)							
Pearson	0.10	-0.02	0.25	-0.12	0.17	0.10	-0.11
Significance	0.17	0.44	0.01	0.13	0.07	0.19	0.16
Std. Beta	0.12	-0.03	0.22	-0.02	0.16	0.03	-0.10
t	1.09	-0.22	1.97	-0.18	1.40	0.28	-0.94
Sig. Influence	pos						
PRQ (R <sup>2</sup> = 0.337)							
Pearson	-0.21	0.33	-0.41	0.07	0.16	-0.16	0.13
Significance	0.03	0.00	0.00	0.26	0.07	0.08	0.13
Std. Beta	-0.25	0.29	-0.37	0.05	0.13	-0.05	0.07
t	-2.55	2.92	-3.83	0.47	1.37	-0.53	0.70
Sig. Influence	neg	pos	neg				
PSQ (R <sup>2</sup> = 0.433)							
Pearson	0.20	-0.27	0.57	-0.14	0.03	0.10	-0.15
Significance	0.03	0.01	0.00	0.10	0.38	0.18	0.09
Std. Beta	0.27	-0.23	0.53	-0.06	0.04	-0.03	-0.10
t	2.96	-2.51	5.95	-0.67	0.41	-0.30	-1.09
Sig. Influence	pos	neg	pos				

The significant factors on the occupational stress sub-scale (ORQ) are depicted in Table 25. E is significant for phases 1 and 7 in the CM model, thus for imagination (1) and realisation (7). The correlation is negative for this significance. There are no significant variables for motivation (2) and satisfaction (6) as well as for the phases planning (3) and

evaluation (5). N is significant for the action phase of the CM model (phase 4) and positively correlated.

Table 25. Summary of regression analysis for the ORQ relationships as a function of EPQ-R for different functioning phases

	P	E	N
Phases 1&7 (R <sup>2</sup> = 0.883)			
Pearson	0.20	-0.92	0.34
Sig.	0.36	0.01	0.26
Std. Beta	-0.17	-0.98	0.07
t	-0.34	-2.68	0.16
Influence	neg		
Phases 2&6 (R <sup>2</sup> = 0.120)			
Pearson	0.30	0.06	0.22
Sig.	0.09	0.40	0.17
Std. Beta	0.29	0.01	0.20
t	1.20	0.03	0.85
Influence			
Phases 3&5 (R <sup>2</sup> = 0.040)			
Pearson	-0.06	0.16	0.12
Sig.	0.41	0.28	0.33
Std. Beta	0.02	0.16	0.12
t	0.05	0.52	0.39
Influence			
Phase 4 (R <sup>2</sup> = 0.095)			
Pearson	0.04	-0.00	0.33
Sig.	0.40	0.49	0.01
Std. Beta	0.06	-0.01	0.30
t	0.35	-0.05	1.98
Influence	pos		

The regression analysis for the OSI as a function of EPQ-R is illustrated in Table 26. The ORQ dimension reflected no significant variables that influence the RO (negatively correlated). RI is significantly influenced and positively correlated by N. N has a significant influence on the RA sub-scale as well, and is positively correlated. P and N (positive correlation) significantly influence RB, whereas R has no variables that influence the sub-scale significantly. P has a significant influence on PE and is positively correlated.



Table 26. Summary of regression analysis for the OSI sub-scale relationships as a function of EPQ-R

	P	E	N
<b>RO (<math>R^2 = 0.020</math>)</b>			
Pearson	-0.01	-0.02	0.13
Sig.	0.46	0.43	0.11
Std. Beta	0.01	-0.04	0.13
t	0.09	-0.36	1.17
Influence			
<b>RI (<math>R^2 = 0.057</math>)</b>			
Pearson	0.10	-0.05	0.25
Sig.	0.17	0.33	0.01
Std. Beta	0.10	-0.03	0.22
t	0.94	-0.24	1.99
Influence			pos
<b>RA (<math>R^2 = 0.107</math>)</b>			
Pearson	0.02	-0.15	0.31
Sig.	0.44	0.08	0.00
Std. Beta	0.04	-0.15	0.27
t	0.41	-1.36	2.58
Influence			pos
<b>RB (<math>R^2 = 0.140</math>)</b>			
Pearson	0.21	0.16	0.30
Sig.	0.02	0.07	0.00
Std. Beta	0.20	0.17	0.29
t	1.92	1.63	2.80
Influence	pos		pos
<b>R (<math>R^2 = 0.031</math>)</b>			
Pearson	-0.11	0.06	-0.12
Sig.	0.14	0.29	0.13
Std. Beta	-0.12	0.04	-0.13
t	-1.05	0.40	-1.17
Influence			
<b>PE (<math>R^2 = 0.035</math>)</b>			
Pearson	0.25	0.02	0.10
Sig.	0.01	0.42	0.17
Std. Beta	0.24	0.04	0.13
t	2.27	0.35	1.21
Influence	pos		

## **5. DISCUSSION AND CONCLUSIONS**

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### **5.1 Introduction**

This chapter presents the discussion and interpretation of the results, as well as the conclusions. The first part of this final chapter re-states the objectives of the study, and discusses the findings of the research. The second part draws the implications of the findings for the larger domain, for other researchers and suggests further necessary research. The limitations of the study are also noted.

The primary aim of this study was to measure the relationship of occupational stress and personality typologies within the changing organisation. The study hypothesised that occupational stress is different for the different functioning phases of the CM model and, according to the personality type there is an ideal functioning phase. Individuals operating in ideal functioning phases of the CM model should have less stress. These findings could be used to highlight areas for new research and to develop stress management programmes within organisations.

Several analyses were performed i.e. t-tests, regression analysis and ANOVA analysis. The most consistent finding in the results was the lack of statistical significant difference between stress and ideal or non-ideal functioning levels within the CM model for individuals. However, it was found that there is a possible difference in occupational stress between functioning phases of the management model.

### **5.2 Hypotheses Testing**

#### **5.2.1 First Set of Hypotheses**

The fact that certain personality and demographical factors that influence stress are different for the different phases implies that stress will be different for the different functioning phases of the CM model. The hypothesis that occupational stress is different for the different functioning phases of the CM model was supported by the findings of the research.

The difference in occupational stress was inter-related to demographical factors (e.g. age). The influence of the demographical factors reacted differently on different functioning phases, whereas the influence of personality types was inconclusive between different paired functioning phases. Table 27 illustrates the findings.

Table 27. Functioning levels in the CM model, possible factors that could contribute towards stress of the individuals and actual research findings.

CM Level & Function (Hurst et al., 1991)	Hypothesised Factors (Demographic & Personality) that Influence Stress ( Hedges, 1993)	Significant Factors (Demographic & Personality) Influencing Stress (Research Results).
<b>Intuition:</b> Level 1 (Information gathering, future, prospecting.)	<p>Age - Younger individuals are more futuristic and impulsive, and have less boundaries that prohibit their thought processes and creativity thus they are less prone to stress.</p> <p>Restructuring - individuals with this preference will have less stress on this level because innovation and imagination is part of restructuring.</p>	<p><i>Significant Factors for ORQ</i>  Age has a significant relationship with stress on this level. The positive relationship indicates that younger individuals are less prone to stress.</p> <p>Extraversion has a significant relationship with occupational stress at this level. It is a negative relationship, thus the more extrovert the individual the less stress they would experience at this level.</p> <p><i>Significant Factors for PRQ</i>  Age has a positive significance at this level. This indicates that older persons have more resources available to them.</p> <p>Management has a significant relationship with the PRQ on this level. This positive relationship suggests that non-managers have less personal resources available than managers.</p> <p>Feeling is significant at this level. The positive relationship with the PRQ indicates that feeling individuals have more resources available.</p> <p><i>Significant Factors for PSQ</i>  Sensing individuals are more prone to personal strain at this level. The relationship with the PSQ at this level is positive and significant.</p> <p>Individuals that measure high on intuition have less personal strain. The relationship with PSQ at this level is negative.</p> <p>Judging personalities are more prone to personal strain in this phase. The relationship is positive and significant.</p>
<b>Feeling:</b> Level 2 (Information evaluation, past, preserving.)	<p>Sex - Women tend to consider feelings more often than men do, and therefore experience less stress than men do on this phase.</p> <p>N - Individuals with a high level of neuroticism are moody and anxious and would experience more stress on this phase.</p>	<p><i>Significant Factors for ORQ</i>  Sex has a significant relationship with stress but it is a positive relationship, which indicates that women have more stress in this phase than men.</p> <p>Management has a significant relationship with stress at this level. This positive relationship indicates that non-managers have more stress in this phase than managers.</p> <p><i>Significant Factors for PRQ</i>  Management has a negative and significant relationship for PRQ. This indicates that at this level managers have more resources than non-managers.</p> <p>Sensing types have a positive relationship with personal resources at this level suggesting that they have more resources.</p> <p><i>Significant Factors for PSQ</i>  At this level managers have less personal strain than non-managers. The relationship is significant and positively correlated.</p>

CM Level & Function (Hurst et al., 1991)	Hypothesised Factors (Demographic & Personality) that Influence Stress (Hedges, 1993)	Significant Factors (Demographic & Personality) Influencing Stress (Research Results).
<b>Thinking:</b> Level 3 (Information evaluation, analysing, future and past.)	<p>Age: Older individuals would probably experience less stress in this phase because they have more life experience and should be able to deal with these aspects with ease.</p> <p>Sex: Men would probably make decisions more objectively than women would in certain circumstances and therefore their stress would be less on this phase.</p>	<p><i>Significant Factors for ORQ</i>  Age has a significant relationship with stress in this phase. The negative relationship indicates that older individuals do experience less stress in this phase.</p> <p>Stress is significant for management in this phase and the positive relationship indicates non-managers have higher stress at this level.</p> <p>Thinking has a significant influence in stress on this phase and the positive relationship indicates that thinking preferences have higher stress in this phase.</p> <p><i>Significant Factors for PRQ</i>  Sex has a positive relationship with personal resources at this level, indicating that females have more resources.</p> <p>According to the research extroverts have more personal resources than introverts do at this level. The correlation is positive for extraversion and negative for introversion.</p> <p>Judging types have more personal resources than perceivers do at this level. The correlation for judging is positive whilst negative for perceiving.</p> <p><i>Significant Factors for PSQ</i>  Management is positively correlated for PSQ at this level, suggesting that non-managers have more personal strain than managers.</p>
<b>Sensing:</b> Level 4 (Information gathering, reflecting, present.)	<p>Non-management - They would probably have less stress in this phase as non-managers are often concerned with activities where they have to follow instructions.</p> <p>Restructuring - Individuals with this preference will have increased levels of stress within a changing environment because facts are of more importance to them than possibilities.</p> <p>Introversion - They would experience more stress in this phase, as they do not need any external sensory stimulation, as internally sensory stimulation with introverts is high.</p>	<p><i>Significant Factors for ORQ</i>  None</p> <p><i>Significant Factors for PRQ</i>  Restructuring is significant in this phase. The positive correlation suggests that restructuring organisations have more resources.</p> <p>Extraversion types are significant in this phase and the positive correlation suggests that extroverts have more stress than introverts (negative correlation) on this phase.</p> <p>Judging types have significantly more resources in this phase. The correlation is positive.</p> <p><i>Significant Factors for PSQ</i>  Extroverts have significantly less personal strain in this phase and the correlation is negative.</p> <p>The sensing types have less personal strain. The sensing factor is significant and the correlation is negative.</p> <p>Intuition has a positive correlation with personal strain in this phase. This suggests that intuition types have more personal strain in the sensing phase.</p> <p>Neuroticism has a significant relationship with stress in this phase. The positive relationship indicates that individuals who measure high on N on the EPQ would experience more stress in this phase.</p>

### **5.2.2 Second Set of Hypotheses**

The second hypotheses suggested that there is an ideal functioning phase for each personality type and that individuals operating in ideal functioning phases have less stress than those who operate in non-ideal functioning phases (i.e. occupational stress is a function of model match).

According to the findings in this study, the hypothesis was not supported. The findings were based on the following comparisons:

Firstly, all data was considered to determine stress between individuals who matched their ideal phase and those who occupied a different phase. It was found that the stress between the overall comparisons for ideal and non-ideal functioning of individuals showed no significant difference between these two groups.

Secondly, different phases were considered in isolation to determine whether there was a difference in stress levels between individuals who matched their ideal phase and those who occupied a different phase. It was found that the stress between ideal and non-ideal functioning, as depicted in Table 6, showed no significant difference.

Lastly, the individual personality types were compared for an ideal functioning phase and the most likely functioning phase where an increase in stress (as hypothesised) would be experienced. Unfortunately the data were too limited for this comparison and it could not be concluded that these two groups had significant differences in stress.

This person-environment misfit (model match) is not always clearly defined and simplified. Factors such as personality and demographical characteristics are much stronger moderators of stress.

## **5.3 Demographical Information**

The sample consisted of 130 participants, mostly managers (65%) from private, government and corporate companies across New Zealand. Ages ranged from 26 to 62 years of age ( $M=44$ ,  $SD=9.13$ ).

There were many positive aspects to the study. The study involved quite a large sample. The sample was well distributed for men and women. However, more management respondents compared to non-management were targeted, which makes this study specifically suitable to investigate the Creative Management (CM) model (Hurst et al., 1991). Most respondents were in the business industry, education and engineering or architectural fields (72%) with a diploma, degree or a post graduate qualification (81%). Therefore the study was not equally distributed for qualifications. The types of organisations that participated in this study could possibly explain this. These organisations employ large numbers of skilled employees and this could explain the high

percentage of educated and qualified participants in this study, especially in the management positions of this sample.

Uneven distributions were found for personality, the seven functioning phases of the CM model and for ethnicity. The Myers & Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) classified most of the participants as Introverts with Sensing, Thinking and Judging (ISTJ). The seven functioning phases were unequally distributed because most of the respondents indicated their focus to be on making things work (phase 4 of the CM model) (47%). The second most popular options were motivating the team (phase 2 of the CM model) (16%) and planning strategically (phase 3 of the CM model) (12%). The managers and non-managers did not differ significantly with their preferences on the phases of the CM model. Gender differences were only noted with the second option. The only difference in gender for this category was that male respondents chose strategic planning (21%) as second choice whilst female respondents chose motivating a team (21%). 12% did not indicate a specific preference, which could indicate that participants did not understand the question or that they could not choose one above the other. Some participants may have perceived the levels incorrectly, adding to the source of error, so that if wrongly classified, the personality and occupational stress variables would be associated with the wrong level.

The MBTI type and the functioning phase of the CM model correspond with the theory on the CM model. It is more likely for the ISTJ type to prefer the functioning level where action or making things work are the main activities (phase 4) (Margerison, 1982; Hurst et al., 1991).

The fact that such a big section of respondents identified themselves as ISTJ's and/or functioning in phase 4 of the CM model implies that the study applications could be limited in this regard. Phases 2 and 3 also had a number of participants for those phases. It is important to keep in mind that the other phases of the model do not necessarily need to be represented by an equal number of individuals. The theory on the CM model does not indicate or advise a specified number of individuals to represent the different phases of the CM model. According to this, some of these phases only require one person to get the process started in the organisation. Hurst et al. (1991) suggests that radical ideas (phase 1 of the CM model) seem to be the creation of a single mind and are often not a group activity. To be able to keep the existing operations and implementations of the organisation together, it is expected that the larger amount of the employee force should be occupied with the action phase of the CM model. However, it is also important that these individuals have enthusiasm for action on new initiatives. No minimum number of individuals would thus be required to operationalise the phases of the CM model. The representation of participants on the phases of the CM model for this study might not be sufficient to make reliable conclusions for all the phases of the CM model, but for a few at least.



Other limitations in distribution were the lack of diversity for ethnic groups, as participants who classified themselves as New Zealand Europeans (90%) dominated the study. This could imply that these positions in these specific age groups and in these specific organisations are dominated by New Zealand Europeans, or that it was merely by chance that no substantial amount of other ethnic groups participated in the research.

#### **5.4 MBTI Personality Types in the Sample**

For the MBTI more subjects scored towards the introverted pole on (E-I), the sensing pole on (S-N) the thinking pole on (T-F) and judgement pole in (J-P). It seems then that individuals of type ISTJ dominated the sample, introverts with sensing, thinking and judging as mentioned in the previous section. This could be because of the occupations or fields of study that participants were involved in, or the positions in the specific organisations, which these individuals occupied, being mostly managers perhaps.

There was no significant difference in mean statistics on the MBTI for men and women and they could therefore be dealt with as one group for the purpose of this study. However, for the management and non-management group there was a significant difference on the sensing-intuition dimension. Managers leaned more towards the sensing pole whilst non-managers leaned towards the intuition pole. The management group reflects an ISTJ profile and the non-management group an INTJ profile. This difference was found to be significant for this dimension between managers and non-managers for this sample group.

In order to get a better understanding of this type, the personality type ISTJ is explained in more detail as this is also indicated as the average personality, which this sample group falls into, especially managers in this case it seems. Introverts are oriented primarily toward the inner world; thus, these individuals focus their judgement on concepts and ideas. The individuals would report observable facts or happenings through one or more of the five senses and would rely on thinking to decide impersonally on the basis of logical consequences. They also prefer to use a judgement process to deal with the outer world (Myers & McCaulley, 1985). The ISTJ type is often referred to as the traditionalist or stabiliser. According to Giovannoni et al., (1987) when they enter a new job, they want to know what the rules and regulations are. In addition, who is in charge? They do their best to keep things stable and judge harshly on those who do not. They contribute to stability in the organisation and hold on to traditions. They do not like constant change and find it frustrating and disorientating. If the majority of individuals, especially managers, are in this category it could hinder growth and renewal within an organisation and they would probably find change quite disruptive. The sensing dimension indicates that these individuals would more likely put emphasis on facts, details and concrete knowledge, whereas the non-managers, being higher on intuition, would put more emphasis on possibilities, imagination, creativity and seeing things as a

whole. With the non-managing group being INTJ it could possibly cause problems between managers and non-managers being on two opposites of a continuum. The INTJ, which represented non-managers for this sample group, are described as the visionaries according to Giovannoni et al. (1987). They enter new job situations and want to know where the opportunities for growth and change are and what the new directions and new developments are over time. They want to know what the challenges are for the imagination and are called the architects of change and organisational entrepreneurs. They are also seen as the builders and creators of new businesses and systems. Their energies will be devoted to being creative and developing and implementing new things. They find the status quo to be de-motivating and it holds little interest for them. There could, therefore, be conflicts of interest for these parties in a work environment (Margerison, 1982).

According to Hurst et al. (1991) this could cause one phase of the CM model to bypass others, especially if these individuals are in the top management positions and devoted to their established plans and unwilling to experiment with unusual approaches. This may lead to a cognitive void in other phases of the CM model according to Hurst et al. (1991). It could also hinder the renewal process, as a specific cognitive preference would not be present to influence the renewal process at the particular time or phase when it is required. However, it would be possible for these individuals to occupy a different cognitive preference if awareness for such a need exists within the team. In such situations Hurst et al. (1991) suggests that power or authority of the situation should shift as needed between the different phases of the CM model, regardless of hierarchical level to be able to meet the needs of the renewal process within the organisations at that specific point in time.

## **5.5 EPQ-R Personality Traits in the Sample**

With the EPQ-R it appears that the data distribution is normal and the sample mean is representative of the population mean. The mean statistic for psychoticism is 4.80, for extraversion-introversion, 13.03 and for neuroticism 9.00. The scoring guidelines as depicted by Eysenck & Eysenck (1994) indicate maximum scores on the sub-scales, as E = 21, N = 23 and P = 25.

This implies that the average participant in this study indicated a score for E that leans slightly towards extraversion, a score for neuroticism that was below average and a low score for psychoticism. These results are confirmed by comparing them to the norm tables for the EPQ-R. This reflects certain characteristics of the sample group that are of interest.

The personality dimensions as depicted by the EPQ-R suggest that the average participant is calm, even-tempered, carefree and emotionally stable. The low

psychoticism implies that the person tends to be altruistic, socialised, empathic, and conventional (Eysenck & Eysenck, 1994). The majority are probably emotionally relatively stable, and respond emotionally slowly and generally weakly to disruptive situations. They tend to be able to return to baseline quite quickly after emotional upheaval. According to the theory, these individuals are usually relatively calm, even-tempered, controlled and unworried (Eysenck & Eysenck, 1994). Earlier personality schemes would indicate a sanguine personality type to this group although just slightly so, with probably some of the characteristics of the others especially the phlegmatic personality type if considered where they lie on the extroversion scale. If this is true for the majority of the individuals in this study, the stress outcome as measured on the OSI should be relatively low to moderate.

Trends observed for the male and female comparison show no statistical significant differences for factors of extraversion-introversion and for neuroticism between management and non-management groups, but a significant difference is indicated for psychoticism. The psychoticism factor for management is significantly lower than for the non-management group. This indicates that managers measure lower on psychoticism and therefore they would be more altruistic, socialised, empathic and conventional (Eysenck & Eysenck, 1994) than non-managers.

This does not exactly correspond with the results of the MBTI. The introversion on the MBTI does not correlate with the findings of the EPQ-R, where the latter finds the mean to be slightly towards extroversion. The results of the MBTI for the extraversion-introversion dimension were not clearly towards one of the poles. Of the sample group, 75% indicated a preference that could only be classified as moderately or slightly crystallised towards one pole or the other. The difference found on the E-I scale in the two personality measures is explained by Eysenck & Eysenck (1994) by stating that factorial studies of E have resulted in a picture that may resemble, but is not identical to, the picture as conveyed by Jung. For example the differences in the mean statistic comparisons for the managers and non-managers with both personality assessment measures indicate some differences in the two groups. Managers measure higher on sensing and lower on psychoticism than non-managers. It does however give us a broader picture of the sample group and their cognitive preferences. There are some similarities in the factors, for example no significant differences were found for factors E and I-E on both personality measures for the two groups, although the personality measures differ in their actual classification of the type introversion-extraversion explanation. It is possible that the EPQ-R and the MBTI measure introversion-extraversion differently with different factors of importance. It is also possible that the discrepancies could be explained by the difference in the samples on which the norms for these personality measures were based. The EPQ-R seems to measure abnormality more so than specific personality traits, where the MBTI might fare better in this sense

with more detailed dimensions and explanations. The personality factors are thus difficult to compare for these two tests as the theory on these does not isolate the factors of importance correspondingly. These tests could thus be used to complement each other in many respects, and is used so in this instance.

## **5.6 Mean Statistics for the OSI**

For the OSI the data distribution is normal and the sample mean is representative of the population mean. The distribution for physical environment is skewed. Considering the physical environment sub-scale one would expect that people would experience their work environment significantly towards one of the extremes. In the case of this study most subjects work in an office environment, resulting in an uneven distribution.

The descriptive statistics indicated occupational stress within the normal ranges for all the sub-scales of the occupational stress (ORQ) factor i.e. Role Overload (RO), Role Insufficiency (RI), Role Ambiguity (RA), Role Boundary (RB), Responsibility (R) and Physical Environment (PE) (Osipow & Spokane, 1992).

The PSQ is the factor of the OSI that measures the extent of personal strain amongst the subjects. The mean statistics indicate personal strain to be within normal ranges with most of the subjects (Osipow & Spokane, 1992) for all the sub-scales i.e. Vocational Strain (VS), Psychological Strain (PSY), Interpersonal Strain (IS) and Physical Strain (PHS). The statistics indicate that the distribution for the sub-scale vocational strain (VS) is normal. Psychological strain, interpersonal strain and physical strain depict positive skewed distributions. This indicates that more than 50% of the distribution for these factors falls above the median point. This could imply that there are specific individuals who measured very low on these factors, which caused the mean and the median to differ.

The factor on the OSI that measures coping resources is the PRQ. This factor has different sub-scales i.e. Recreation (RE), Self-Care (SC), Social Support (SS) and Rational or Cognitive Coping (RC). The mean statistics for the different sub-scales indicate that both RE and SC are significantly low. This indicates that the sample group does not take sufficiently advantage of the recreational or leisure time available, and are probably not engaging in many relaxing and satisfying activities (RE). The group also measures low on self-care, as well which implies that they probably did not exercise, go to bed at regular hours or were careful about their diet. They did not practise sufficient relaxation techniques and/or were involved to some degree with harmful substances (Osipow & Spokane, 1992).

The sample group is within mild deficits concerning coping skills (Osipow & Spokane, 1992) on the social support (SS) and rational coping sub-scales (RC). This implies that the sample group does not always feel that they have someone to talk to or trust, have

conversations with about work and help them do important things or tasks around the house. They sometimes feel that they have nobody who values them or loves them. Their cognitive coping is not always up to par. The sample group reports that they sometimes have difficulty with finding a systematic approach to solving problems, and thinking through the consequences of their choices. They sometimes find it hard to identify important elements of problems, set and follow priorities and reorganise their work schedule. It is sometimes difficult for them to leave work problems behind and to have confidence in the fact that they could do something else should they need to. SS has a negative skew distribution (Osipow & Spokane, 1992). This implies that more than 50% of the distribution for social support falls below the median.

The OSI indicates that women have significantly more occupational stress than men do. (ORQ) It is, if you compare it to the above-mentioned scores, still within normal ranges though. The results of the mean statistic comparisons for males and females indicated significant differences on specific sub-scales i.e. RI, RA, PE and SC as well. There was a significant difference between males and females for role insufficiency, role ambiguity and physical environment on the occupational stress dimension. Woman reported higher on role insufficiency thus indicating less fit between their skills and the job they were performing, less career progress and more need for recognition and success than men did. They also reported more that they were bored and under utilised than their male counterparts. Women reported higher scores on role ambiguity, implying on average that they were less sure of their tasks and input and what they should do to get ahead in their jobs, did not know where to begin on new projects and experienced more conflicting demands from supervisors than men did. Females also reported being more exposed to environmental stressors such as noise, cold and heat, and reported higher on erratic work schedule or feeling personally isolated than men of this sample did. Females also measured higher on self-care on the coping resources dimension, implying that they probably exercised more, got to bed at more regular hours, were careful about their diet, practised relaxation techniques and avoided harmful substances more so than men did for this sample (Osipow & Spokane, 1992).

The OSI indicates that non-managers have significantly more occupational stress and personal strain than managers (OPQ & PSQ). As mentioned before, the occupational stress and personal strain of the total group is still within normal ranges. The comparison for the mean statistics on management and non-management indicates that these two groups differ significantly for specific sub-scales i.e. RI, RA, RB, R and PE on the ORQ. (See Appendix B.) The managers seem to measure significantly lower on all the above-mentioned sub-scales on the ORQ, except for R where managers measure higher. Non-managers reported higher on role insufficiency thus indicating less fit between their skills and the job they were performing, less career progress and more need for recognition and success than managers. They also reported more that they were bored and under



utilised, but that is to be expected and could be explained by the fact that most managers in this group's stabilising personality (ISTJ) did not like change and in were in direct conflict with the innovative traits of non-managers (INTJ). Non-managers reported higher scores on role ambiguity, implying that on average they were less sure of their tasks and input and what they should do to get ahead in their jobs, did not know where to begin on new projects and experienced more conflicting demands from supervisors than managers did. The confusion could possibly be explained also by the difference in personality in this regard, with managers (ISTJ) expecting their subordinates to comply with rules and instructions, which did not correspond with the needs and expectancies that the non-managers (INTJ) had for their positions. The theory indicates that this problem could be solved by the CM model (Hurst et al., 1991), which provides a framework to share and compare ideas and, according to Margerison (1982), provide an environment in which some of the dilemmas involved in matching personal skill and aptitude with the job expectancies could be solved. This is confirmed by the fact that non-managers also measured higher on the role boundaries scale, indicating that they did not really know the boundaries and were confused about the exact lines of authority. They, more often than managers, got different instructions from different supervisors and felt less proud of their positions. They felt less confident and felt caught between supervisory demands and factions than managers. They did not feel that they were adding value. Managers however reported higher responsibility than non-managers. This is expected though. They report higher levels because they are responsible for the activities and work performance of subordinates. They seem to be worried that others would not perform well and that would reflect on them. They may also have poor relationships with people at work, or feel pressure from working with angry or difficult employees. This could reflect the manager's side of the personality differences. The managers in this group (ISTJ) would feel pressure for change and innovation from employees with an INTJ profile and this could reflect the pressure managers experience to have employees perform, despite the fact that the parties could not agree on what is to be accomplished. Non-managers also reported being more exposed to environmental stressors such as noise, cold and heat, and reported higher on erratic work schedules or feeling more personally isolated than managers (Osipow & Spokane, 1992). This could also be due to the fact that managers, because of the status they held, would be less likely to experience physical discomfort in the work environment, being more office bound and probably having more luxurious surroundings, than would non-managers.

This implies that the comparison for the mean statistics on management versus non-management indicates that they also differ significantly for the VS, PSY and IS sub-scales on the PSQ. Thus non-managers attain higher scores than managers and experience more personal strain. These sub-scales basically confirm what was found up until now, as non-managers indicate they experience poor attitudes towards their work, including boredom and lack of interest more often than do managers. They may report



making more mistakes, having more accidents and that their quality of work usually suffers. Non-managers would probably, according to this information, also suffer from concentration problems and be absent from work more often. They also feel depressed, anxious, unhappy and irritable and complain about little issues more often. The non-managers also report being more dependent on spouses, family members and friends or try to isolate themselves more than managers (IS) (Osipow & Spokane, 1992). The scores for the total sample group on the personal strain factor are still within normal ranges though.

The sub-scale, which differs significantly for the two groups, managers versus non-managers on the PRQ, is the RE sub-scale. On this sub-scale managers measure higher thus they probably more often make use of opportunities for doing what they like in their leisure time. This implies that they indicated a higher score on recreation on the coping resources dimension than non-managers do. In total the sample group does, however, measure low on the coping resources dimension and are in slight deficit regarding recreation.

A study, which involved sixteen countries, found New Zealand to be the fourth highest in the category of office workers reporting high levels of job stress (Bennett & Rigby, 1995). In this study though it was found that participants, who consisted of mainly European managers with an average age of 44 years, in the business industry, education, engineering or architectural fields with a diploma, degree or postgraduate qualification did not measure particularly high on stress.

Hurst et al. (1991) state it is not the cognitive preference of the individuals, group or top management team that impact the actions of an organisation, but that it is the behaviour of the group and the integration of these behaviours that forms a pattern of organisational actions, which impacts the strategy and performance. Thus, it is not just the personality types that influence the whole, but also the behaviour.

## **5.7 ANOVA Analyses**

The seven phases of the CM model were compared with each other and in terms of the ORQ, there was a significant difference established. For the PSQ and the PRQ there were no significant differences. These significant differences noted for the ORQ might suggest a relationship for the seven phases of functioning and occupational stress. The relationship is investigated in subsequent sections. The fact that no significant differences were found for personal strain (PRQ) and coping resources (PSQ) suggests that these factors are common amongst the phases.

The combined functioning phases (1-7, 2-6, 3-5 and 4) were also tested in terms of ORQ, PSQ and PRQ. No significant differences in stress were observed between the combined functioning phases.

The seven phases were also compared for the MBTI. No significant differences were established for the seven phases. This suggests that the personality types were equally distributed between the seven functioning levels. This is in contrast with the model as discussed by Hurst et al. (1991). In the creative management model (CM) Hurst et al. (1991) depicts an ideal management composition. The data from this study is in obvious disparity, reflecting the reality of the work environment i.e. personality types on inappropriate functioning phases.

The same trend is visible for Eysenck with no significant differences in personality types between the seven phases of functioning.

## **5.8 Regression Analysis**

### **5.8.1 The Relationship Between Demographical Variables and MBTI with Stress (OSI)**

Demographical issues such as age, gender and levels of occupation and the correlation with stress were expected to turn out as predicted by previous studies. It was assumed that older women would experience more stress because of the continuing demands on women in society. It was also predicted that younger men would experience more stress, because of the need to establish themselves in their careers and the competitive edge involved at that age.

Age, restructuring, sensing, feeling, judging and model match are negatively correlated for occupational stress (ORQ), but not all of these factors are significant. Sex, management and sensing are the significant variables for the ORQ. This implies that gender, sensing levels and management variables have a significant influence on the ORQ. Sensing is negatively correlated and significant, and therefore it can be predicted that higher sensing levels would imply lower levels of occupational stress. This corresponds with the findings and discussion of the personality type ISTJ that also represents the larger portion of the sample. Sex and management are positively significant, implying that females and non-managers have higher levels of occupational stress. This also corresponds with the information as given by the mean comparisons on these factors.

The significant variables for personal strain (PSQ) are management, restructuring, extroversion and sensing. Managers are positively correlated for the personal strain dimension, implicating that non-managers have less personal strain. This is again confirming previous findings, as discussed in earlier sections. Restructuring, extraversion and sensing are negatively correlated for the personal strain dimension, which suggests that restructuring will precede higher levels of personal strain. The more significant the score on introversion, the higher the personal strain. High sensing levels would indicate lower levels of personal strain.

The significant variables for (PRQ) are extraversion, introversion, judging and perceiving. The correlations are positively significant for extraversion and judging. This implies that extroverts would have higher coping resources available. Personalities where judging is significant would also have higher coping abilities and resources, and would thus probably be better equipped to deal with stressors and strains. Introversion and perceiving are negatively correlated and significant. This suggests that introverts have less coping resources and so do personalities where perceiving prevails as the significant preference on that specific personality dimension. This corresponds with findings on previous sections. This could possibly explain why managers have less stress, as they have both these cognitive preferences to their advantage, whereas non-managers have only the J factor.

It is also important to note that when these types according to Jung, are under stress they are in most need of all their functions, and are most likely to battle to keep less well developed functions intact or they might even resort to lesser ones (Myers, 1982).

#### **5.8.2 Relationship of the MBTI and Stress (OSI)**

Margerison (1982) states that some workers are psychologically predisposed to stress and that these differences may be due to various factors that he refers to as personality, age related factors, etc. This study found it to be true for two personality types on the MBTI. Introverts were found to be more prone to stress as well as individuals that scored more towards intuition and perceiving. Thinking and feeling dimensions did not show any significant relationship with stress. This suggests that INTP's and INFP's could be identified as the two personality types of the MBTI that would be more prone to stress. This indicates that these individuals would measure higher on stress than other MBTI personalities as measured by the OSI.

According to Giovannoni et al., (1987) the intuition-feeling personalities are identified as stressed by the impersonal and the resistant and need interpersonal relationships, significance and positive feedback. A divided, argumentative, competitive atmosphere offends them. This type would probably rescue or play the role of nurturer. They suffer, according to theory, sometimes unbearable isolation in situations where their needs are not met.

The intuition-thinking types are their own worst critics and are often stressed by a fear of incompetence, loss of control and helplessness. Rigid, routine, dull environments offend them and often drive them away. They do their best in situations that stimulate them intellectually and allow them to have control over their learning and express their ideas.

Skodol (1998) found personality traits or coping mechanisms that involve mental withdrawal to be harmful. Perceived self-efficacy in coping may be the most emotionally

protective factor in a stressful situation according to Skodol (1998). This could perhaps explain why these types are more prone to stress, thus less able to cope.

This information could *"...provide a useful way for managers to appreciate observable, individual behaviours and their contribution to the process of organisational renewal"* (Hurst et. al., 1991, p. 250). Certain personality types should thus measure higher on stress just solely to type or nature that they belong to.

### **5.8.3 Relationship of the EPQ-R and Stress (OSI)**

The regression analysis done in Appendix D tests the correlation and significance of the EPQ-R, in a model that describes stress in terms of the three sub-scales ORQ, PRQ and PSQ. The EPQ-R portrays the personality in terms of three dimensions i.e. the extraversion-introversion dimension (E), neuroticism or emotional stability (N) and psychoticism or sociability (P).

Neuroticism has a significant positive correlation for the occupational stress sub-scale (ORQ) in this instance. This suggests that emotionally stable individuals will have less occupational stress. The variables that indicate a significant influence with the personal strain factor (PSQ) of the OSI are extroversion-introversion, psychoticism and neuroticism. The extraversion-introversion sub-scale is negatively correlated, implying that extroverts have lower personal strain. Psychoticism (sociability) and neuroticism (emotional stability) is positively correlated suggesting that sociable and emotional stable individuals have less personal strain. The variables that indicate a significant influence with the coping resources factor (PRQ) of the OSI are extroversion-introversion, psychoticism and neuroticism. The first dimension is positively correlated, indicating that extroverts have more coping resources, confirming findings of the MBTI. Individuals that measure high on sociability and emotional stability will have less coping resources (negative significant correlation).

To summarise the Pearson statistic for the significant factors, psychoticism (P) indicates a negative correlation for coping resources and a positive correlation for personal strain. For the ORQ the Pearson statistic indicates a positive correlation. This is what could be expected though. When occupational stress and personal strain is high, the individual would be very likely to have low levels of coping resources and skills. The occupational and personal stress or strain would be higher with individuals who rated high on psychoticism, but it would be negatively correlated for the coping resources and skills (PRQ). The negative linear correlation for extraversion-introversion (E) suggests that extroverts would experience less occupational stress and personal strain, and have more coping skills. People who measure high on neuroticism have high levels of occupational stress and personal strain and have less coping resources and skills.

The findings of the EPQ-R supports the findings of the MBTI and it contributes to the reliability of the findings in this study.

The sub-scales are discussed in more detail. RI and RA sub-scales are significantly influenced and positively correlated by N. This implies that individuals that measure high on emotional stability experience less role insufficiency and less role ambiguity. This suggests that emotionally stable individuals experience a fit between their skills and the job they are performing, more career progress and less need for recognition and success. They also report less boredom and are sure of their tasks and input and what they should do to get ahead in their jobs.

P and N (positive correlation) significantly influence RB. This suggests that individuals that measure high on sociability and emotional stability will have less confusion regarding role boundaries. This suggests that they will know the boundaries and exact lines of authority. They are confident and proud of their positions. P has a significant influence on PE and is positively correlated. Environmental stressors such as noise, cold and heat, and erratic work schedules or feeling personally isolated will have less influence on individuals with high sociability.

Both the personality measures (MBTI & EPQ-R) indicate that positive personality attributes correlate with low levels of stress and strain and high levels of coping resources. This confirms the predictions based on the review of literature (Boeree, 1998).

#### **5.8.4 Relationship of Functioning Levels and Stress (OSI)**

Previous literature shows that the creative management model can enhance the growth and renewal process within organisations. An organisation that matches the model of Hurst et al. (1991) should therefore be successful in its growth and renewal process and adapt to change with ease. The organisations that were included in this study do not necessarily apply to the model as suggested by Hurst et al. (1991). As said previously, organisations tend to focus on appointing just certain personality types. Therefore the model match would not necessarily be applicable.

The question is, however, whether a model match has an influence on the stress of the individual. This study found that applying the creative management model does not increase or decrease stress levels with the individual, thus the ideal functioning phase (model match) does not increase or decrease the stress experience for the individual. There is, however, certain demographical attributes that influence the stress experience for the individual.

The significant factors on ORQ are age for imagination (1) and realisation (7), whereas sex and management are significant for motivation (2) and satisfaction (6). Age, management and thinking are significant for planning (3) and evaluation (5).



ORQ has mostly demographical variables that significantly influence the model, whilst PRQ has a variety of both demographical and personality variables, with the personality variables being slightly more. The PSQ has more personality variables. It is also notable that management is significant for phases 2 and 6 on all three sub-scales of the OSI.

Figure 18 illustrates the factors for different functioning phases that had a significant influence on the occupational stress relation. Because no significant differences were found for the PSQ and PRQ between the seven phases of the CM model, the above mentioned trends on these two dimensions will not be discussed.

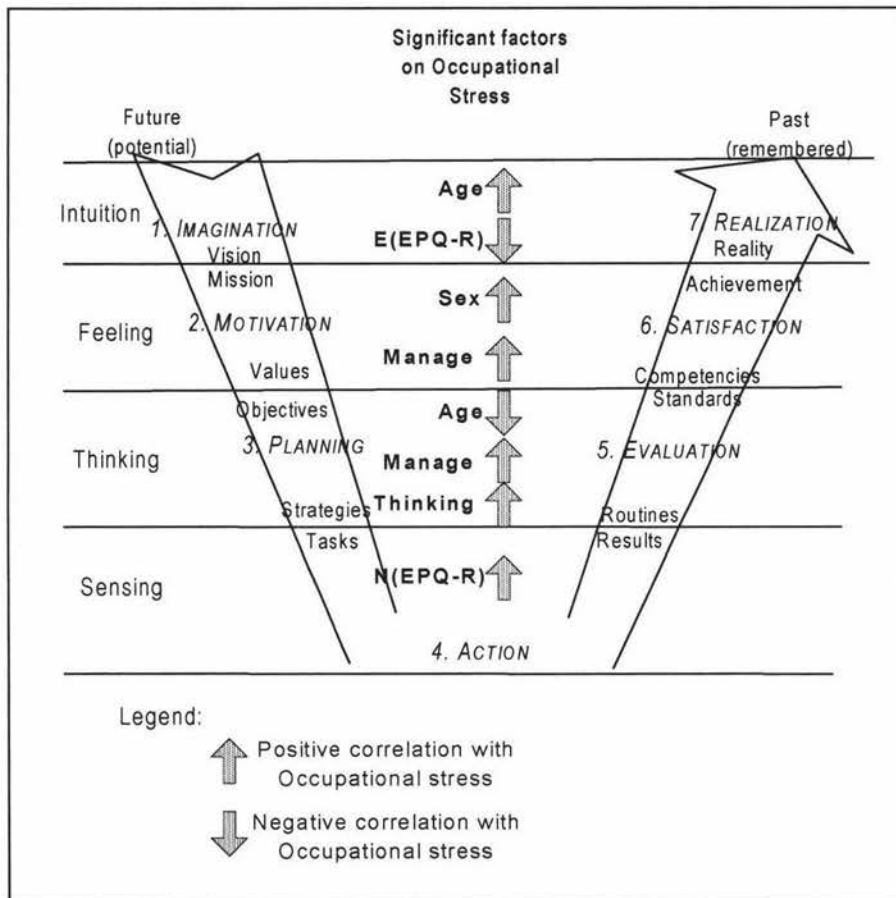


Figure 18. Significant factors of different functioning phases and the influence on the occupational stress relation

Different variables are significant when the phases of the functioning dimension are individually modelled. This is possible because there are a different number of respondents for each phase, which will result in a different statistical composition. In this case the majority of respondents function at level 4, therefore the outcome of the total model will be influenced mostly by this phase or, the relationship of stress between the phases may differ (e.g. phases 2-6 and 3-5 are influenced by management, but sex only influences the ORQ for phases 2 and 6 significantly).



The significant trends of stress correlation that appeared in the study of the individual phases were compared with the trends established in the study for the combined phases. Most of the significant stress variables within the individual phases (functioning levels) correlated with those in the total trend. The correlation for the total data set revealed a positive correlation between sex and ORQ for the combined phases, which is the same trend found for phases 2 and 6 in this section on the ORQ.

Comparisons between functioning levels (phases) in terms of significant variables for the ORQ shows functioning levels have a positive correlation with management, including level 2, 6, 3 and 5 where the influence on the model was statistically significant.

Sex has a positive correlation for all functioning phases except for phased 1 and 7. Since the negative correlation for these phases is not significant, it could be accepted that in general women will have more stress than men, regardless of the functioning phase. Women will probably have higher demands because in most cases they are probably still the main caretaker, and if not, feel divided because of general role expectancies held by society. A similar conclusion could be drawn for thinking people who will have more stress, regardless of their functioning level.

Age has a significant influence on the ORQ sub-scale for phases (1, 7) and (3, 5), but also shows opposite correlation. This suggests that older people have more stress for phases 1 and 7, but less stress for 3 and 5. It is possible for older individuals to prefer phases 3 and 5 as they tend to be reliable and orderly, are handled with regulations and language and concerned with cause and effect things according the CM model (Hurst et al., 1991). Behaviour on this level would consist of matching goals and resources to results, organising people and balancing novel with routine. Most of these are actions where experience is important. Younger employees would probably prefer phases 1 and 7 because, according to Hurst et al. (1991), these are the phases where possibilities and patterns, as well as ideas, are formed. Individuals at this phase often see what others don't and promote new ways of working at things, propose new ideas and are not very concerned with practical issues according to Hurst et al. (1991). Younger individuals aspire and probably dream more, also because they lack experience and are not concerned with practical problems as yet.

The significant EPQ-R factors on the occupational stress sub-scale (ORQ) are depicted in Appendix D. E is significant for phases 1 and 7 in the CM model, thus for imagination (1) and realisation (7). The correlation is negative for this significance. N is significant for the action phase of the CM model (phase 4) and positively correlated.

#### **5.8.5 Comparing Results of MBTI and Eysenck**

Demographically there are no differences between the significance for the MBTI and the Eysenck findings. Results for the extrovert factor on both scales are similar. The other

personality factors are difficult to compare, as they do not isolate the factors of importance correspondingly. Empirically people with the following characteristics should have more occupational stress: unstable, neurotic (melancholic) as measured by the Eysenck and introversion, thinking and perceiving as measured by the MBTI.

A conclusion could therefore be formulated that personality types in combination with some demographical factors are moderators of occupational stress, regardless of the ideal or non-ideal functioning phase of an individual. Therefore, certain personality types are prone to stress experiences. These individuals will experience stress on any functioning phase, whether it is ideal or non-ideal in relation to their personality. This corresponds with some of the research available i.e. Margerison (1982) who suggested that some workers are psychologically predisposed to stress, and not able to cope or adapt to stress provoking situations. He said that differences in this regard may be due to various factors, which he refers to as personality, motivation and being able to deal with specific problems, age related factors and awareness of one's own strengths and weaknesses. Jacobs et al. (1969 & 1971) and Sainsbury's (1960) findings correspond with the findings of this research - that people with maladaptive coping mechanisms will experience more crises and failure and will respond to life crises with symptoms more overtly neurotical than the symptoms they manifest at times of lesser life stress.

Please note that the findings on this hypothesis do not necessarily affect the management model. Where the management model emphasised the characteristics of a growing business, this study investigated the model in terms of the individual.

The study also showed that in reality the working environment is normally not ideal in terms of representative managers on the appropriate functioning phases according to personality type (50% of individuals functioned on an inappropriate functioning phase in this study). This corresponds with the findings of the Creative Management (CM) Model. Hurst et al. (1991) argue that the conventional model does not allow human potential to be utilised to the full. Management team members who are focused on the intuition, sensing and feeling cognitive preferences as explained by the Myers-Briggs Type Indicators (MBTI) (Myers, 1982) seem to be less popular recruits. Candidates that have the judging, perceiving and thinking combination of cognitive preferences as described by the Myers-Briggs Type Indicators (MBTI) (Myers, 1982) are common appointees. With the size of the sample group one would expect to find some kind of representation with different cognitive preferences. If Hurst et al. (1991) are correct, this does not create a conducive environment for change and renewal in the organisation.

## **5.9 Summary**

Global competition, corporate downsizing and reorganisation, new management philosophies, increased workforce diversity and new technologies contribute to change.

The world economy is now based on knowledge - value, information and innovation (Kiernan, 1996). These changes do not occur in isolation. The changes in the strategic focus of the organisations affects the culture of the organisation, the structure and the skills of the executives in the organisation. The influence of stress and personality in this process cannot be denied. Organisations will only manage change if they are able to fit people skills to the business situation. People skills could possibly include knowledge of individuals or managers, how they function, what their strong areas are, or in what category they find themselves functioning optimally, and what the influence would be of stress on utilising them to the fullest. The future success or failure of an organisation hinges on how market-led requirements and the organisation's adjustments are bridged (Kiernan, 1996). Barr, Stimpert and Huff (1992) suggest that top managers' mental models must keep pace with changing environments. Organisational renewal is only possible when top managers consider changes in their beliefs during periods of major environmental change. At an individual level, researchers have argued that people must first perceive the need for change before the organisation will respond to environmental change (Neck, 1996).

The companies in this study appointed mainly ideal candidates, thus candidates that had the judging, perceiving and thinking combination of cognitive preferences as described by the Myers-Briggs Typologies (Myers, 1982). This left management team members who were focused on the intuition, sensing and feeling cognitive preferences as explained by the Myers-Briggs Typologies (Myers, 1982) to be less popular recruits. The CM model states that organisations will require a diverse group of senior staff to enable the organisation to adapt to the changing environment.

Sources of stress for the individual could be factors intrinsic to the job, extrinsic to the job or personality related. In this study it was found that personality typologies, as classified by the MBTI, have a significant relationship with the stress which is experienced by the individual. INTP's and INFP's were found to be more prone to stress.

For the individual, coping refers to specific processes that a person fits into place for dealing with stress (Lazarus & Folkman, 1984). Skodol (1998) suggests that personality traits, and or coping processes, will either diminish or magnify the emotional impact of stressful experiences. Results of his studies imply that people may be relatively consistent with coping strategies used with similar problems at different times, but little consistency exists with stressors across life situations or role domains such as work, health and marriage. This study, however, indicates that it is not just the personality that determines coping or stress proneness but also the demographical factors. The demographical factors have an interactive effect on stress. The individual could be a young person with an INFP personality in the thinking (planning and evaluating) phase of the CM model. As stress in this phase is negatively correlated for age, it implies that the individual would be even more prone to stress, and the phase in which the individual

functions at that stage could amplify the stress effect. According to the results found in this study this proneness to stress would not be reduced if the individual functioned at a phase that corresponded with their cognitive preference.

Skodol (1998) also suggests that a large majority of studies that show coping effects indicate that maladaptive coping contributes to adverse outcomes, rather than adaptive coping buffering against stress.

### **5.10 Limitations of the Study**

Issues such as psychometric and practical issues are of importance. Self-report measures, compared to projective tests are more likely to be a reflection of the insight that the individual has in him/herself, thus it would also largely depend on how well the individual knows him or herself, to be able to reflect a reasonably accurate picture for research purposes.

Parkes (1994) states that the standard questionnaires used might be acceptable in certain environments, such as clinical and hospital settings, but are less appropriate in an occupational environment and therefore the confidentiality issue has to be communicated clearly. Most of the tests used were specifically suitable for the purposes that they were used for in this study.

Studies done in the past, according to Skodol (1998), were retrospective and few studies have taken into account pre-existing conditions, thus denying the possibility of psychopathology. This study has also not taken into account any pre-existing conditions, although the P measure on the Eysenck questionnaire might have indicated any obvious abnormalities. This study was a cross-sectional study. Longitudinal studies might be able to give a perspective on the existence and influence of pre-existing psychopathology.

Participants were mostly managers, all highly qualified and of European, decent which could casts doubt on the generalisability of findings.

### **5.11 Specific Applications**

This research could lead to healthier individuals and healthier organisations and create improved and more efficient managers, management strategies and teams within the organisation by implementing more effective stress management programmes. This could take the form of training in personal leadership or personal mastery and through self-leadership skills. The individual could learn to influence him/ herself and change his/her inner attitude. This strategy could be particularly effective for personality types who are resistant to change and thereby take charge of their situation and not only be reactive to challenges and change.

The result would be lower staff turnover and absenteeism, fewer industrial relations difficulties and better quality control. It would also improve the physical and mental health of employees and the total growth and renewal process within the organisation. Neck (1996) states that research on organisational change could focus on research at an individual level to address cognition, mental and thought processes of managers, instead of the relationship between managers and change.

Studies that investigated personality factors have been limited, for the most part, to traits related to neurotics and not a full array of personality dimensions, or to new constructs such as hardiness. This classification system could hopefully achieve a better understanding of the individual and how to assist him/her to be as productive as possible in his/her job.

Most studies of coping have not considered the relationship of other potential mediators or variables such as availability of social support on coping efforts. This study however, addresses the understanding of these relationships through the composition of the test material used.

## **5.12 Further Research Work**

Longitudinal studies would be useful to confirm findings and to exclude the pre-existing conditions issue, as it was not taken into account for this study thus denying possibility of psychopathology.

The composition of the sample complicates generalisability of findings to the wider community. This factor was unknown to the researcher while commencing the survey. A wider study sample is therefore required to confirm the findings of this study. For example, further research should also target better representation on the following parameters - ethnical groups and occupational groups (professional versus non-professional, etc).

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## **APPENDIX A INFORMATION SHEETS & QUESTIONNAIRES**

## **APPENDIX A**

### **Pilot Evaluation Form**

#### **Questionnaire Evaluation**

1. Was the information sheet easy to understand?

No (please circle)

If not, why not?

2. Was the language used in the questionnaire easy to understand?

No (please circle)

If no, what did you find difficult to understand and why?

3. Did you have difficulty answering any questions for other reasons (unrelated to how questions were worded)?

No (please circle)

If yes, what was the difficulty and why?

4. Approximately how long did it take you to complete the questionnaire?

5. Can you think of any other changes that would improve the questionnaire?

## MASSEY UNIVERSITY LETTERHEAD

### OCCUPATIONAL STRESS AND PERSONALITY RESEARCH PROJECT

#### INFORMATION SHEET

One of the difficult questions that have only been hinted at so far in research concerns the reason why the stress-illness phenomena manifests itself in such diverse forms in different individuals.

This research is being conducted to assess the possible relationship between occupational stress and personality and it would be greatly appreciated if you could take part in this study. I am looking for participants who are currently in a working environment. Information gained from the study may facilitate new stress management strategies. This could possibly accomplish a broader perspective on the individual, enhance the psychological wellbeing and health of workers in the future and create improved and efficient managers, management strategies and teams within the organisation.

The research will partially be funded by the School of Psychology Post-Graduate Research Fund. The research is conducted in fulfilment of the requirements for a Masters Thesis. I am a postgraduate student at the Massey University, Albany Campus, Auckland. My supervisor is Dr Dave Clarke with the School of Psychology.

Completion of the questionnaires implies that you agree with the conditions on the information sheet and give your consent to participate in this research. By choosing to take part in the research, you will be asked to complete three questionnaires. This should take approximately 45 to 60 minutes.

- You have the right, with no consequence,
- To decline to participate;
- To refuse to answer any particular questions;
- To withdraw from the study up until the time you hand in the questionnaire;
- To ask any questions about the study at any time during participation;
- To provide information on the understanding that your name will not be used unless you give permission to the researcher;
- To be given access to a summary of the findings of the study when it is concluded.

All questionnaires are anonymous. You will not be required to give your name when completing the questionnaires and therefore it would not be possible to identify you in any way. The information gathered will only be used in an aggregated form and not to identify specific individuals.

The data will be kept on a floppy disk in a secure location. This data will be kept for 2 years after submission of the thesis should questions arise. The questionnaires will be destroyed after the study has been completed.

If you find any of the issues raised in the questionnaires to be distressing in any way, please ask for help. For students enrolled at Massey University you can contact the Student Health and Counselling Centre at (09) 443 9783. Otherwise, please contact Dr Dave Clarke at (09) 443 9799 ext. 9867.

Thank you for helping me with this research.

Tania Henning

(06) 835 8009

E-mail: [tania@htc.co.nz](mailto:tania@htc.co.nz)



MASSEY UNIVERSITY ALBANY

SCHOOL OF PSYCHOLOGY

PERSONAL TYPOLOGY AND OCCUPATIONAL STRESS

INSTRUCTIONS:

1. Completion of this questionnaire implies that you agree with the conditions on the information sheet and give your consent to participate in this research project.
2. All responses to this questionnaire are completely confidential. No personal details are required other than basic general demographic questions. You may note the number on the questionnaire if you would like to get feedback on your percentile scores.
3. Please make no marks on these pages. Write all your answers in the boxes on the separate answer sheet provided. Due to copyright restrictions, these sheets need to be returned.
4. This self-report questionnaire is not a test in the sense that your answers can be right or wrong. It is in four parts. Parts 1 and 2 are attached. For parts 3 and 4, there are separate question booklets and answer sheets. Please separate the materials and have no other pages on top of or under the answer sheets. Please give an answer to every question.
5. You should be able to complete all parts in 40 to 50 minutes. When you have finished answering the items on the answer sheets, please clip all the materials together and deposit them in the box provided.
6. A summary of the preliminary results will be mailed to each participant. If you would like a copy of the report and your percentile scores, please ask for an envelope, write your name and address on it, and deposit it in the separate box, or mail it to the researcher.
7. If you decide not to complete the questionnaire after receiving it, please return it to the researcher. All questionnaires must be returned to comply with copyright regulations and ethical guidelines for the administration and use of psychological tests.
8. Thank you for helping me with this research.

Tania Henning

The contents of this questionnaire are subject to copyright restrictions. Copying them or using them for other purposes than the research project is an infringement of copyright.

# PART 1 - BEHAVIOURAL RESPONSES

Please answer each question by putting a circle around the 'YES' or 'NO' following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions. Some items are missing. Those items have been removed to shorten the questionnaire. Please answer all the questions.

- |     |   |      |                 |
|-----|---|------|-----------------|
| 1   | Do you have many different hobbies?                                   | YES, | NO <sub>0</sub> |
| 2.  | Do you stop to think things over before doing anything?               | YES, | NO <sub>0</sub> |
| 3.  | Does your mood often go up and down?                                  | YES, | NO <sub>0</sub> |
| 5.  | Do you take much notice of what people think?                         | YES, | NO <sub>0</sub> |
| 6.  | Are you a talkative person?   | YES, | NO <sub>0</sub> |
| 7.  | Would being in debt worry you?  | YES, | NO <sub>0</sub> |
| 8.  | Do you ever feel 'just miserable' for reason?                         | YES, | NO <sub>0</sub> |
| 9.  | Do you give money to charities?                                       | YES, | NO <sub>0</sub> |
|     | Are you rather lively?  | YES, | NO <sub>0</sub> |
| 12. | Would it upset you a lot to see a child or an animal suffer?          | YES, | NO <sub>0</sub> |
| 13. | Do you often worry about things you should not have done or said?     | YES, | NO <sub>0</sub> |
| 14. | Do you dislike people who don't know how to behave themselves?        | YES, | NO <sub>0</sub> |
| 16. | Can you usually let yourself go and enjoy yourself at a lively party? | YES, | NO <sub>0</sub> |
| 17. | Are you an irritable person?  | YES, | NO <sub>0</sub> |
| 18. | Should people always respect the law?                                 | YES, | NO <sub>0</sub> |
| 20. | Do you enjoy meeting new people?                                      | YES, | NO <sub>0</sub> |
| 21. | Are good manners very important?                                      | YES, | NO <sub>0</sub> |
| 22. | Are your feelings easily hurt?  | YES, | NO <sub>0</sub> |
| 24. | Do you tend to keep in the background on social occasions?            | YES, | NO <sub>0</sub> |
| 25. | Would you take drugs which may have strange or dangerous effects?     | YES, | NO <sub>0</sub> |
| 26. | Do you often feel 'fed- up'?  | YES, | NO <sub>0</sub> |
| 28. | Do you like going out a lot?  | YES, | NO <sub>0</sub> |
| 29. | Do you prefer to go your own way rather than act by the rules?        | YES, | NO <sub>0</sub> |
| 30. | Do you enjoy hurting people you love?                                 | YES, | NO <sub>0</sub> |
| 31. | Are you often troubled about feelings of guilt?                       | YES, | NO <sub>0</sub> |

33.	Do you prefer reading to meeting people?	YES <sub>1</sub>	NO <sub>0</sub>
34.	Do you have enemies who want to harm you?	YES <sub>1</sub>	NO <sub>0</sub>
35.	Would you call yourself a nervous person?	YES <sub>1</sub>	NO <sub>0</sub>
36.	Do you have many friends?	YES <sub>1</sub>	NO <sub>0</sub>
37.	Do you enjoy practical jokes that can sometimes really hurt people?	YES <sub>1</sub>	NO <sub>0</sub>
38.	Are you a worrier?	YES <sub>1</sub>	NO <sub>0</sub>
40.	Would you call yourself happy- go- lucky?	YES <sub>1</sub>	NO <sub>0</sub>
41.	Do good manners and cleanliness matter much to you?	YES <sub>1</sub>	NO <sub>0</sub>
42.	Have you often gone against you parent's wishes?	YES <sub>1</sub>	NO <sub>0</sub>
43.	Do you worry about awful things that might happen?	YES <sub>1</sub>	NO <sub>0</sub>
45.	Do you usually take the initiative in making new friends?	YES <sub>1</sub>	NO <sub>0</sub>
46.	Would you call yourself tense or 'highly- strung'?	YES <sub>1</sub>	NO <sub>0</sub>
47.	Are you mostly quiet when you are with other people?	YES <sub>1</sub>	NO <sub>0</sub>
48.	Do you think marriage is old- fashioned and should be done away with?	YES <sub>1</sub>	NO <sub>0</sub>
50.	Are you more easy- going about right and wrong than most people?	YES <sub>1</sub>	NO <sub>0</sub>
51.	Can you easily get some life into a rather dull party?	YES <sub>1</sub>	NO <sub>0</sub>
52.	Do you worry about your health?	YES <sub>1</sub>	NO <sub>0</sub>
54.	Do you enjoy cooperating with others?	YES <sub>1</sub>	NO <sub>0</sub>
55.	Do you like telling jokes and funny stories to your friends?	YES <sub>1</sub>	NO <sub>0</sub>
56.	Do most things taste the same to you?	YES <sub>1</sub>	NO <sub>0</sub>
58.	Do you like mixing with people?	YES <sub>1</sub>	NO <sub>0</sub>
59.	Does it worry you if you know there are mistakes in your work?	YES <sub>1</sub>	NO <sub>0</sub>
60.	Do you suffer from sleeplessness?	YES <sub>1</sub>	NO <sub>0</sub>
61.	Have people said that you sometimes act too rashly?	YES <sub>1</sub>	NO <sub>0</sub>
63.	Do you nearly always have a 'ready answer' when people talk to you?	YES <sub>1</sub>	NO <sub>0</sub>
64.	Do you like to arrive at appointments in plenty of time?	YES <sub>1</sub>	NO <sub>0</sub>
65.	Have you often felt listless and tired for no reason?	YES <sub>1</sub>	NO <sub>0</sub>
67.	Do you like doing things in which you have to act quickly?	YES <sub>1</sub>	NO <sub>0</sub>
68.	Is (or was) your mother a good woman?	YES <sub>1</sub>	NO <sub>0</sub>

69.	Do you often make decisions on the spur of the moment?	YES,	NO <sub>0</sub>
70.	Do you often feel life is very dull?	YES,	NO <sub>0</sub>
72.	Do you often take on more activities than you have time for?	YES,	NO <sub>0</sub>
73.	Are there several people who keep trying to avoid you?	YES,	NO <sub>0</sub>
74.	Do you worry a lot about your looks?	YES,	NO <sub>0</sub>
75.	Do you think people spend too much time safeguarding their future with savings and insurance?	YES,	NO <sub>0</sub>
76.	Have you ever wished that you were dead?	YES,	NO <sub>0</sub>
77.	Can you get a party going?	YES,	NO <sub>0</sub>
78.	Do you try not to be rude to people?	YES,	NO <sub>0</sub>
79.	Do you worry too long after an embarrassing experience?	YES,	NO <sub>0</sub>
80.	Do you generally 'look before you leap'?	YES,	NO <sub>0</sub>
83.	Do you suffer from 'nerves'?	YES,	NO <sub>0</sub>
84.	Do you often feel lonely?	YES,	NO <sub>0</sub>
85.	Can you on the whole trust people to tell the truth?	YES,	NO <sub>0</sub>
87.	Are you easily hurt when people find fault with you or the work you do?	YES,	NO <sub>0</sub>
88.	Is it better to follow society's rules than go your own way?	YES,	NO <sub>0</sub>
90.	Do you like plenty of bustle and excitement around you?	YES,	NO <sub>0</sub>
91.	Would you like other people to be afraid of you?	YES,	NO <sub>0</sub>
92.	Are you sometimes bubbling over with energy and sometimes very sluggish?	YES,	NO <sub>0</sub>
94.	Do other people think of you as being very lively?	YES,	NO <sub>0</sub>
95.	Do people tell you a lot of lies?	YES,	NO <sub>0</sub>
96.	Do you believe one has special duties to one's family?	YES,	NO <sub>0</sub>
97.	Are you touchy about some things?	YES,	NO <sub>0</sub>
99.	Would you feel sorry for an animal caught in a trap?	YES,	NO <sub>0</sub>
100.	When your temper rises, do you find it difficult to control?	YES,	NO <sub>0</sub>

Please turn over for Part 2

## PART 2 - DEMOGRAPHIC QUESTIONS

1. What is your age in years? \_\_\_\_\_ years
  
2. What is your gender?
 

☐

Female ☐
  
3. What ethnic group do you identify with *primarily*?
 

☐

European/Pakeha ☐

Pacific Island ☐

☐

Other ☐ Please specify: \_\_\_\_\_
  
4. What is your *highest* educational qualification?
 

Some Secondary School ☐

School Certificate (5<sup>th</sup> Form) ☐

High School Certificate (6<sup>th</sup> Form)/UE ☐

Bursary ☐

Tertiary      Bachelors Degree ☐

Diploma ☐

Post-Graduate ☐

Other (e.g. trades) ☐ Please specify: \_\_\_\_\_
  
5. Are you in a management supervisory or management position at present?
 

Yes ☐

No ☐

Please turn over to p. 6 . . .

- 6 Do you expect to be in a managerial position within the next 5 years?
- Yes ☐
- No ☐
7. Has there been any *major* restructuring, renewal or change within your organisation in the past 5 years?
- Yes ☐
- No ☐
8. Although you may be functioning in different areas of your organisation, where do you see yourself functioning *predominantly* in your organisation now? (Please tick *one* of the following boxes.)
- ☐ Generating new insights, forming original ideas, formulating a vision of what the organisation might be in the future.
  - ☐ Motivating a team; evoking shared group values to aspire towards the new ideas and goals; energising the organisation.
  - ☐ Thinking strategically; planning to implement the ideas and goals.
  - ☐ Making things work and getting results.
  - ☐ Evaluating routine operations and standards.
  - ☐ Celebrating your organisation's competencies and achievements; rewarding people with recognition and praise for their contributions.
  - ☐ Perceiving patterns in past decisions, actions and events. A strong sense of history and tradition.

### PART 3 - TYPE INDICATOR

Please remove the answer sheet from the Myers-Briggs Type Indicator.

2. Complete the **Occupational Career Field Box** on the answer sheet. (Shade in only one oval.)
3. Read the directions on the **Form G Booklet**. Shade in the appropriate ovals on the answer sheet.

### PART 4 - OCCUPATIONAL STRESS

- 1 Please remove the rating sheet from the **OSI Item Booklet**.
2. Read the directions on the **OSI Item Booklet**. Shade in the appropriate circles on the rating sheet.

Thank you for assisting me with my research project.

Tania Henning



**APPENDIX B DESCRIPTIVE STATISTICS OF OSI**

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## Descriptive ORQ

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std.	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error
RO	138	17.00	46.00	29.6449	.5500	6.4613	.042	.206
RI	138	10.00	45.00	24.7971	.5694	6.6893	.189	.206
RA	138	11.00	41.00	24.9710	.7018	8.2444	.061	.206
RB	138	10.00	39.00	22.7971	.5652	6.6400	.054	.206
R	138	16.00	40.00	26.5072	.5352	6.2866	.156	.206
PE	138	10.00	31.00	13.9928	.3098	3.6398	1.690	.206
Valid N (listwise)	138							

## Descriptive PSQ

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std.	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error
VS	138	11.00	33.00	20.2536	.4201	4.9347	.216	.206
PSY	138	10.00	37.00	22.4058	.5675	6.6669	.533	.206
IS	138	10.00	49.00	22.1522	.5322	6.2525	.822	.206
PHS	138	10.00	50.00	19.8623	.6473	7.6044	1.087	.206
Valid N (listwise)	138							

## Descriptive PRQ

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std.	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error
RE	138	14.00	40.00	26.2464	.4727	5.5524	.204	.206
SC	138	10.00	45.00	26.9565	.5611	6.5912	.224	.206
SS	138	12.00	52.00	41.3623	.6301	7.4019	-1.513	.206
RC	138	19.00	50.00	36.0000	.5111	6.0036	-.100	.206
Valid N (listwise)	138							

**APPENDIX C ANOVA ANALYSES RESULTS**

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OSI as a function of functioning

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
ORQ	.00	19	160.4737	13.4634	3.0887	153.9845	166.9628	134.00	185.00
	1.00	7	121.1429	21.6751	8.1924	101.0967	141.1890	81.00	145.00
	2.00	22	137.5000	29.4307	6.2746	124.4512	150.5488	89.00	192.00
	3.00	16	138.0625	18.0572	4.5143	128.4405	147.6845	115.00	175.00
	4.00	60	141.5500	20.3390	2.6258	136.2959	146.8041	97.00	181.00
	5.00	6	151.8333	26.6189	10.8671	123.8985	179.7682	107.00	182.00
	6.00	3	150.6667	36.5011	21.0739	59.9928	241.3405	114.00	187.00
	7.00	5	141.4000	17.8550	7.9850	119.2301	163.5699	115.00	157.00
	Total	138	142.7101	22.9287	1.9518	138.8506	146.5697	81.00	192.00
PSQ	.00	19	92.2632	19.7789	4.5376	82.7300	101.7963	68.00	139.00
	1.00	7	86.2857	22.8233	8.6264	65.1776	107.3938	54.00	111.00
	2.00	22	81.9091	24.8843	5.3054	70.8760	92.9422	46.00	138.00
	3.00	16	72.1250	12.7482	3.1871	65.3320	78.9180	51.00	90.00
	4.00	60	86.0667	21.1723	2.7333	80.5973	91.5361	51.00	154.00
	5.00	6	87.0000	20.7942	8.4892	65.1778	108.8222	66.00	127.00
	6.00	3	67.3333	15.9478	9.2075	27.7167	106.9499	54.00	85.00
	7.00	5	96.8000	17.2105	7.6968	75.4304	118.1696	81.00	125.00
	Total	138	84.6739	21.1871	1.8036	81.1075	88.2403	46.00	154.00
PRQ	.00	19	130.7368	21.7864	4.9982	120.2361	141.2376	80.00	165.00
	1.00	7	130.8571	16.0772	6.0766	115.9882	145.7261	114.00	162.00
	2.00	22	135.5000	17.1957	3.6661	127.8759	143.1241	90.00	168.00
	3.00	16	130.9375	17.9387	4.4847	121.3787	140.4963	101.00	167.00
	4.00	60	128.5333	16.5021	2.1304	124.2704	132.7963	68.00	175.00
	5.00	6	140.8333	9.3684	3.8246	131.0018	150.6649	128.00	155.00
	6.00	3	141.3333	12.5033	7.2188	110.2733	172.3933	129.00	154.00
	7.00	5	112.2000	9.5499	4.2708	100.3423	124.0577	97.00	123.00
	Total	138	130.5652	17.4607	1.4864	127.6261	133.5044	68.00	175.00

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
ORQ	Between Groups	10972.82	7	1567.546	3.338	.003
	Within Groups	61051.58	130	469.628		
	Total	72024.41	137			
PSQ	Between Groups	5586.445	7	798.064	1.856	.082
	Within Groups	55911.88	130	430.091		
	Total	61498.33	137			
PRQ	Between Groups	3453.701	7	493.386	1.674	.121
	Within Groups	38314.21	130	294.725		
	Total	41767.91	137			

# MBTI as a function of Functioning

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
E	.00	19	9.0000	6.4979	1.4907	5.8681	12.1319	.00	22.00
	1.00	7	12.2857	4.1115	1.5540	8.4832	16.0883	6.00	18.00
	2.00	22	12.6364	6.3587	1.3557	9.8171	15.4556	.00	23.00
	3.00	16	10.3750	7.1822	1.7955	6.5479	14.2021	.00	24.00
	4.00	60	11.4667	6.1657	.7960	9.8739	13.0594	.00	24.00
	5.00	6	10.6667	7.3121	2.9851	2.9931	18.3402	.00	18.00
	6.00	3	15.3333	2.0817	1.2019	10.1622	20.5045	13.00	17.00
	7.00	5	9.6000	3.7815	1.6912	4.9046	14.2954	6.00	15.00
	Total	138	11.2101	6.2121	.5288	10.1645	12.2558	.00	24.00
I	.00	19	15.8947	8.3858	1.9238	11.8529	19.9366	.00	26.00
	1.00	7	14.2857	3.8173	1.4428	10.7553	17.8161	10.00	20.00
	2.00	22	12.1364	6.0340	1.2865	9.4610	14.8117	.00	24.00
	3.00	16	15.0000	7.7460	1.9365	10.8725	19.1275	.00	26.00
	4.00	60	14.6833	6.3125	.8149	13.0527	16.3140	.00	27.00
	5.00	6	16.8333	7.4944	3.0596	8.9684	24.6983	10.00	28.00
	6.00	3	10.3333	.5774	.3333	8.8991	11.7676	10.00	11.00
	7.00	5	17.4000	3.7815	1.6912	12.7046	22.0954	13.00	21.00
	Total	138	14.5580	6.6178	.5633	13.4440	15.6720	.00	28.00
S	.00	19	9.3158	7.8390	1.7984	5.5375	13.0941	.00	23.00
	1.00	7	10.5714	8.6767	3.2795	2.5468	18.5961	.00	26.00
	2.00	22	13.5000	7.7074	1.6432	10.0827	16.9173	.00	28.00
	3.00	16	14.0625	9.6917	2.4229	8.8982	19.2268	.00	32.00
	4.00	60	13.8667	8.6072	1.1112	11.6432	16.0901	.00	33.00
	5.00	6	14.0000	8.3905	3.4254	5.1947	22.8053	4.00	25.00
	6.00	3	17.6667	11.0151	6.3596	-9.6965	45.0298	5.00	25.00
	7.00	5	9.2000	4.7117	2.1071	3.3497	15.0503	5.00	17.00
	Total	138	12.9565	8.4490	.7192	11.5343	14.3787	.00	33.00
N	.00	19	14.8421	7.1201	1.6335	11.4103	18.2739	.00	25.00
	1.00	7	14.7143	6.5502	2.4757	8.6564	20.7722	5.00	23.00
	2.00	22	10.0000	5.4685	1.1659	7.5754	12.4246	.00	20.00
	3.00	16	10.0625	7.1505	1.7876	6.2523	13.8727	.00	23.00
	4.00	60	11.0833	6.8847	.8888	9.3048	12.8619	.00	25.00
	5.00	6	12.6667	6.8313	2.7889	5.4977	19.8357	4.00	20.00
	6.00	3	8.0000	9.5394	5.5076	-15.6972	31.6972	2.00	19.00
	7.00	5	13.6000	4.5056	2.0149	8.0056	19.1944	6.00	17.00
	Total	138	11.5870	6.7820	.5773	10.4453	12.7286	.00	25.00
T	.00	19	12.5789	7.4931	1.7190	8.9674	16.1905	.00	24.00
	1.00	7	14.4286	5.5032	2.0800	9.3389	19.5182	9.00	26.00
	2.00	22	11.7727	5.8711	1.2517	9.1696	14.3758	.00	22.00
	3.00	16	13.3750	6.9750	1.7437	9.6583	17.0917	.00	24.00
	4.00	60	13.1667	7.6914	.9930	11.1798	15.1536	.00	31.00
	5.00	6	14.6667	8.0416	3.2830	6.2276	23.1058	4.00	23.00
	6.00	3	17.6667	3.5119	2.0276	8.9427	26.3907	14.00	21.00
	7.00	5	13.4000	2.6077	1.1662	10.1621	16.6379	9.00	16.00
	Total	138	13.1232	6.9655	.5929	11.9507	14.2957	.00	31.00
F	.00	19	7.0526	5.0824	1.1660	4.6030	9.5023	.00	18.00
	1.00	7	7.7143	2.2147	.8371	5.6661	9.7625	4.00	10.00
	2.00	22	7.5455	4.4692	.9528	5.5639	9.5270	.00	15.00
	3.00	16	6.4375	3.6691	.9173	4.4824	8.3926	.00	12.00
	4.00	60	7.5667	5.1827	.6691	6.2278	8.9055	.00	19.00
	5.00	6	6.8333	5.5287	2.2571	1.0313	12.6354	2.00	14.00
	6.00	3	5.3333	2.8868	1.6667	-1.8378	12.5044	2.00	7.00
	7.00	5	6.4000	2.7019	1.2083	3.0452	9.7548	2.00	9.00
	Total	138	7.2464	4.6290	.3940	6.4672	8.0256	.00	19.00
J	.00	19	13.2632	8.0956	1.8572	9.3612	17.1651	.00	27.00
	1.00	7	18.4286	6.0238	2.2768	12.8575	23.9996	8.00	26.00
	2.00	22	18.0909	7.5461	1.6088	14.7452	21.4367	.00	27.00
	3.00	16	17.6250	6.9750	1.7437	13.9083	21.3417	.00	27.00
	4.00	60	15.8500	7.3203	.9451	13.9590	17.7410	.00	28.00
	5.00	6	21.3333	4.2269	1.7256	16.8975	25.7692	14.00	25.00
	6.00	3	18.0000	4.5826	2.6458	6.6163	29.3837	13.00	22.00
	7.00	5	12.4000	5.7271	2.5612	5.2888	19.5112	3.00	17.00
	Total	138	16.3478	7.3003	.6214	15.1190	17.5767	.00	28.00
P	.00	19	13.5789	8.2214	1.8861	9.6164	17.5415	.00	27.00
	1.00	7	9.1429	5.1130	1.9325	4.4141	13.8716	2.00	18.00
	2.00	22	8.5455	6.9057	1.4723	5.4837	11.6073	.00	25.00
	3.00	16	8.1250	4.7452	1.1863	5.5965	10.6535	.00	15.00
	4.00	60	11.3833	7.6249	.9844	9.4136	13.3530	.00	29.00
	5.00	6	6.3333	4.0332	1.6465	2.1008	10.5659	2.00	13.00
	6.00	3	8.6667	3.5119	2.0276	-5.7338E-02	17.3907	5.00	12.00
	7.00	5	15.0000	7.0000	3.1305	6.3084	23.6916	7.00	26.00
	Total	138	10.5942	7.1854	.6117	9.3847	11.8037	.00	29.00

## ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
E	Between Groups	226.503	7	32.358	.831	.563
	Within Groups	5060.403	130	38.926		
	Total	5286.906	137			
I	Between Groups	292.544	7	41.792	.952	.469
	Within Groups	5707.492	130	43.904		
	Total	6000.036	137			
S	Between Groups	511.082	7	73.012	1.024	.417
	Within Groups	9268.657	130	71.297		
	Total	9779.739	137			
N	Between Groups	443.447	7	63.350	1.406	.208
	Within Groups	5858.009	130	45.062		
	Total	6301.457	137			
T	Between Groups	135.413	7	19.345	.386	.909
	Within Groups	6511.493	130	50.088		
	Total	6646.906	137			
F	Between Groups	36.422	7	5.203	.233	.976
	Within Groups	2899.201	130	22.302		
	Total	2935.623	137			
J	Between Groups	554.154	7	79.165	1.525	.164
	Within Groups	6747.150	130	51.901		
	Total	7301.304	137			
P	Between Groups	628.399	7	89.771	1.811	.090
	Within Groups	6444.877	130	49.576		
	Total	7073.275	137			



# Estimates

Dependent Variable	fsum	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Zscore: ORQ	4.00	-7.2E-02	.130	-.329	.185
	17.00	-.409	.303	-1.009	.191
	26.00	-.182	.201	-.580	.216
	35.00	-6.0E-02	.214	-.484	.364
Zscore: PSQ	4.00	6.06E-02	.128	-.192	.314
	17.00	.366	.298	-.225	.957
	26.00	-.218	.198	-.610	.174
	35.00	-.405	.211	-.823	1.264E-02
Zscore: PRQ	4.00	-.115	.122	-.356	.127
	17.00	-.482	.285	-1.046	8.148E-02
	26.00	.323	.189	-5.089E-02	.697
	35.00	.177	.201	-.222	.575

# Pairwise Comparisons

Dependent Variable	(I) fsum	(J) fsum	Mean Difference (I-J)	Std. Error	Sig. <sup>a</sup>	95% Confidence Interval for Difference <sup>a</sup>	
						Lower Bound	Upper Bound
Zscore: ORQ	4.00	17.00	.337	.330	.308	-.316	.990
		26.00	.110	.239	.646	-.363	.584
		35.00	-1.198E-02	.250	.962	-.508	.484
	17.00	4.00	-.337	.330	.308	-.990	.316
		26.00	-.227	.364	.534	-.947	.493
		35.00	-.349	.371	.349	-1.084	.386
	26.00	4.00	-.110	.239	.646	-.584	.363
		17.00	.227	.364	.534	-.493	.947
		35.00	-.122	.294	.678	-.704	.460
	35.00	4.00	1.198E-02	.250	.962	-.484	.508
		17.00	.349	.371	.349	-.386	1.084
		26.00	.122	.294	.678	-.460	.704
Zscore: PSQ	4.00	17.00	-.305	.324	.349	-.948	.337
		26.00	.278	.235	.240	-.188	.745
		35.00	.466	.247	.061	-2.269E-02	.954
	17.00	4.00	.305	.324	.349	-.337	.948
		26.00	.583	.358	.106	-.125	1.292
		35.00	.771*	.365	.037	4.733E-02	1.494
	26.00	4.00	-.278	.235	.240	-.745	.188
		17.00	-.583	.358	.106	-1.292	.125
		35.00	.187	.289	.518	-.385	.760
	35.00	4.00	-.466	.247	.061	-.954	2.269E-02
		17.00	-.771*	.365	.037	-1.494	-4.733E-02
		26.00	-.187	.289	.518	-.760	.385
Zscore: PRQ	4.00	17.00	.368	.310	.237	-.246	.981
		26.00	-.438	.225	.054	-.883	7.495E-03
		35.00	-.291	.235	.218	-.757	.175
	17.00	4.00	-.368	.310	.237	-.981	.246
		26.00	-.805*	.341	.020	-1.482	-.129
		35.00	-.659	.348	.061	-1.349	3.146E-02
	26.00	4.00	.438	.225	.054	-7.495E-03	.883
		17.00	.805*	.341	.020	.129	1.482
		35.00	.146	.276	.597	-.400	.693
	35.00	4.00	.291	.235	.218	-.175	.757
		17.00	.659	.348	.061	-3.146E-02	1.349
		26.00	-.146	.276	.597	-.693	.400

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Anova results for functioning (Eysenck)

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
P	1.00	7	5.0000	2.8868	1.0911	2.3302	7.6698	3.00	10.00
	2.00	19	3.7368	2.1040	.4827	2.7227	4.7509	1.00	8.00
	3.00	15	4.3333	2.4689	.6375	2.9661	5.7005	1.00	8.00
	4.00	46	5.2391	2.9604	.4365	4.3600	6.1183	.00	12.00
	5.00	1	6.0000	.	.	.	.	6.00	6.00
	6.00	2	2.5000	.7071	.5000	-3.8531	8.8531	2.00	3.00
	Total	90	4.7000	2.7126	.2859	4.1318	5.2682	.00	12.00
E	1.00	7	12.5714	3.1015	1.1722	9.7031	15.4398	9.00	17.00
	2.00	19	13.7895	4.0631	.9321	11.8311	15.7478	6.00	20.00
	3.00	15	13.7333	5.6879	1.4686	10.5835	16.8832	4.00	21.00
	4.00	46	12.4565	4.5933	.6772	11.0925	13.8206	3.00	21.00
	5.00	1	18.0000	.	.	.	.	18.00	18.00
	6.00	2	19.0000	.0000	.0000	19.0000	19.0000	19.00	19.00
	Total	90	13.1667	4.6040	.4853	12.2024	14.1310	3.00	21.00
N	1.00	7	11.1429	6.4402	2.4342	5.1867	17.0990	3.00	21.00
	2.00	19	8.4737	3.8495	.8831	6.6183	10.3291	2.00	17.00
	3.00	15	6.7333	4.2337	1.0931	4.3888	9.0779	1.00	14.00
	4.00	46	9.9783	5.4670	.8061	8.3548	11.6018	2.00	22.00
	5.00	1	7.0000	.	.	.	.	7.00	7.00
	6.00	2	3.0000	1.4142	1.0000	-9.7062	15.7062	2.00	4.00
	Total	90	9.0222	5.1363	.5414	7.9464	10.0980	1.00	22.00

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
P	Between Groups	45.013	5	9.003	1.240	.298
	Within Groups	609.887	84	7.261		
	Total	654.900	89			
E	Between Groups	129.281	5	25.856	1.236	.300
	Within Groups	1757.219	84	20.919		
	Total	1886.500	89			
N	Between Groups	234.450	5	46.890	1.864	.109
	Within Groups	2113.506	84	25.161		
	Total	2347.956	89			

**APPENDIX D REGRESSIONS AND CORRELATIONS**

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## OSI All Data

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.352 <sup>a</sup>	.124	.069	46.0594

a. Predictors: (Constant), P, E, T, S, F, N, I, J

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	96.514	22.309		4.326	.000	52.372	140.656
	E	-2.448	1.645	-.320	-1.488	.139	-5.703	.807
	I	-1.065	1.628	-.148	-.654	.514	-4.286	2.157
	S	-.778	1.038	-.138	-.750	.455	-2.831	1.276
	N	7.89E-02	1.310	.011	.060	.952	-2.513	2.671
	T	2.011	1.234	.294	1.630	.106	-.431	4.452
	F	2.541	1.827	.247	1.391	.167	-1.074	6.156
	J	-.215	1.663	-.033	-.129	.897	-3.505	3.075
	P	1.106	1.656	.167	.668	.505	-2.170	4.382

a. Dependent Variable: OSI

## ORQ All Data

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.396 <sup>a</sup>	.157	.047	21.7282

a. Predictors: (Constant), MODMATCH, P, RESTR, SEX, E, F, MGMT, AGE, N, S, T, I, J

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	85.480	52.033		1.643	.104	-17.753	188.712			
	AGE	6.58E-02	.243	.027	.271	.787	-.417	.549	-.050	.027	.025
	SEX	8.675	4.348	.196	1.995	.049	.049	17.302	.196	.196	.183
	MGMT	7.891	4.838	.165	1.632	.106	-1.704	17.485	.236	.161	.150
	RESTR	-7.862	5.363	-.136	-1.429	.156	-18.301	2.978	-.133	-.141	-.131
	E	-4.8E-02	1.096	-.013	-.044	.965	-2.223	2.127	-.030	-.004	-.004
	I	-8.8E-04	1.108	.000	-.001	.999	-2.194	2.193	.019	.000	.000
	S	-.581	.542	-.216	-1.073	.286	-1.656	.494	-.171	-.107	-.099
	N	-.214	.670	-.062	-.319	.750	-1.542	1.115	.131	-.032	-.029
	T	.914	.712	.275	1.282	.203	-.500	2.327	.067	.127	.118
	F	.647	1.056	.130	.613	.541	-1.447	2.742	-.038	.061	.056
	J	1.538	1.284	.459	1.198	.234	-1.009	4.085	-.062	.119	.110
	P	1.727	1.251	.531	1.381	.170	-.755	4.209	.088	.137	.127
	MODMATCH	-6.272	4.680	-.134	-1.340	.183	-15.558	3.013	-.012	-.133	-.123

a. Dependent Variable: ORQ

PSQ All Data

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.447 <sup>a</sup>	.200	.096	20.2134

a. Predictors: (Constant), MODMATCH, P, RESTR, SEX, E, F, MGMT, AGE, N, S, T, I, J

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	131.036	48.406		2.707	.008	35.000	227.072			
	AGE	-6.6E-02	.226	-.028	-.291	.772	-.515	.383	-.064	-.029	-.026
	SEX	.979	4.045	.023	.242	.809	-7.047	9.004	.046	.024	.022
	MGMT	7.850	4.499	.172	1.745	.084	-1.076	16.775	.233	.172	.156
	RESTR	-8.116	4.989	-.151	-1.627	.107	-18.014	1.782	-.181	-.161	-.146
	E	-2.664	1.020	-.733	-2.612	.010	-4.688	-.641	-.220	-.253	-.234
	I	-2.040	1.029	-.563	-1.983	.050	-4.081	.000	.147	-.195	-.177
	S	-.276	.504	-.107	-.547	.586	-1.276	.724	-.173	-.055	-.049
	N	8.57E-02	.623	.026	.138	.891	-1.150	1.322	.148	.014	.012
	T	.805	.663	.253	1.214	.228	-.510	2.119	-.063	.121	.109
	F	1.381	.982	.291	1.406	.163	-.568	3.329	.131	.139	.126
	J	-.127	1.194	-.040	-.106	.916	-2.496	2.243	-.110	-.011	-.009
	P	.100	1.164	.032	.086	.932	-2.209	2.409	.121	.009	.008
	MODMATCH	-2.333	4.354	-.052	-.536	.593	-10.971	6.305	.028	-.054	-.048

a. Dependent Variable: PSQ

PRQ All Data

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.459 <sup>a</sup>	.211	.108	16.0979

a. Predictors: (Constant), MODMATCH, P, RESTR, SEX, E, F, MGMT, AGE, N, S, T, I, J

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	74.717	38.550		1.938	.055	-1.785	151.199			
	AGE	.145	.180	.078	.803	.424	-.213	.503	.006	.080	.071
	SEX	4.802	3.221	.136	1.429	.156	-1.789	10.994	.148	.141	.127
	MGMT	-2.551	3.583	-.070	-.712	.478	-9.660	4.557	-.076	-.071	-.063
	RESTR	4.366	3.973	.102	1.099	.274	-3.517	12.249	.129	.109	.098
	E	1.336	.812	.459	1.647	.103	-.274	2.949	.341	.163	.146
	I	.485	.819	.160	.567	.572	-1.161	2.090	-.313	.057	.050
	S	5.72E-02	.401	.028	.142	.887	-.739	.854	-.041	.014	.013
	N	.251	.496	.095	.506	.614	-.733	1.236	.051	.051	.045
	T	-.213	.528	-.084	-.404	.687	-1.260	.834	.006	-.040	-.036
	F	-.232	.782	-.061	-.297	.767	-1.784	1.320	-.030	-.030	-.026
	J	1.100	.951	.428	1.156	.250	-.788	2.987	.239	.115	.103
	P	.499	.927	.201	.539	.591	-1.339	2.338	-.227	.054	.048
	MODMATCH	1.785	3.468	.050	.515	.608	-5.094	8.665	.074	.051	.046

a. Dependent Variable: PRQ



ORQ functioning=4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.444 <sup>a</sup>	.197	-.035	20.5410

a. Predictors: (Constant), MODMATCH, F, I, SEX, RESTR, J, AGE, MGMT, N, S, T, E, P

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	27.770	73.408		.378	.707	-120.082	175.622
	AGE	.102	.327	.050	.311	.757	-.557	.761
	SEX	11.231	6.301	.280	1.782	.081	-1.459	23.921
	MGMT	4.18E-02	7.306	.001	.006	.995	-14.674	14.758
	RESTR	-9.895	7.441	-.199	-1.330	.190	-24.882	5.092
	E	1.431	1.683	.427	.850	.400	-1.959	4.821
	I	1.334	1.646	.400	.810	.422	-1.982	4.649
	S	-.964	.709	-.405	-1.360	.181	-2.391	.464
	N	-.109	.802	-.037	-.136	.892	-1.725	1.506
	T	1.593	.918	.596	1.736	.089	-.255	3.441
	F	1.759	1.311	.447	1.342	.186	-.881	4.398
	J	2.028	1.643	.711	1.234	.224	-1.281	5.337
	P	2.112	1.585	.789	1.333	.189	-1.079	5.303
	MODMATCH	-12.730	9.950	-.308	-1.279	.207	-32.770	7.310

a. Dependent Variable: ORQ

ORQ for functioning=1, 7

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000 <sup>a</sup>	1.000	1.000	.

a. Predictors: (Constant), MODMATCH, MGMT, SEX, E, J, RESTR, T, F, AGE, N

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-368.708	.000		.	.	-368.708	-368.708
	AGE	.116	.000	.064	.	.	.116	.116
	SEX	-66.505	.000	-2.107	.	.	-66.505	-66.505
	MGMT	76.226	.000	2.415	.	.	76.226	76.226
	RESTR	11.094	.000	.272	.	.	11.094	11.094
	E	-1.212	.000	-.311	.	.	-1.212	-1.212
	N	11.861	.000	4.207	.	.	11.861	11.861
	T	8.023	.000	2.218	.	.	8.023	8.023
	F	18.922	.000	2.812	.	.	18.922	18.922
	J	1.924	.000	.786	.	.	1.924	1.924
	MODMATCH	108.956	.000	3.453	.	.	108.956	108.956

a. Dependent Variable: ORQ

## ORQ FOR FUNCTIONING=2,6

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.664 <sup>a</sup>	.441	-.287	33.9478

a. Predictors: (Constant), MODMATCH, SEX, N, RESTR, AGE, I, MGMT, T, P, S, F, E, J

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	187.695	232.836		.806	.439	-331.097	706.486
	AGE	.569	1.090	.166	.522	.613	-1.859	2.997
	SEX	25.182	21.155	.372	1.190	.261	-21.954	72.318
	MGMT	22.784	25.428	.290	.896	.391	-33.872	79.441
	RESTR	-2.864	31.939	-.027	-.090	.930	-74.028	68.300
	E	-1.298	3.828	-.240	-.339	.742	-9.828	7.232
	I	-1.449	3.626	-.253	-.400	.698	-9.528	6.629
	S	-.495	2.448	-.126	-.202	.844	-5.951	4.960
	N	2.60E-02	2.898	.005	.009	.993	-6.430	6.482
	T	-.464	3.015	-.084	-.154	.881	-7.182	6.255
	F	-3.000	4.767	-.415	-.629	.543	-13.622	7.622
	J	.272	7.472	.057	.036	.972	-16.378	16.921
	P	.146	6.976	.031	.021	.984	-15.399	15.690
	MODMATCH	-35.200	34.335	-.448	-1.025	.329	-111.703	41.303

a. Dependent Variable: ORQ

## ORQ FOR FUNCTIONING = 3,5

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.924 <sup>a</sup>	.854	.537	14.4460

a. Predictors: (Constant), MODMATCH, I, SEX, N, P, RESTR, MGMT, T, AGE, S, J, E, F

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	63.308	258.676		.245	.815	-569.646	696.263
	AGE	9.28E-02	.803	.032	.116	.912	-1.873	2.059
	SEX	-2.354	9.136	-.054	-.258	.805	-24.710	20.001
	MGMT	32.928	13.385	.729	2.460	.049	.175	65.681
	RESTR	-7.164	8.996	-.159	-.796	.456	-29.177	14.849
	E	3.483	3.524	1.065	.989	.361	-5.138	12.105
	I	3.411	3.236	1.042	1.054	.332	-4.507	11.329
	S	-2.657	1.463	-1.119	-1.815	.119	-6.237	.924
	N	-3.012	1.709	-.947	-1.762	.129	-7.194	1.170
	T	4.675	3.558	1.447	1.314	.237	-4.031	13.381
	F	6.082	7.785	1.054	.781	.464	-12.967	25.131
	J	-3.291	3.436	-.782	-.958	.375	-11.699	5.118
	P	-1.720	4.193	-.350	-.410	.696	-11.981	8.541
	MODMATCH	25.032	13.843	.593	1.808	.121	-8.841	58.904

a. Dependent Variable: ORQ

PSQ FOR FUNCTIONING =4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.511 <sup>a</sup>	.261	.047	20.3749

a. Predictors: (Constant), MODMATCH, F, I, SEX, RESTR, J, AGE, MGMT, N, S, T, E, P

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	155.607	72.815		2.137	.038	8.951	302.263
	AGE	-.330	.325	-.157	-1.016	.315	-.984	.324
	SEX	1.423	6.250	.034	.228	.821	-11.165	14.011
	MGMT	-4.474	7.247	-.103	-.617	.540	-19.071	10.123
	RESTR	-5.001	7.381	-.097	-.678	.502	-19.867	9.865
	E	-1.636	1.669	-.473	-.980	.332	-4.999	1.726
	I	-.793	1.633	-.230	-.486	.629	-4.082	2.496
	S	-.663	.703	-.270	-.944	.350	-2.079	.753
	N	.580	.796	.188	.728	.470	-1.023	2.182
	T	.880	.910	.319	.967	.339	-.953	2.713
	F	1.475	1.300	.363	1.135	.262	-1.143	4.094
	J	-1.467	1.630	-.497	-.900	.373	-4.749	1.816
	P	-1.316	1.572	-.475	-.837	.407	-4.481	1.850
	MODMATCH	-7.121	9.869	-.166	-.722	.474	-26.999	12.757

a. Dependent Variable: PSQ

PSQ FOR FUNCTIONING=1,7

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000 <sup>a</sup>	1.000	1.000	.

a. Predictors: (Constant), MODMATCH, MGMT, SEX, E, J, RESTR, T, F, AGE, N

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-711.584	.000		.	.	-711.584	-711.584
	AGE	.531	.000	.235	.	.	.531	.531
	SEX	-76.120	.000	-1.947	.	.	-76.120	-76.120
	MGMT	111.330	.000	2.848	.	.	111.330	111.330
	RESTR	57.487	.000	1.139	.	.	57.487	57.487
	E	-1.479	.000	-.306	.	.	-1.479	-1.479
	N	14.500	.000	4.152	.	.	14.500	14.500
	T	14.294	.000	3.191	.	.	14.294	14.294
	F	29.908	.000	3.589	.	.	29.908	29.908
	J	3.744	.000	1.235	.	.	3.744	3.744
	MODMATCH	169.601	.000	4.339	.	.	169.601	169.601

a. Dependent Variable: PSQ

## PSQ FUNCTIONING =2,6

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.770 <sup>a</sup>	.593	.063	23.6175

a. Predictors: (Constant), MODMATCH, SEX, N, RESTR, AGE, I, MGMT, T, P, S, F, E, J

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	81.580	161.984		.504	.625	-279.342	442.503
	AGE	.545	.758	.195	.719	.489	-1.144	2.234
	SEX	-3.332	14.718	-.060	-.226	.825	-36.125	29.460
	MGMT	24.601	17.690	.384	1.391	.194	-14.815	64.017
	RESTR	-6.606	22.220	-.076	-.297	.772	-56.115	42.902
	E	-1.321	2.663	-.299	-.496	.631	-7.256	4.613
	I	-2.766	2.522	-.591	-1.097	.299	-8.386	2.854
	S	-1.041	1.703	-.325	-.611	.555	-4.836	2.754
	N	-.918	2.016	-.211	-.456	.658	-5.410	3.573
	T	-.497	2.098	-.111	-.237	.818	-5.171	4.178
	F	-2.156	3.316	-.366	-.650	.530	-9.546	5.234
	J	4.309	5.199	1.103	.829	.426	-7.274	15.892
	P	3.248	4.853	.856	.669	.518	-7.566	14.062
	MODMATCH	-42.548	23.887	-.664	-1.781	.105	-95.772	10.675

a. Dependent Variable: PSQ

## PSQ FOR FUNCTIONING=3,5

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.978 <sup>a</sup>	.957	.863	6.2770

a. Predictors: (Constant), MODMATCH, I, SEX, N, P, RESTR, MGMT, T, AGE, S, J, E, F

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	433.151	112.398		3.854	.008	158.124	708.178
	AGE	.477	.349	.205	1.366	.221	-.377	1.331
	SEX	-13.143	3.970	-.379	-3.311	.016	-22.857	-3.430
	MGMT	34.435	5.816	.953	5.921	.001	20.203	48.667
	RESTR	-10.182	3.909	-.282	-2.605	.040	-19.747	-.617
	E	-7.151	1.531	-2.734	-4.671	.003	-10.897	-3.405
	I	-6.452	1.406	-2.463	-4.589	.004	-9.892	-3.011
	S	-1.914	.636	-1.008	-3.011	.024	-3.470	-.358
	N	-2.651	.743	-1.041	-3.569	.012	-4.468	-.833
	T	.929	1.546	.359	.601	.570	-2.854	4.712
	F	-1.891	3.383	-.409	-.559	.596	-10.168	6.386
	J	-5.714	1.493	-1.698	-3.827	.009	-9.368	-2.060
	P	-5.550	1.822	-1.413	-3.046	.023	-10.008	-1.092
	MODMATCH	23.240	6.015	.688	3.864	.008	8.522	37.959

a. Dependent Variable: PSQ

## PRQ FOR FUNCTIONING=4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.586 <sup>a</sup>	.343	.154	15.3016

a. Predictors: (Constant), MODMATCH, F, I, SEX, RESTR, J, AGE, MGMT, N, S, T, E, P

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	79.843	54.684		1.460	.151	-30.297	189.982
	AGE	.582	.244	.348	2.387	.021	.091	1.073
	SEX	3.485	4.694	.105	.743	.462	-5.968	12.939
	MGMT	11.698	5.443	.340	2.149	.037	.736	22.660
	RESTR	9.549	5.543	.233	1.723	.092	-1.615	20.713
	E	-.366	1.254	-.133	-.292	.772	-2.891	2.159
	I	-1.092	1.226	-.398	-.891	.378	-3.562	1.378
	S	.155	.528	.079	.294	.770	-.908	1.219
	N	.472	.598	.193	.790	.434	-.732	1.676
	T	-.722	.684	-.328	-1.057	.296	-2.099	.654
	F	-1.013	.976	-.313	-1.038	.305	-2.980	.953
	J	1.854	1.224	.789	1.515	.137	-.611	4.319
	P	1.562	1.180	.708	1.323	.192	-.815	3.939
	MODMATCH	-2.290	7.412	-.067	-.309	.759	-17.219	12.638

a. Dependent Variable: PRQ

## PRQ FOR FUNCTIONING =1,7

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000 <sup>a</sup>	1.000	1.000	.

a. Predictors: (Constant), MODMATCH, MGMT, SEX, E, J, RESTR, T, F, AGE, N

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-363.185	.000		.	.	-363.185	-363.185
	AGE	.955	.000	.516	.	.	.955	.955
	SEX	-28.755	.000	-.897	.	.	-28.755	-28.755
	MGMT	24.702	.000	.771	.	.	24.702	24.702
	RESTR	29.239	.000	.707	.	.	29.239	29.239
	E	2.715	.000	.686	.	.	2.715	2.715
	N	7.205	.000	2.516	.	.	7.205	7.205
	T	7.232	.000	1.969	.	.	7.232	7.232
	F	20.954	.000	3.067	.	.	20.954	20.954
	J	2.02E-02	.000	.008	.	.	.020	.020
	MODMATCH	102.079	.000	3.185	.	.	102.079	102.079

a. Dependent Variable: PRQ

## PRQ FOR FUNCTIONING = 2,6

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.896 <sup>a</sup>	.803	.548	11.2777

a. Predictors: (Constant), MODMATCH, SEX, N, RESTR, AGE, I, MGMT, T, P, S, F, E, J

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	161.598	77.350		2.089	.063	-10.747	333.944
	AGE	.259	.362	.135	.715	.491	-.548	1.065
	SEX	4.059	7.028	.107	.578	.576	-11.600	19.718
	MGMT	-29.581	8.447	-.672	-3.502	.006	-48.403	-10.760
	RESTR	-10.883	10.610	-.183	-1.026	.329	-34.524	12.759
	E	1.076	1.272	.354	.846	.417	-1.758	3.910
	I	1.182	1.204	.368	.981	.350	-1.502	3.866
	S	1.696	.813	.770	2.086	.064	-.116	3.509
	N	.656	.963	.219	.682	.511	-1.488	2.801
	T	-1.599	1.002	-.518	-1.596	.142	-3.831	.633
	F	-1.766	1.584	-.436	-1.115	.291	-5.295	1.763
	J	-2.501	2.482	-.932	-1.007	.337	-8.032	3.030
	P	-2.077	2.318	-.796	-.896	.391	-7.241	3.087
	MODMATCH	6.102	11.406	.139	.535	.604	-19.313	31.517

a. Dependent Variable: PRQ

## PRQ FOR FUNCTIONING =3, 5

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.946 <sup>a</sup>	.895	.667	9.9189

a. Predictors: (Constant), MODMATCH, I, SEX, N, P, RESTR, MGMT, T, AGE, S, J, E, F

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	35.914	177.612		.202	.846	-398.685	470.513
	AGE	-.854	.552	-.362	-1.549	.172	-2.204	.496
	SEX	2.591	6.273	.074	.413	.694	-12.758	17.941
	MGMT	6.349	9.191	.174	.691	.515	-16.139	28.838
	RESTR	7.320	6.177	.200	1.185	.281	-7.795	22.434
	E	3.122	2.419	1.180	1.291	.244	-2.797	9.042
	I	1.005	2.222	.379	.452	.667	-4.432	6.442
	S	-.499	1.005	-.260	-.497	.637	-2.958	1.960
	N	-.910	1.174	-.353	-.775	.468	-3.781	1.962
	T	.190	2.443	.072	.078	.941	-5.788	6.167
	F	3.161	5.345	.677	.591	.576	-9.919	16.240
	J	3.546	2.360	1.041	1.503	.184	-2.227	9.320
	P	2.003	2.879	.504	.696	.513	-5.042	9.049
	MODMATCH	-18.753	9.505	-.549	-1.973	.096	-42.011	4.504

a. Dependent Variable: PRQ



## ORQ FOR P,E,N

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.332 <sup>a</sup>	.110	.030	21.5439

a. Predictors: (Constant), RESTR, AGE, N, P, SEX, E, MGMT

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	120.534	23.670		5.092	.000	73.412	167.657
	P	.979	.895	.123	1.094	.277	-.802	2.761
	E	-.120	.539	-.025	-.222	.825	-1.193	.954
	N	.950	.481	.219	1.974	.052	-.008	1.908
	AGE	-5.6E-02	.306	-.022	-.183	.856	-.665	.553
	SEX	6.918	4.955	.158	1.396	.167	-2.945	16.782
	MGMT	1.982	7.060	.033	.281	.780	-12.074	16.039
	RESTR	-5.276	5.633	-.102	-.937	.352	-16.490	5.939

a. Dependent Variable: ORQ

## PSQ FOR P,E,N

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.658 <sup>a</sup>	.433	.383	17.3076

a. Predictors: (Constant), RESTR, AGE, N, P, SEX, E, MGMT

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	76.830	19.015		4.040	.000	38.973	114.686
	P	2.131	.719	.266	2.964	.004	.700	3.562
	E	-1.087	.433	-.227	-2.510	.014	-1.950	-.225
	N	2.299	.387	.525	5.947	.000	1.529	3.069
	AGE	-.165	.246	-.064	-.671	.504	-.654	.324
	SEX	1.618	3.980	.037	.407	.685	-6.306	9.542
	MGMT	-1.698	5.672	-.028	-.299	.765	-12.991	9.594
	RESTR	-4.952	4.525	-.096	-1.094	.277	-13.961	4.057

a. Dependent Variable: PSQ

## PRQ FOR P,E,N

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.580 <sup>a</sup>	.337	.277	14.5923

a. Predictors: (Constant), RESTR, AGE, N, P, SEX, E, MGMT

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	123.662	16.032		7.713	.000	91.745	155.579
	P	-1.547	.606	-.247	-2.552	.013	-2.754	-.340
	E	1.066	.365	.285	2.917	.005	.338	1.793
	N	-1.247	.326	-.366	-3.826	.000	-1.896	-.598
	AGE	9.77E-02	.207	.049	.472	.638	-.315	.510
	SEX	4.601	3.356	.134	1.371	.174	-2.080	11.281
	MGMT	-2.533	4.782	-.053	-.530	.598	-12.054	6.988
	RESTR	2.665	3.815	.066	.699	.487	-4.930	10.261

a. Dependent Variable: PRQ

## RO All data

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.272 <sup>a</sup>	.074	-.016	6.4578

a. Predictors: (Constant), P, E, Restr, Sex, T, Age, Mgmt, S, F, N, I, J

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	33.022	5.191		6.361	.000	22.747	43.297
	Age	4.00E-02	.061	.059	.651	.516	-.082	.162
	Sex	.976	1.178	.076	.829	.409	-1.356	3.308
	Mgmt	-1.790	1.234	-.135	-1.451	.149	-4.233	.652
	Restr	-1.136	1.456	-.069	-.780	.437	-4.017	1.746
	E	-.282	.231	-.275	-1.223	.224	-.739	.175
	I	-.181	.231	-.188	-.785	.434	-.638	.276
	S	7.34E-02	.147	.097	.498	.619	-.218	.365
	N	.274	.185	.290	1.481	.141	-.092	.639
	T	-2.7E-02	.178	-.029	-.151	.880	-.380	.326
	F	-2.8E-02	.263	-.020	-.106	.916	-.548	.492
	J	-2.1E-02	.237	-.024	-.088	.930	-.490	.448
	P	-1.8E-02	.235	-.020	-.075	.941	-.483	.448

a. Dependent Variable: RO

## RI All data

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.431 <sup>a</sup>	.186	.107	6.2714

a. Predictors: (Constant), P, E, Restr, Sex, T, Age, Mgmt, S, F, N, I, J

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	12.037	5.042		2.388	.018	2.058	22.015
	Age	3.97E-02	.060	.057	.665	.507	-.078	.158
	Sex	2.731	1.144	.206	2.387	.018	.467	4.996
	Mgmt	3.434	1.198	.250	2.866	.005	1.062	5.806
	Restr	.171	1.414	.010	.121	.904	-2.627	2.969
	E	3.55E-04	.224	.000	.002	.999	-.444	.444
	I	6.69E-04	.224	.001	.003	.998	-.443	.445
	S	-.139	.143	-.178	-.974	.332	-.423	.144
	N	-9.6E-02	.179	-.098	-.535	.594	-.451	.259
	T	.179	.173	.189	1.035	.303	-.163	.522
	F	-3.8E-02	.255	-.027	-.149	.882	-.543	.467
	J	5.72E-02	.230	.063	.249	.804	-.398	.512
	P	.183	.228	.199	.801	.425	-.269	.635

a. Dependent Variable: RI

## RA All data

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.585 <sup>a</sup>	.343	.279	6.9521

a. Predictors: (Constant), P, E, Restr, Sex, T, Age, Mgmt, S, F, N, I, J

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	10.548	5.589		1.887	.061	-.514	21.610
	Age	7.40E-02	.066	.086	1.118	.266	-.057	.205
	Sex	2.642	1.268	.162	2.083	.039	.132	5.153
	Mgmt	7.272	1.328	.429	5.474	.000	4.642	9.901
	Restr	-2.571	1.567	-.122	-1.641	.103	-5.673	.530
	E	-6.0E-02	.249	-.046	-.243	.808	-.553	.432
	I	4.19E-02	.249	.034	.169	.866	-.450	.534
	S	-.330	.159	-.341	-2.080	.040	-.644	-.016
	N	-.313	.199	-.260	-1.572	.118	-.706	.081
	T	.158	.192	.135	.825	.411	-.222	.538
	F	-8.6E-02	.283	-.049	-.304	.762	-.646	.474
	J	.250	.255	.224	.982	.328	-.254	.755
	P	.260	.253	.229	1.026	.307	-.241	.761

a. Dependent Variable: RA

## RB All data

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493 <sup>a</sup>	.243	.170	6.0003

a. Predictors: (Constant), P, E, Restr, Sex, T, Age, Mgmt, S, F, N, I, J

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	16.179	4.824		3.354	.001	6.632	25.726
	Age	3.44E-02	.057	.050	.603	.548	-.079	.147
	Sex	.999	1.095	.076	.913	.363	-1.167	3.166
	Mgmt	4.863	1.147	.357	4.241	.000	2.594	7.133
	Restr	-1.265	1.353	-.074	-.935	.351	-3.942	1.412
	E	-.243	.215	-.230	-1.132	.260	-.668	.182
	I	-.277	.215	-.279	-1.291	.199	-.702	.148
	S	-1.8E-02	.137	-.023	-.130	.897	-.289	.253
	N	.116	.172	.120	.678	.499	-.223	.456
	T	.147	.166	.156	.885	.378	-.181	.474
	F	.207	.244	.146	.850	.397	-.276	.691
	J	-3.4E-02	.220	-.038	-.155	.877	-.470	.401
	P	.121	.219	.133	.554	.580	-.311	.554

a. Dependent Variable: RB

## R All data

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.585 <sup>a</sup>	.343	.279	5.3028

a. Predictors: (Constant), P, E, Restr, Sex, T, Age, Mgmt, S, F, N, I, J

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	36.178	4.263		8.487	.000	27.740	44.615
	Age	6.58E-02	.050	.100	1.304	.195	-.034	.166
	Sex	.435	.967	.035	.449	.654	-1.480	2.349
	Mgmt	-7.133	1.013	-.552	-7.039	.000	-9.139	-5.128
	Restr	-1.323	1.195	-.082	-1.107	.271	-3.689	1.043
	E	-.276	.190	-.275	-1.455	.148	-.651	.099
	I	-.390	.190	-.415	-2.058	.042	-.766	-.015
	S	-3.1E-02	.121	-.042	-.257	.798	-.271	.208
	N	5.59E-02	.152	.061	.369	.713	-.244	.356
	T	6.86E-02	.146	.077	.469	.640	-.221	.358
	F	8.36E-02	.216	.062	.387	.699	-.343	.511
	J	.222	.194	.260	1.139	.257	-.163	.606
	P	.144	.193	.166	.743	.459	-.239	.526

a. Dependent Variable: R