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# **Stress, Well-Being And Hardiness In The New Zealand Military: A Transactional Model**

A thesis presented in partial fulfilment for the degree  
of Master of Arts in Psychology at Massey University  
(Palmerston North), New Zealand.

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2006

## **Abstract**

The present research sought to investigate stress in the New Zealand Army from a transactional perspective (Lazarus & Folkman, 1984). Traditional models of stress have focused on linear or cause and effect relationships, often referred to as stressor-strain models, when attempting to explain the complex nature of stress. However, stressor-strain models often emphasise the negative consequences of stress and tend to incorporate a “one size fits all” approach where stress is assumed to be negative and unavoidable. It is argued that people differ in their response to stress, the types of stress they experience as well as the intensity and duration of stressful encounters.

The current research investigated appraisal, coping, cognitive hardiness and work related stress in 439 military personnel. Positive and negative outcomes were measured as well as the role of moderating and mediating variables in the stress process. Results provide empirical support for a transactional model of occupational stress consisting of both negative and positive pathways. Associations were found between challenge appraisals, adaptive coping and positive psychological and physical outcomes. Associations were also found between threat appraisals, maladaptive coping and negative psychological and physical outcomes. Cognitive hardiness was not found to be associated with building adaptive coping strategies and did not mediate or moderate the positive pathway to stress. However, cognitive hardiness did mediate the negative pathway suggesting a potential protective element to this construct.

## **Acknowledgements**

I dedicate this research to Leslie - my best friend and wife. Without your unconditional love support I would not have been able to complete this.

My thanks to the NZ Army who enabled access to such a large and diverse organisation and to everyone who participated in this research. There was an overwhelming response from participants and this will not be forgotten.

To Dianne Gardner, my sincerest thanks and appreciation for your continuous enthusiasm and good humour throughout, especially given the never-ending e-mails, phone calls and “quick questions”. Your technical guidance from idea to research and a final product taught me much about the process of research and about myself.



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# **Chapter 1**

## **Prevalence of Occupational Stress**

Most people spend the majority of their life either at work or sleeping. Consequently many problems causing adverse physical and mental health are thought to originate from work purely because of the long hours people spend in the workplace. Occupational stress is a term many people can relate to and it has attracted a great deal of interest from academics, organisations and the general public, but the history of occupational stress as a field of study is relatively recent.

The rapid interest and growth of occupational stress research has stimulated steady interest from the media and developed into a topic of choice during conversation (Jex, 2002). A search of the 'Psych Info' database using the keyword "stress" generated 88,460 hits and "occupational stress" produced 9,276 hits, demonstrating the amount of attention this topic has generated. Of interest is that most of this research has been conducted in the last 15 to 20 years.

An examination of the literature raises a number of pertinent questions, for example: "Is work really more demanding and pressurized than at any previous time in history" (Wainwright & Calnan, 2002, p. v), does stress "really have an aversive effect on individuals and organizations?" (Jex, 2002, p. 179), does stress exist, what causes it and is it a legitimate illness? (Peterson, 2003).

There does appear to be a growing awareness that work related stress exists and can have a detrimental effect on employees, employers, and organisational performance if not managed appropriately. Jones, Hodgson, Clegg, and Elliot (1998) reported that over half a million people in the United Kingdom believed they had a stress related illness. Jex (2002) cites a number of sources that estimate that the American economy has lost billions of dollars due to claims related to occupational stress such as healthcare, absenteeism and turnover. Recent figures from the Australian National Occupational Health and Safety Commission report that when compared with non-psychological injuries, work-

related mental stress had the highest average costs per case (\$17,400) and on average accounted for the longest working weeks lost (National Occupational Health and Safety Commission, 2002). This research has led to prioritisation of psychosocial risk factors for the Australian Occupational Safety and Health strategy for 2002 to 2012 (National Occupational Health and Safety Commission, 2002).

Overall, the research shows that occupational stress is a significant issue in society and the workplace and warrants further investigation.

### ***Occupational Stress in New Zealand***

The increasing interest and research into occupational stress have resulted in “stress” and “fatigue” being recognised as hazards in the workplace by the New Zealand Occupational Safety and Health (OSH) Service. Recent New Zealand legislation (The Health and Safety in Employment Act 1992 and the Health and Safety in Employment Amendment Act 2002) “are designed to make New Zealand’s workplaces as healthy and safe as possible” and recognise that “a part of creating a healthy and safe workplace is managing stress in the workplace” (New Zealand Occupational Safety and Health Service, 2003, p. 2).

The New Zealand OSH Service defines workplace stress as “the result of the interaction between a person and their work environment. For the person it is the awareness of not being able to cope with the demands of their work environment, with an associated negative emotional response” (New Zealand Occupational Safety and Health Service, 2003, p. 4).

Investigations into occupational safety and health in New Zealand (New Zealand Occupational Safety and Health Service, 2005), Britain (Jones et al., 1998) and Australia (National Occupational Health and Safety Commission, 2002), have stimulated a great deal of interest and debate. Organisations are increasingly aware that workplace stress is a problem and they can be held accountable for the physical and mental health of their employees. In a recent court decision the New Zealand Police paid damages of \$242,000 to an employee from the police video unit who developed symptoms of Post Traumatic Stress Disorder (PTSD)



after multiple and prolonged exposure to filming and editing crime scene investigations (Gubb Mitchell Crawshaw & Partners, 2003). However this does not mean that occupational stress need be “traumatic” in order for the courts to acknowledge its effects. A New Zealand probation officer recently sued for constructive dismissal claiming he worked in an understaffed office with a very high workload. Mr Gilbert was awarded \$75,000 in general damages, \$14,000 for medical costs, and 14 years of lost wages until his expected retirement (approximately \$700,000). Although the Court did not find the employer liable for the circumstances leading to Mr Gilbert’s first instance of stress leave, it did find the employer responsible for not taking reasonable steps to avoid further stress upon Mr Gilbert’s return to work (Gubb Mitchell Crawshaw & Partners, 2003)

New Zealand’s OSH Service received 18 notifications relating to mental stress and 15 complaints relating to stressful situations between January 2003 and May 2005. The above cases were all classified as Category A defined by either serious harm occurring or at risk of occurring, a major workplace disaster, or an event that had occurred where there was a significant history of non-compliance with OSH legislation. In addition to the above cases OSH has also investigated 249 Category B cases, defined as a situation where minor harm had occurred or was at risk of occurring (Barton, D., personal communication, 19 May, 2005). A landmark case in early 2005 saw the New Zealand OSH Service, for the first time successfully prosecute a company for failing to effectively manage work-related stress.

The cases above and their associated court rulings have heightened general public awareness of occupational stress in New Zealand and emphasised the importance of stress management and prevention in the workplace (New Zealand Occupational Safety and Health Service, 2005). Employers who do not make efforts to reduce or manage workplace stress in today’s society face real consequences.

## **Occupational Stress in the Military**

The study of occupational stress in the New Zealand military has had relatively little attention. Recent research has investigated the general physical and mental health of New Zealand (NZ) Army personnel before, during, and after peacekeeping duty (Alpass, Long, MacDonald, & Chamberlain, 1999). The most recent empirical data on occupational stress comes from the New Zealand Defence Force 'Ongoing Attitude Survey' (Headquarters New Zealand Defence Force, 2003). This survey has been in use since April 2003 and has provided the Defence Force with information on personnel satisfaction in a number of occupational areas (e.g. leadership, change issues, job satisfaction, organisational commitment). Other than this research, there has been relatively little examination of occupational stress issues in the NZ Army and NZ Defence Force.

### ***The Present Research***

The NZ Army like most organisations is hierarchical with a structured induction and enculturation process focused on mental and physical discipline. The desired outcome is to produce a physically and mentally robust soldier. The military is well known for producing task oriented and stress resilient "hardy" people. Outcomes of a stress resilient organisation may include increased organisational commitment, enhanced teamwork and adaptability (Maddi, 2002).

However, the hierarchical nature of the military means that staff do not always have responsibility and control over their work environment as this tends to come with increased experience and rank progression. In addition characteristics such as resilience (Holmes, 2001) and coping (Folkman & Lazarus, 1988) are proposed to increase with age. Military personnel may be seen as a resilient population in general, but older and more experienced military personnel are likely to be even more "hardy" and better able to cope with the demands of work and life than younger and less experienced personnel.

This thesis will explore the nature of stress, hardiness and coping within a military setting including differences among senior and junior ranks. An insight

into the relative differences (if any) among military personnel can allow for improvements in the training and programmes that contribute toward maintaining a robust defence force.

There are many theories and definitions of stress and it is generally agreed that stress exists and that it can have a negative impact on health and well-being (Nelson & Simmons, 2003). Regardless of the various definitions, concepts or models, workplace stress appears to be a major problem for individuals and organisations. What is less well recognised is that challenges and demands at work can have positive as well as negative effects by acting as a source of motivation and interest.

It is well established that certain environmental situations and pressures elicit stress in most people and traditionally research and thinking on stress has been primarily interested in discovering antecedents and causal variables (Lazarus & Folkman, 1984). Typical stress research has focused on either the environmental or personal causes of stress, and has ranged from examining decreased performance to increased health risks.

This research argues that people differ in the type of reaction they experience, the duration and the intensity of the emotions that accompany stress. In order to understand these differences Lazarus and Folkman (1984) proposed the transactional model of stress that emphasises the importance of the cognitive processes that a person goes through when facing a potentially stressful situation. The model presented in Figure 1 (overleaf) is based on Lazarus and Folkman's (1984) transactional approach and allows for a complex interplay between personal and environmental factors. The significance of these factors depends on how demands are appraised by the person (e.g. as threats, challenges or a combination of both) and may influence and/or be influenced by variables such as hardiness and coping strategies. The outcome of a stressful encounter therefore rests on the cognitive processes of the individual and may be positive or negative.

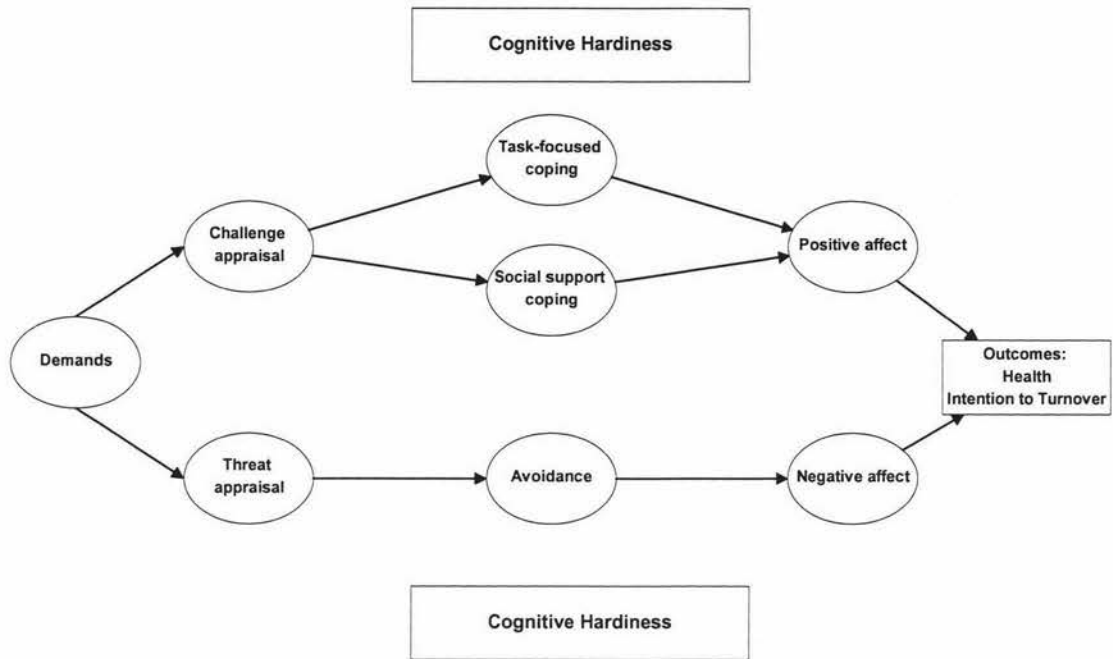


Figure 1. *A Transactional Model of Stress, Hardiness, and Outcomes (adapted from McGowan, 2004)*

The main aim of this thesis is to explore the impact of work related demands on NZ Army personnel from a transactional perspective and to examine the role of mediating and moderating variables such as cognitive hardiness, coping and affect. This will help gain an understanding of how various demands lead to positive or negative consequences and will help organisations manage workplace stress.

The next chapter will outline the positive and negative consequences of stress at work and highlight the need to develop more complete models of stress that allow for a range of outcomes.

## **Chapter 2**

### **The Consequences of Stress**

The range of outcomes, often referred to as strains, allegedly associated with or caused by stress is extensive (Clarke & Cooper, 2004). Consequences can include negative effects on general psychological health (Karademas & Kalantzi-Azizi, 2004), anger (Bongard & al Absi, 2005), psychological distress (Marchand, Demers, & Durand, 2005), burnout (Burke & Greenglass, 1995; Collins & Long, 2003), increased susceptibility to respiratory infections (Cohen, Tyrell, & Smith, 1993), high blood pressure (Rylander, 2004), heart disease (Herbert et al., 1994; Rosengren et al.), and cancer (Dettenborn et al., 2005; Kruk & Aboul-Enein, 2004). These affect the individual and may also impact directly or indirectly on organisational well-being (Jex & Crossley, 2005).

This Chapter will begin by examining physiological, psychological, and behavioural consequences of stress for individuals and then consider the implications for organisational well-being.

#### ***Physiological Consequences***

##### **Fight-or-Flight Response**

Walter Cannon (1929) in his pioneering work on stress, coined the term “fight-or-flight” response to explain the physiological responses of an organism faced with a threat. The fight-or-flight response is the automatic activation of physiological systems that prepare an organism to fight or flee in reaction to a dangerous situation. This stress response allows certain physiological systems to be activated while non-essential ones are suppressed until after the danger or threat has passed. The stress response results in an increase in heart rate, respiration and the release of adrenaline into the bloodstream. The activation of the stress response is useful as it enables a high level of physiological performance that can aid human survival (Cannon, 1929; Kemeny, 2003).

Cannon's conceptualisation of the stress response was largely based on Darwinian theory and essentially explained evolutionary adaptation to environmental threats (Wainwright & Calnan, 2002). However, Cannon's view of the stress response has received criticism as much of his work suggests that the stress response is entirely adaptive and therefore unlikely to cause permanent damage (Wainwright & Calnan, 2002).

### **General Adaptation Syndrome**

Hans Selye (1974, p. 17) defined stress as the "non-specific response of the body to any demand placed upon it". Selye named the collective physiological responses to stress as the General Adaptation Syndrome (GAS). In contrast to Cannon's (1929) work Selye (1974) acknowledged the potential for negative consequences if a stressor was not overcome.

The process of physiological adaptation to a stressful environment, the GAS, is comprised of three stages: the alarm reaction, the stage of resistance, and the stage of exhaustion. The alarm reaction occurs at first exposure to a stressor. The stage of resistance arises if adaptation to the stressor occurs and is characterised by a decrease or neutralisation of the alarm reaction and an increase in resistance levels. However if exposure to the stressor is prolonged then exhaustion will eventually occur, resulting in reactivation of the alarm reaction (Selye, 1974).

Selye's (1974) model extends Cannon's fight-or-flight response by considering the aftermath of the stress response. Selye (1974) emphasised that the body's 'adaptation energy' is finite, and that health can be affected if a stressor is not managed effectively. Both Cannon's and Selye's models of stress have aided understanding of the physiological consequences of stress on humans and animals (Kemeny, 2003; Wainwright & Calnan, 2002).

The physiological processes described above have certain short-term benefits such as preparing an individual for danger, enabling the activation of physiological mechanisms that increase their chances of survival. However, continuous or frequent activation is associated with negative health outcomes (McEwen, 1998; 2002). The most studied aspects of the physiological response

to stress include effects on the autonomic nervous system and the hypothalamic-pituitary-adrenal axis and their links with the immune system (Kemeny, 2003).

### **The Hypothalamic-Pituitary-Adrenal (HPA) Axis**

A range of psychological stressors can activate the hypothalamic-pituitary-adrenal (HPA) axis. The hypothalamus secretes corticotropin-releasing hormone which stimulates the anterior pituitary gland to release adrenocorticotrophic hormone (ACTH), resulting in the release of cortisol hormones from the adrenal cortex (Kemeny, 2003). Cortisol is associated with a wide range of actions such as increasing blood glucose levels and suppressing immune function, allowing energy to be used elsewhere. Nonetheless, sustained activation of the HPA axis can be detrimental and has been linked with delayed wound healing (Segerstrom & Miller, 2004).

### **Autonomic Nervous System**

The autonomic nervous system (ANS) is comprised of sympathetic and parasympathetic components. Involuntary physiological responses such as slowing the heart rate and digestion are controlled by the parasympathetic nervous system (Kemeny, 2003). The sympathetic nervous system produces involuntary responses when a person is exposed to a threatening situation, resulting in increased heart rate, blood pressure and respiration. The sympathetic nervous system also controls the release of the neurotransmitter noradrenaline resulting in the release of adrenaline into the bloodstream.

Activation of the sympathetic nervous systems in response to a perceived threat can enable a rapid and efficient response to danger by enhancing certain physiological processes and suppressing others (Kemeny, 2003). This adaptive response results in the most efficient response to perceived danger, where non-essential physiological processes are suppressed until after the perceived threat has passed. However sustained activation of the ANS can alter immune cell function (Kemeny, 2003). For example, chronic stressors have been linked with a reduced capacity to produce antibodies after routine influenza vaccinations, and this is thought to reduce one's immunity to this illness (Segerstrom & Miller, 2004).



### ***Consequences of Stress for the Individual***

As well as physiological responses stress can also have negative psychological consequences, although this relationship is less well established.

As Cohen, Kessler, and Gordon (1997) noted, sustained exposure to stressors is believed to alter the hormonal balance, leading to psychological distress, anxiety or depression. These in turn can affect susceptibility to disease (Cohen et al., 1993), general health and well-being. Stress has also been linked to an increase in maladaptive behaviours such as increased alcohol consumption (Lukassen & Beaudet, 2005), smoking (Falba, Teng, Sindelar, & Gallo, 2005), and poor nutrition (Steptoe, Lipsey, & Wardle, 1998). These behaviours can lead to negative outcomes for the individual and others around them.

Often general terms such as psychological distress are adopted to describe a number of psycho-physiological and behavioural symptoms. These symptoms may also overlap with other psychological strains such as depression, low self esteem (Marchand et al., 2005), psychological burnout, and anxiety (Spector & Jex, 1998). Thus, the stress process is complex with an extensive range of possible symptoms, physiological and psychological pathways and consequences.

### ***Consequences of Stress for the Organisation***

A number of texts have documented the negative consequences of stress to the organisation. Consequences include reduced commitment to the organisation, reduced productivity, production, or quality of service as well as decreased morale and lowered job satisfaction (Beehr & Glazer, 2005; Jex & Crossley, 2005). A number of occupational stress models attempt to conceptualise occupational strains and link them to organisational consequences. However most of the research on the organisational consequences of stress tends to focus on the relationship between occupational stressors (e.g. role overload) and individual consequences (e.g. psychological stress), rather than focusing on organisational outcomes such as customer satisfaction or productivity and how



they are related to individual consequences of stress. Consequently there appears to be a gap in current occupational stress models and organisational consequences (Elshaug, Knott, & Mellington, 2004; Jex & Crossley, 2005). The organisational outcomes of stress studied have included turnover (de Croon, Sluiter, Blonk, Broersen, & Frings-Dresen, 2004; Hom & Griffeth, 1995), organisational commitment (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002), role ambiguity (Chang & Hancock, 2003) and work-family balance (Boyar, Maertz, Pearson, & Keough, 2003; Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005).

### ***Positive Consequences of Stress***

Traditionally stress researchers have investigated simple linear cause and effect relationships. These approaches are often referred to as stressor-strain models and will be discussed in detail in the following chapter. As the name implies the focus has tended to be on negative outcomes (strains). There is general agreement in the literature that over time stressors can have a negative impact on health (Nelson & Simmons, 2003). The adverse response to stressors is most often referred to as *distress*. However, despite Selye's (1974; 1976) proposal that stress can have positive benefits and coining the term *eustress* (good stress) researchers have continued to neglect, ignore, or circumvent possible adaptive consequences of stress in favour of examining adverse health outcomes and *distress*. This has led some prominent researchers to declare that:

*The exclusive focus on pathology that has dominated so much of our discipline results in a model of the human being lacking in the positive features that can make life worth living (Seligman & Csikszentmihalyi, 2000, p. 5).*

The term eustress was introduced ('eu' meaning good, as in euphoria) in order to demonstrate that stress does not always equal *distress* (Selye, 1980). Selye, while still acknowledging that stress is non-specific in terms of the physiological reactions to a perceived stressor, emphasised the importance of an individual's appreciation of any particular situation rather than the situation itself (Selye, 1980, p. xi). If a situation is not appreciated as a stressor then there is no stress.

This aspect of Selye's thinking appears to be misunderstood or simply not acknowledged in much of the literature. What one person finds distressing may not be the case for someone else. This line of thought is consistent with Lazarus and Folkman's (1984) transactional model where stress is a product of an individual's *appraisal* of the situation or demands and their perceived coping resources. Consistent with this type of reasoning Selye (1974) wrote the book "Stress Without Distress" in part to explain that stress can be positive or negative.

### **Research on Positive Emotions**

Lazarus and Folkman (1984) and Hart and Cooper (2002) proposed that stress is a complex multivariate process that can have multiple and changing outcomes. Despite a growing body of support for more sophisticated models the stressor-strain approach has dominated research on stress and occupational stress (Hart & Cooper, 2002). Breznitz (1980, p. 85) wrote on the "surprising ability" of some people to "mobilize" their coping abilities in times of great stress and highlights the relevance of cognitive factors and their role in mediating the impact of stressors. Breznitz (1980) went on to say that a situation seen as a challenge by one person might be seen as a threat to another. Cavanaugh, Boswell, and Bourdreau (2000) reviewed a number of papers that supported the hypothesis that not all stressors are in fact stressful and other research suggests that stress can be positive or negative, either aiding or hindering performance (Kemeny, 2003; Lazarus & Folkman, 1984; LePine, LePine, & Jackson, 2004; Selye, 1974; Tomaka, Blascovich, Kibler, & Ernst, 1997).

Stressor-strain models do not adequately account for the complex intervening variables in the stress process such as personality, nor do they consider an individual's appraisal of a situation in order to determine whether or not it is potentially stressful. Transactional models attempt to determine critical pathways in the stress process and to include positive as well as negative consequences. Intervening variables such as cognitive appraisal, coping and individual and environmental factors are theorised to influence the stress process and its associated emotions (Lazarus, 1990).

A key area for future stress research is identifying key variables that are important in determining whether or not demands are dealt with and then overcome, possibly leading to positive consequences. Identification of these key intervening characteristics will enhance understanding of the stress process. Moving on from the general consequences of stress the next chapter will consider some of the prevalent models of stress.

## **Chapter 3**

### **Models of Stress**

There is a number of influential theories and models of stress that have been applied to help understand processes of stress and work-related stress. These include the Life Events Approach (Holmes & Rahe, 1967), the Daily Hassles Model (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Kanner, Coyne, Schaefer, & Lazarus, 1981; Lazarus & Folkman, 1984), Person-Environment Fit Theory (French, Caplan, & Harrison, 1982), and the Demands-Control-Support Model (Karasek, 1979). Another model, the Transactional Model will be discussed in Chapter 4.

### **The Stressor-Strain Approaches**

Traditional approaches to studying stress have incorporated a stimulus-response methodology that essentially examined cause and effect relationships. Often the term stress has been associated with an external or environmental cause such as the death of a loved one or a high stress job. In this situation it is believed that the stimulus or stressor caused the person to react in a certain way and become stressed. Stress is described as a person's response to a stressor and is also commonly referred to as strain. This approach is referred to as a Stressor-Strain Model and is prevalent in the occupational stress literature, although it does not take into account individual difference variables that affect stress outcomes (Hart & Cooper, 2002). Two models that incorporate the stressor-strain approach are the Life Events Model (Holmes & Rahe, 1967) and the Daily Hassles Model (DeLongis et al., 1982; Kanner et al., 1981; Lazarus & Folkman, 1984).

#### ***Life Events***

The life events approach proposes that major environmental change is stressful and requires adjustment or adaptation. Some of the best known research was pioneered by Holmes and Rahe (1967) who developed the Social Readjustment Rating Scale (SRRS) which ranks a range of life events such as the death of a spouse or going on vacation that are believed to require social readjustment. Each event has a number associated with it representing life change units (LCU),

and participants are required to mark each life event that has occurred within the last 12 months. The total LCU score for a year represents a range of life events ranging from mild (a score of 150-199) to major (more than 300). Those who score above 300 are considered to be most at risk of developing health problems (Holmes & Masuda, 1974).

A number of alternative life event checklists have been developed although Scully, Tosi and Banning (2000) found that the results across different checklists are consistent. Scores on the Life Event scales have been found to correlate with changes in health (Holmes & Masuda, 1974). It is consequently one of the most cited ways of measuring stress, although it has received criticism (Scully et al., 2000). The theory assumes that any change is stressful as it involves readjustment and therefore does not consider individual differences or the potential for positive as well as negative outcomes (Lazarus, 1990). For example, if a family member has been suffering from a long-term illness and passes away, a life events model might classify this as a highly stressful event. However it is also reasonable to assume that although a period of grieving will likely occur, there could be a feeling of relief in that the affected family member is no longer suffering. Thus it is possible that such a major life change may have positive and negative implications for those experiencing it. Lazarus and Folkman (1984) put forward the research on aging, menopause, and retirement as examples of major changes that do not necessarily produce stress if they are planned for and expected. In addition these authors argue that the absence of change can produce stress, for example not being chosen for a sports team or missing out on a job promotion.

In addition concerns have been raised that life event scales do not represent the most likely major events that occur in people's lives (Cohen et al., 1997) and that major life events do not occur with enough regularity to account for stress levels over time. This has led to criticism of this approach for not addressing the minor reoccurring events that can cumulatively lead to stress (Jones & Kinman, 2001).

## ***Daily Hassles***

Lazarus and Folkman (1984) acknowledge that stress can eventuate from major life events but argue that stress can often arise from minor events in daily life and refer to these as “daily hassles”. Examples include not feeling like going to work, breaking a glass or finding that the morning newspaper was not delivered. During the 1980s the Berkeley Stress and Coping Project approached stress measurement by focusing on the daily hassles and minor pleasures of everyday life and their impact on health (Lazarus & Folkman, 1984). This approach was named the “daily hassles and uplifts approach” and research has supported the association between daily hassles and negative health symptoms (DeLongis et al., 1982; Kanner et al., 1981).

However, like the Life Event Scales the Daily Hassles Model requires further research to identify the subjective meaning of a hassle, while taking into consideration individual differences and adjustment to hassles over time (Lazarus, 1990).

In summary the stressor and strain approach is based on a stimulus-response theory where stressors from the environment contribute to decreased physical, psychological and behavioural functioning which in occupational terms leads to decreased organisational productivity (Beehr & Glazer, 2005; Hart & Cooper, 2002; Jex, 2002; Jex & Crossley, 2005). Although these models have contributed to the understanding of stress, they have been criticised for being simplistic, circular and for their assumption that people are passive recipients of stressors or hassles and are not actively involved in a sense-making process. The stressor-strain approach implies that stress is a simple cause and effect relationship. However, this view of stress assumes that because daily hassles and major life events cannot always be avoided there is little that can be done to prevent or manage stress.

## **Occupational Stress Models**

More recent and comprehensive models of stress have acknowledged that intervening variables such as individual differences and environmental factors

may interact to influence the stressor-strain relationship. Two of the most influential interaction models used to study occupational stress are Person-Environment Fit Theory (French et al., 1982), and Karasek's (1979) Demand-Control-Support Model.

### ***Person-Environment Fit***

Person-Environment (P-E) Fit Theory recognises the importance of environmental and individual factors when examining stress. The P-E Fit Model is based on the interactional psychology approach of Kurt Lewin (as cited in Jex, 2002) and proposes that human behaviour is a result of an interaction between the characteristics of the person and the environment. The general acceptance of interaction effects by many researchers has contributed to the widespread acceptance of P-E Fit theory in occupational stress research (Edwards, Caplan, & Van Harrison, 1998; Edwards & Cooper, 1990). According to P-E Fit Theory, a lack of fit between the person and their environment can result in damaging psychological, physiological, and behavioural outcomes (Edwards & Cooper, 1990; Kristof, 1996).

P-E Fit Theory proposes that the relationship between the person and the environment can be broken down into objective and subjective representations of that relationship. Objective representations refer to actual personal attributes or environmental situations. Subjective representations are personal attributes or environmental situations as perceived by the person. It is the subjective representations of P-E Fit that are important to health and well-being (Edwards et al., 1998). Essentially, when a person perceives that their needs are not being met or their abilities are not matched with the demands of a situation then stress occurs regardless of the objective degree of fit (Cooper, Dewe, & O'Driscoll, 2001; Edwards et al., 1998).

In organisations P-E Fit studies have focused on the congruence between an individual's goals, values and personality and their work environment (Verquer, Beehr, & Wagner, 2003). Research has found personal values to be strongly related to job satisfaction (Cable & Edwards, 2004; Verquer et al., 2003). Other studies have shown P-E Fit dimensions to be related to organisational



commitment and intention to turnover (Caldwell, Herold, & Fedor, 2004) although the correlations are often moderate (Verquer et al., 2003). A major drawback of the P-E Fit approach to stress is that overall there is little empirical evidence to support the model (Cooper et al., 2001). The inconclusive research on the P-E fit model has largely been attributed to variations in the conceptualisation and measurement of 'fit' and its constructs and the inappropriate analysis of fit effects (Edwards & Cooper, 1990).

### ***Demands Control Support (DCS) Model***

The Demands-Control-Support Model (Karasek, 1979; Karasek & Theorell, 1990) is one of the most well known approaches to studying occupational stress (de Lange, Taris, Kompier, Houtman, & Bongers, 2003). The model focuses on the interactions between job demands and job control (referred to as decision latitude) in determining health and well-being. Demands are defined as psychological pressures associated with a job or role, such as deadlines or complex tasks. Job control or decision latitude refers to the amount of authority an individual has when making decisions and the skill level required to do the job. The model predicts that stress will predominate in an environment where there are high job demands and little decision latitude.

Much of Karasek's earlier work examined the relationship between high demand jobs and cardiovascular disease (Karasek, Theorell, Schwartz, Pieper, & Alfredsson, 1982). Studies have found that high job demands and low decision latitude have been related to increased risk of myocardial infarction (Alfredsson, Karasek, & Theorell, 1982). Other research has found increased job control can result in decreased levels of depression and exhaustion (Karasek, 1990)

The model was later broadened to include social support, defined as helpful social interaction with supervisors and co-workers (Karasek & Theorell, 1990, p. 69). Social support buffers high job demands and low decision latitude (Daniels & Harris, 2005; Rodriguez, Bravo, Peiro, & Schaufeli, 2001) and Karasek and Theorell (1990) proposed that effective social support facilitates the use of task-focused coping which leads to active engagement with work-related difficulties.



Studies have also attempted to investigate the effects of locus of control, defined as the belief that one has internal control over events rather than relying on external factors (Rotter, 1966 as cited in Rodriguez et al., 2001). This is seen as an important component of the model as people with a high locus of control believe that they can control the outcome of a situation and are therefore more likely to adopt a proactive approach to problem solving. However, high levels of actual control (decision latitude) combined with high levels of internal locus of control and social support have been found to have a damaging effect on well being (Rodriguez et al., 2001). These findings do not support the notion that high control and high social support lead to positive outcomes so the model has some areas that need further investigation.

Many roles within the organisation are likely to be associated with different levels of demands and decision latitude. The Demands-Control-Support model could be useful for making changes to an organisation's structure (e.g. reallocating personnel to other positions or reassigning job tasks) yet it does not account for individual differences in perceptions of demands, control or support. It also tends to assume that organisational factors rather than individual ones have a greater causal role in generating stress. This view is not entirely accurate as two individuals in similar roles may have very different levels of job-related stress because of individual differences in the way they manage and cope with stress.

Overall, results using a Demands-Control-Support framework have been mixed (de Lange et al., 2003). In practical terms Demands-Control-Support Models have driven some organisational change initiatives to increase social support and job control in addition to (or in some cases instead of) managing demands, but results have been inconsistent (Cooper et al., 2001). The Demands-Control-Support Models appear to be useful in identifying general trends and there is no doubt that the organisation plays a part in the stress process, but it seems logical that the management of stress is more complex than simply changing organisational structures.

### ***Summary of the Occupational Models***

Person-Environment Fit and the Demands-Control-Support Models extend the stressor-strain paradigm by incorporating the interactions of environmental and personal characteristics. However, there is increased evidence that the stressor-strain and interactionist approaches do not capture the complexities of the stress process with these models being criticised for inconsistent findings, using a narrow range of variables, and methodological issues (Cooper et al., 2001; de Lange et al., 2003; Edwards et al., 1998; Edwards & Cooper, 1990).

The next chapter will consider transactional models of stress. They have the benefit of allowing a range of interactions between stressors and strains, individual appraisal of stressful encounters and also a variety of outcomes, both positive and negative.

## **Chapter 4**

### **The Transactional Model of Stress**

This chapter will examine the stress process from a transactional perspective and will frame the present research. Lazarus and Folkman (1984, p. 19) defined psychological stress as a “particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being”. A key focus of the transactional model is that stress does not result from the environment or the person alone, but is determined by the relationship between them.

The initial step in the stress process is the experience of demands. Lazarus and Folkman (1984) refrained from using the term “stressors” as this is often associated with negative outcomes. Instead Lazarus and Folkman (1984) adopted the term “demands” to denote the potential requirements of a particular situation. Whether demands are perceived as stressful or not depends on the context of the encounter and cognitive processes of appraisal, which are mediated by individual and situational factors. If the demands are appraised as stressful then coping processes are invoked to manage the situation. Coping processes influence future appraisals and the type of stress reaction experienced.

A feature of the transactional approach to stress is the notion of process, the unfolding of events over time and the changing relationship between the person and the environment (Lazarus, 1990; 1999; Lazarus & Folkman, 1984). It is inherently more complex than the stressors and strain approach, allowing for a range of interactions between stressors and strains as well as a variety of outcomes, both positive and negative.

There is increased evidence and support for viewing stress as a process (Folkman & Lazarus, 1985; Folkman & Moskowitz, 2004; Lazarus, 2000; Somerfield & McCrae, 2000; Tennen, Affleck, Armeli, & Carney, 2000). The broad stages of the model, based on Lazarus and Folkman’s (1984) theory, are set out in Figure 2 (overleaf).

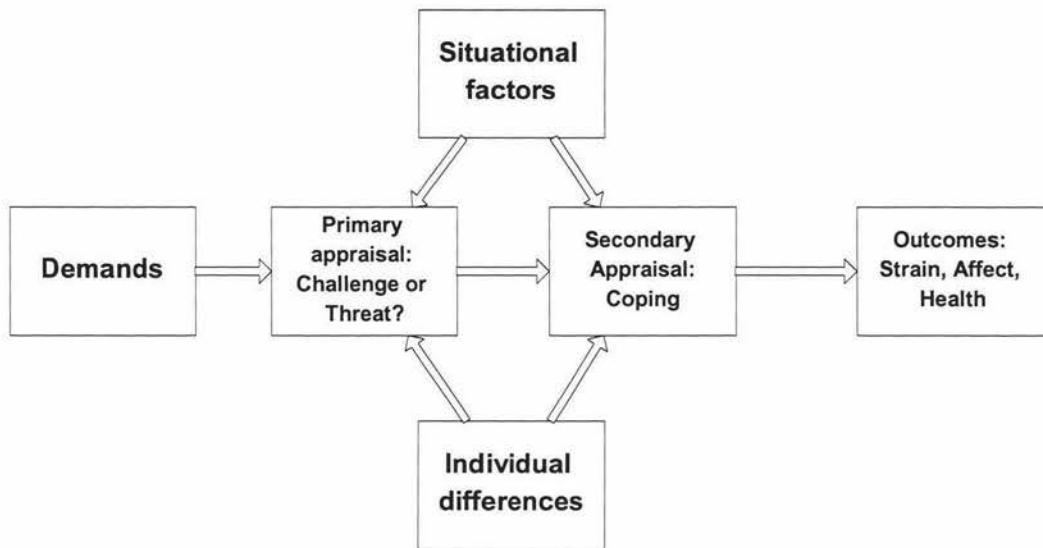


Figure 2. *An Appraisal-Coping Model of Occupational Stress Outcomes: Distress and Eustress, adapted from McGowan (2004).*

A core concept of transactional models is the concept of appraisal. Appraisal is the process whereby a person evaluates a situation and decides whether that situation will impact on their health or well-being (Lazarus & Folkman, 1984). The model distinguishes between two types of appraisal, primary and secondary. Primary appraisal is the assessment of the potential harm, threat or benefit that a situation presents and the personal (or motivational) relevance of a situation (Lazarus & Folkman, 1984; Lowe & Bennett, 2003; Tomaka, Blascovich, Kelsey, & Leitten, 1993). If a demand is appraised as threatening, challenging or potentially harmful then it is a stress appraisal and consequently secondary appraisal takes place. Secondary appraisal is the evaluation, selection, and implementation of appropriate coping strategies and will be discussed in the next chapter.

Diagrammatically speaking, the stress process appears to be linear, but in reality it is a complex process that continually changes throughout an encounter (Lazarus & Folkman, 1984). The terms “primary” and “secondary” are not meant to imply that one (i.e. primary appraisal) is more important than the other, or that one necessarily precedes the other. Primary and secondary appraisal may

occur simultaneously but the terms are useful for dividing appraisal into its analytical components (Lazarus & Folkman, 1984).

## **Primary Appraisal**

Three types of primary appraisal have been identified: irrelevant, benign-positive and stressful appraisals (Lazarus & Folkman, 1984).

### ***Irrelevant***

An appraisal of irrelevance arises when a person has no direct interest in the outcome of a transaction and therefore stress does not occur (Lazarus & Folkman, 1984).

### ***Benign Positive***

A demand is appraised as benign-positive if the outcome of a transaction maintains, enhances or may enhance a person's well-being. Benign positive appraisals are not considered to be stress appraisals as they do not prompt secondary appraisal and are associated with feelings of happiness and enjoyment. Lazarus and Folkman (1984) acknowledge that pure benign-positive appraisals without any apprehension are rare.

### ***Stress Appraisals***

Lazarus and Folkman (1984) distinguish three types of stress appraisals: Harm/loss, threat, and challenge (Lazarus, 1966; Lazarus & Folkman, 1984; Tomaka et al., 1993). All three stress appraisals are coped with differently, and all have specific psychophysiological and performance outcomes (Lazarus, 1999).

### **Harm/Loss Appraisals**

Harm/loss appraisals occur after some form of damage has been sustained. Examples include an injury, bereavement, or some kind of damage to well-being through embarrassment and loss of self-esteem (Lazarus & Folkman, 1984).

## **Threat Appraisals**

Threat appraisals are concerned with harm or loss that has not occurred but is possible or likely in the future. Threat appraisals occur when a person perceives that their resources or abilities to cope with a demand are exceeded suggesting potential damage to well-being (Lazarus & Folkman, 1984; Skinner & Brewer, 2002). Threat appraisals can aid people to anticipate difficulties and put strategies into place to deal with them (Lazarus & Folkman, 1984). However, threat appraisals are consistently associated with anxiety in situations where there is something at stake such as performance or achievement (Skinner & Brewer, 2002; 2004). Threat appraisals have been linked to increased anxiety in examinations (Folkman & Lazarus, 1985; Skinner & Brewer, 2002) and public speaking tasks (Feldman, Cohen, Hamrick, & Lepore, 2004), increased subjective stress (Anshel, Robertson, & Caputi, 1997; Tomaka et al., 1993), negative affect (Hasida, Dana, & Dorit, 2005), and decreased performance on complex tasks (Drach-Zahavy & Erez, 2002).

Tomaka, Blascovich, Kelsey and Leitten (1993) examined the relationships between threat appraisal and the subjective and physiological responses during the performance of active coping tasks (arithmetic problems). Threat appraisals were associated with increases in heart rate and blood pressure, greater subjective stress, than challenge appraisals, and also predicted participants' perceived performance on arithmetic tasks (Tomaka et al., 1993).

Thus threat appraisals were associated with physiological and subjective stress, as well as decreased task performance. The fact that threat appraisals were associated with physiological responses is interesting as it demonstrates that the way a person thinks or appraises a situation can influence physiological mechanisms. This finding is important in terms of establishing a role for cognitive appraisal in the stress process.

This strong body of research supports the theoretical foundations linking threat appraisal to distress (Lazarus, 1991; Lazarus & Folkman, 1984). To date there is little research examining threat appraisal in an occupational setting. However,

one recent occupational study found that threat appraisals were negatively related to job satisfaction and positively related to active job search and turnover (Cavanaugh et al., 2000). Overall, the research supports the association between threat appraisals, performance, and negative emotional outcomes, however evidence for this relationship appears to be in line with the dominant trend in stress research to examine negative, rather than beneficial, outcomes of the stress process. Therefore, the following hypothesis is proposed:

Hypothesis 1. Threat appraisals will be positively associated with negative affect.

### **Challenge Appraisals**

Challenge appraisal is another form of stress appraisal. It arises when a person perceives that a stressful situation has potential benefits for gain and they have the resources to meet or exceed demands (Lazarus & Folkman, 1984).

There has been little research conducted on the relationship between challenge appraisals and stress outcomes. The recent emergence of a positive psychology movement has spurred interest in positive outcomes of the stress process such as happiness and positive affect (Folkman & Moskowitz, 2000; Seligman & Csikszentmihalyi, 2000). This new direction provides exciting research opportunities and includes the area of challenge appraisal.

As with threat appraisals, research into challenge appraisals has tended to focus on achievement situations rather than work settings. Tomaka and colleagues (1993) found that challenge appraisals were associated with less subjective stress, more physiological reactivity (e.g. heart rate) but less vascular resistance (e.g. blood pressure) than threat appraisals. This suggests that challenge appraisals may invoke greater physiological responses when compared with threat appraisals but their negative effects, both physical (e.g. blood pressure) and mental (e.g. subjective stress), are likely to be mitigated. Overall, challenge appraisals were found to be associated with better performance than threat appraisals. This study highlights the complex nature of cognitive appraisals and supports their association with physical, behavioural and subjective processes.



When compared with threat appraisals, challenge appraisals have been positively associated with the performance of complex tasks (Drach-Zahavy & Erez, 2002). Challenge emotions such as feelings of confidence, hope and eagerness were associated with perceptions of control in students undertaking the exams (Folkman & Lazarus, 1985), although a replication of the study by Carver and Scheier (1994) did not corroborate these findings. Challenge appraisals have also been linked with positive affect (Hasida et al., 2005) and Skinner and Brewer (2002; 2004) found that challenge appraisals were associated with greater expectations of coping ability, lower perceived threat and more positive emotion than threat appraisals in stressful achievement events. Skinner and Brewer (2002, p. 689) cite this finding as “concrete” evidence that the appraisal of demands as challenges plays an important role in the stress process, in terms of emotion and performance.

Emotions are tied to variables such as values, goals, belief systems, personal resources and social (environmental) events so are consequently critical in the stress process (Lazarus, 1999). To date, positive emotions such as eagerness, excitement and confidence and their relationship to challenge appraisal have been examined during the stress process (Folkman & Moskowitz, 2000). There is a growing body of research linking challenge appraisals with positive emotion (see Skinner & Brewer, 2004). Therefore, the following hypothesis is proposed:

Hypothesis 2. Challenge appraisals will be positively associated with positive affect.

Challenge and threat appraisals can occur simultaneously. For example a demand such as a job promotion could be approached with excitement and anticipation but also a fear of being overwhelmed by the responsibility or not being able to meet expectations. The relationship between threat and challenge appraisal can also change throughout an encounter. A situation may initially be appraised as threatening but with effective coping or environmental changes it may later be viewed as a challenge (Lazarus and Folkman, 1984). This view of stress as ever changing, with both threat and challenge appraisals occurring simultaneously, is the essence of the transactional model of stress.



The current chapter outlined the transactional model of stress and focused on the construct of primary appraisal. The following chapters will introduce and critically explore the subsequent components of the transactional model, namely secondary appraisal, intervening variables and outcomes of the stress process. The aim is to equip the reader with an understanding of the transactional model and discuss theoretical and methodological issues surrounding these constructs.

## Chapter 5

### Coping

Lazarus and Folkman (1984) describe secondary appraisal as a complex evaluative process that is a crucial step in deciding the outcome of a stressful situation. It involves the evaluation, selection, and implementation of appropriate coping strategies. Although Lazarus (1999) defined secondary appraisal as an evaluation of coping rather than coping itself, he acknowledged that coping and appraisal are intertwined and therefore secondary appraisal may also be referred to as coping. For the purposes of this thesis secondary appraisal will be defined as coping.

This chapter will explore the development of the coping concept, models of coping and the different functions of coping. The relationship between primary and secondary (coping) appraisal research will then be reviewed.

#### *The Development of the Coping Concept*

Coping is among one of the most widely studied areas in psychology today (Somerfield & McCrae, 2000). Tens of thousands of articles have been published on stress and coping yet the area of coping and positive outcomes is still relatively under-researched. Research has found coping to be a complex and multidimensional process involving interactions among environmental and individual factors (Folkman & Moskowitz, 2004).

Although the basic premise of coping can be traced back many centuries (Cooper & Dewe, 2004) the term “coping” was not given its own category by Psychological Abstracts until 1967 (Snyder & Dinoff, 1999 as cited in Cooper & Dewe, 2004). When Richard Lazarus took his first academic job in the late 1940s there was little interest in stress from the general public or the wider academic community (Lazarus, 1999) and when he first wrote about coping in 1966 there was still little interest in this area. However, interest in stress grew in the aftermath of the First and Second World Wars with the recognition that stress was a problem in peacetime as well as at war (Lazarus, 1999).

## ***Models of Coping***

Essentially there are three main theoretical models underlying most coping research: the ego-psychology model, the trait-dispositional model, and the contextual model (Folkman, 1992). These conceptualisations of coping can be broadly distinguished by their assumptions concerning how a person responds to a stressful situation. The *Trait Models* are based on the earlier *Ego-Psychology Model* and are both dispositional models. They assume that stable personality dispositions determine coping styles while *Contextual* models assume that situational and environmental factors will determine the coping response (Holahan, Moos, & Schaefer, 1996).

## ***The Dispositional Models***

### **Ego-Psychology Model**

Research on the concept of defense arose from Sigmund Freud's interest in the unconscious and his early writings focused on an individual's psychological mechanisms that either distort or disguise unpleasant ideas or feelings (Parker & Endler, 1996). Dispositional approaches based on psychoanalytic ego processes focus on the "unconscious cognitive mechanisms" that act as defense mechanisms by distorting reality and alleviating emotional tension (Holahan et al., 1996, p. 25). Lazarus and Folkman's (1984, p. 120) main criticism of this application of the psychoanalytic ego psychology model is that coping is viewed structurally as a style or trait and not as a "dynamic ego process" where an individual can employ conscious coping strategies depending on the encounter.

### **Trait Model**

Trait models define coping as a personality variable that determines a person's coping responses to a variety of circumstances (Holahan et al., 1996). Trait models assume that people use a certain style of coping regardless of the situation or the relevance of the coping style to that situation (Carver & Scheier, 1994). Trait measures have been criticised for being one-dimensional, along an approach-avoidance continuum and for not being able to accurately predict actual coping responses during a real stress encounter (Parker & Endler, 1996).

### ***The Contextual / Transactional Model***

Lazarus and Folkman (1984, p. 141) define coping as the “constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person”. This definition stems from the transactional model and has been established as one of the foremost definitions of coping (Folkman & Moskowitz, 2004; Tennen et al., 2000). The definition implies coping is a process rather than a trait. It distinguishes between coping and automatic adaptive behaviour because coping is limited to only those events that are appraised as stressful and therefore require effort to resolve.

The definition of coping as “efforts to manage” demands includes all strategies used by a person regardless of their effectiveness and does not imply that management of a stressful encounter is necessarily associated with mastery over that encounter (Lazarus & Folkman, 1984). Lazarus and Folkman (1984) identify three critical principles of coping. Essentially coping is situation-specific and therefore cannot be assessed without an examination of the actual context of a situation. Secondly, Lazarus and Folkman (1984) argue that past coping is not necessarily predictive of future coping and so assessment needs to focus on the actual coping strategies employed by a person rather than previous coping experiences. Thirdly, the word “process” implies change and change is a key concept of the transactional model of stress. Change is a function of appraisals and reappraisals of the person-environment relationship. As a result, coping is a process that evolves and changes depending on the circumstances of the encounter (Folkman & Lazarus, 1985; Lazarus & Folkman, 1984). Changes can occur in a matter of seconds or over an extended period as in cases of chronic stress or grieving. Regardless of the duration of the encounter the process remains “an unfolding, shifting pattern of cognitive appraisal and reappraisal, coping, and emotional processes” (Lazarus & Folkman, 1984, p. 143).

The advantage of transactional models is that they do not assume that people react and cope in the same way to a variety of situations. Lazarus (1999)

acknowledged that a limitation of the transactional approach is the potential to over-complicate coping by neglecting to consider possible patterns, within a contextual framework, in the way people cope. Lazarus (1999) also acknowledged that although there may be multiple coping responses at given times during a stressful encounter, there are also likely to be overall patterns that emerge. The identification of these patterns in the way that people appraise and then cope with stressful encounters allows an insight into the stress process that goes beyond a stressor-strain paradigm and toward a more comprehensive transactional perspective.

### ***Conceptual Issues***

Schwarzer and Schwarzer (1996) raise three conceptual issues that complicate the study and measurement of coping: stability, generality, and dimensionality.

Stability is the tendency to characterise people into certain groups depending on how they respond to stressful situations over time. For example if a person adopts the same coping strategy or strategies over time then one may assume that the preference for that coping strategy is a stable feature of their personality/disposition. The dispositional approach undermines the contextual model of coping and also fails to acknowledge the process approach to coping which incorporates different stages of a demanding situation that may require different coping preferences. For example students were found to undergo significant changes in their preference and use of coping strategies and emotions during various stages of an examination (Folkman & Lazarus, 1985).

Generality refers to the extent to which the same strategies are used in different situations. For example are the coping preferences used in an exam also used when facing significant work stress? Schwarzer & Schwarzer (1996) proposed that by assuming individuals tend to use a finite number of coping strategies over multiple situations, rather than an endless number of strategies potentially applied to each situation, the measurement of coping can produce more beneficial information.

Dimensionality refers to grouping of coping strategies based on purpose, meaning or functional value. It allows one to classify the seemingly endless number of individual coping responses (Schwarzer & Schwarzer, 1996).

## Coping Functions

Despite the array of conceptual issues there are two coping functions that dominate the coping literature: problem-focused coping (also referred to as task-focused coping) which aims to alter the person-environment relationship through active planning and emotion-focused coping which aims to manage the emotions aroused by the stressful situation (Carver, Scheier, & Weintraub, 1989; Folkman & Lazarus, 1980; Lazarus, 1999). An example of *problem-focused* coping is a student who inadvertently studies for the wrong exam. They find out the day before that they have been studying for the wrong subject and desperately make a plan to cover the material in less than one day. After making a plan of action and studying as much as they can they may then decide there is nothing more they can do about the situation and distance themselves (*emotion-focused coping*) from the emotions that could lead to increased anxiety and panic (Lazarus & Folkman, 1984). As highlighted by this example a person may use both problem and emotion-focused functions over a stressful situation.

Problem and emotion-focused coping can be broken down into a number of subcategories but the identification of these categories has often produced mixed results (Carver et al., 1989; Endler & Parker, 1990; Lyne & Roger, 2000). For example the COPE questionnaire (Carver et al., 1989) consists of five scales (with four items per scale) that measure problem-focused coping (active coping, planning, suppression of competing activities, restraint coping, and seeking of instrumental social support), five scales that measure emotion-focused coping (seeking of emotional support, positive reinterpretation, acceptance, denial, turning to religion), and three further scales that address other coping emotion-focused responses (focus on and venting of emotions, behavioural disengagement, and mental disengagement) the last two of which are akin to avoidance coping. In a re-assessment of the COPE, Lyne and Roger (2000) found a clear three-factor structure comprised of rational, emotion-focused and

avoidance focused coping. These results are similar to the factor structure that emerged from Endler and Parker's (1990) Multidimensional Coping Inventory (MCI). Using factor analysis Endler and Parker identified 3 coping styles: task oriented, emotion oriented, and avoidance oriented coping (Endler & Parker, 1990) which are consistent with a number of other coping scales (Lyne & Roger, 2000). A consistent feature of many categorizations of coping is the distinction between problem-focused and emotion-focused coping. Although the subcategories of these two types of coping are often different due to methodological differences they continue to dominate the coping literature.

## Measures of Coping

With a range of conceptual issues the measurement of coping has become a complex procedure. Empirical investigations have produced a variety of results ranging from "muddled" (Carpenter, 1992, p. 7) to "trivial" (Lazarus, 1999, p. 155) and "disappointing" (Lazarus, 2000, p. 665). However, Lazarus (2000, p. 665) goes on to say that some of his "pessimistic thoughts" may have been unwarranted considering the apparent emergence of more robust research.

A number of measures have been developed to assess coping during stressful situations. Some include qualitative measures of coping strategies that are then coded. This method is often used during the development of scales for quantitative coping questionnaires. The dominant measures take the form of a checklist and include the Ways of Coping Questionnaire (Folkman & Lazarus, 1980), the COPE and Brief COPE (Carver, 1997; Carver et al., 1989), the Coping Inventory for Stressful Situations (Endler & Parker, 1990) and a number of other measures that have been published in the early 1980s and 1990s (see Schwarzer and Schwarzer, 1996).

There are a number of contextual measures. The Ways of Coping Questionnaire (WCQ), or checklist as it was originally known (Folkman & Lazarus, 1980) includes 68 items and covers defensive coping, information seeking, problem solving, palliation, inhibition of action, direct action and magical thinking classified into *problem-focused* and *emotion-focused* coping. The WCQ has



been used extensively but it has received criticism over the psychometric properties of its scales (Endler & Parker, 1990).

In order to address the above problems Endler and Parker (1990) developed the Multidimensional Coping Inventory (MCI). The MCI consists of 44 items comprising three scales (Task, Emotion, and Avoidance) with “very good” psychometric properties (Schwarzer and Schwarzer, 1996, p. 121).

Carver and colleagues (1989) also developed a multidimensional coping inventory called the COPE. The COPE is based on both the transactional model of stress (Lazarus & Folkman, 1984) and the work of Carver and Scheier (Carver, 1997; Carver & Scheier, 1994; Carver et al., 1989).

Carver et al (1989) identified three problems with the existing coping measures in use at the time. First, existing measures did not address all potential domains of coping due to the way that the scales were initially developed. Second, Carver and colleagues argued that there was a general lack of clarity in some coping items in that an endorsement of one item would actually tell the researcher little about why that item was endorsed. Third, scale development often came about from an empirical rather than theoretical basis where many items were identified then the dimensions thought to underlie them were subsequently identified through factor analysis (Carver et al., 1989).

Despite the mixed results and criticisms of checklist approaches they continue to be the most popular and time efficient way to gather data on coping (Lazarus, 2000).



## **Primary Appraisal and Coping**

There is little research examining the relationship between primary appraisals and coping yet these are essential components of the transactional model. In a sample of one hundred middle aged people studied over the course of a year Folkman and Lazarus (1980) reported that both problem and emotion-focused coping were used in 98% of 1332 stressful encounters, suggesting that coping is not solely restricted to either problem or emotion-focused coping. An example of a coping strategy often comprised of emotion and problem-focused coping components is social support which has been proposed to be a facilitator of effective coping (Folkman & Lazarus, 1985).

Folkman and Lazarus (1980) found that problem-focused coping was used more often in situations that a person appraised as having the potential for change. Emotion-focused coping, on the other hand, was more frequently used where the situation was appraised as having little potential for change. Folkman and Lazarus (1980) cite this link between primary and secondary (cognitive) appraisal as clear support for their transactional theory.

### ***Challenge Appraisals***

Research has confirmed the importance of appraisals of control in the selection of coping strategies in the health (Park, Folkman, & Bostrom, 2001), and education settings (Folkman & Lazarus, 1985; Park, Armeli, & Tennen, 2004). However the association has not always been supported (Carver & Scheier, 1994) suggesting that control might not be the only variable of interest. Challenge appraisals suggest an individual is usually more confident, less overwhelmed by emotions, and more able to utilise available coping resources (Lazarus, 1999). Research has found that challenge appraisals are associated with control (Anshel et al., 1997). Similarly, Hasida and colleagues (2005) reported that appraisals of challenge and controllability were positively related to problem-focused coping and Skinner and Brewer (2002) found that a challenge appraisal style was the best predictor of coping expectancies.

Although there is comparatively little research examining the role of challenge appraisal and its relationship with coping, the existing research suggests it plays an important role in terms of selecting coping strategies. The following hypotheses are offered:

Hypothesis 3a. Challenge appraisals will be positively associated with the use of Task-Focused Coping.

Hypothesis 3b. Challenge appraisals will be positively associated with the use of Social Support.

### ***Threat Appraisals***

Threat appraisals are associated with a lack of confidence that one can overcome the difficulties of a situation (Lazarus, 1999). They have also been linked with lowered coping expectancies (Skinner & Brewer, 2002), a perceived lack of control (Anshel et al., 1997) and increased use of avoidance (Carver & Scheier, 1994; Hasida et al., 2005). Theoretically, if an individual feels they are not able to control a situation they will be more likely to use emotion-focused strategies aimed at regulating or avoiding the emotions associated with their situation. These types of strategies have been found to be adaptive or maladaptive depending on the situation and the type of emotion-focused coping strategy used (Folkman & Lazarus, 1985; Park et al., 2001). For example, avoidance has long been thought of as a less adaptive form of emotion-focused coping (Carver & Scheier, 1994; Folkman & Moskowitz, 2004; Park et al., 2001). It has been linked with a lack of perceived control over a situation (Park et al., 2004), however avoidance may serve an adaptive purpose when there is nothing constructive that can be done to alter the stressful situation such as waiting for the outcome of an exam or medical test (Folkman & Lazarus, 1985).

Although there is a solid body of evidence linking threat appraisal and negative emotions, the link between threat appraisal and emotion-focused coping warrants further attention. The following hypothesis is suggested:

Hypothesis 4. Threat appraisals will be positively associated with the use of avoidance.

Central to the transactional approach is the complex combination of primary and secondary appraisal and the ensuing emotions. This process of cognitive appraisal allows insight into the multifaceted stress process. Inherent in attempting to understand the intricacies of stress is the assertion that understanding will lead to an enhancement, or at least maintenance, of well-being. An examination of both short and long-term stress outcomes is therefore essential in order to understand the process that leads to positive and negative consequences. These will be discussed in the following chapter.

## Chapter 6

### Outcomes of the Stress Process

By gaining insight into the way stress affects people, researchers might be able to discover patterns that can help prevent negative outcomes of the stress process and better enable a person to deal with stress so that they can continue to function effectively. This is particularly important for employers and organisations that aim to maintain a workforce that functions to the best of its ability. The motto used by the New Zealand Army Physical Training Corps is “mens sana in corpore sano” meaning “a sound mind in a sound body” and encompasses both physical and mental health (New Zealand Defence Force, 2005, Chapt 2, sect 2). Outcomes of a workforce without a sound mind in a sound body are many and, if stress is not managed, these outcomes can affect the performance of both the individual and the organisation.

#### Affective outcomes

Stress was previously viewed as a one-dimensional concept that could be measured on a continuum (Lazarus, 1999). This view of stress was challenged when Hans Selye (1976) divided stress into categories, *distress* and *eustress*. Distress refers to a “destructive” type of stress characterised by anger, aggression and ill health, and eustress refers to a “constructive” type of stress characterised by emotions aroused from “empathetic concern for others”, “positive striving” and good health (Lazarus, 1999, p. 32).

Although the categorisation of emotions into eustress and distress is appealing, the underlying dimensions have not been successfully identified and there are few studies that consider the eustress concept (Nelson & Simmons, 2003). However, the empirically supported dimensions of positive and negative affect are conceptually similar to eustress and distress (Nelson & Simmons, 2003; Watson, Clarke, & Tellegen, 1988). Positive affect (PA) is characterised by emotions associated with “energy, excitement and enthusiasm” while negative affect (NA) is characterised by emotions such as anger, disgust and depression (Watson & Pennebaker, 1989 p. 234). Positive and negative affect can be

measured as a state (i.e. the experience of affect at a given time) or trait (i.e. the reflection of general and stable dispositions over time) (Van Katwyk, Fox, Spector, & Kelloway, 2000; Watson & Pennebaker, 1989).

Despite the general acknowledgement that stress may be positive or negative, research has tended to concentrate on negative outcomes such as negative affect (Nelson & Simmons, 2003; Seligman & Csikszentmihalyi, 2000). Recently there has been a resurgence of interest in the positive emotions associated with stress as the positive psychology movement has argued for a shift away from the traditional stressor-strain approach (Folkman & Moskowitz, 2000; 2004; Nelson & Simmons, 2003; Seligman & Csikszentmihalyi, 2000; Simmons & Nelson, 2001). Unfortunately, most current models of stress do not emphasise the adaptive significance of positive affect and rarely describe the coping processes people use in order to produce positive affect during chronic stressful encounters (Folkman & Moskowitz, 2000). Regardless of the growing recognition of the role of positive emotion in the stress process there is currently a lack of empirical evidence (Lazarus, 1999).

### ***Coping and Positive Affect***

The link between coping and emotions, both positive and negative, is not clear even though many health care professionals agree that this link exists (Folkman & Lazarus, 1980; 1988). Furthermore the link between coping and positive emotion is considered to be relatively recent (Folkman & Moskowitz, 2004) and compared to the coping-negative emotion relationship, it has been a neglected area of research.

Although there is some debate among researchers, problem-focused coping has been generally associated with positive psychological outcomes whereas emotion-focused coping has been generally associated with negative psychological outcomes (Carver & Scheier, 1994; Folkman & Moskowitz, 2004). Folkman and Lazarus (1988) reported that a form of task-focused coping (planful problem solving) was associated with less negative and more positive emotion. It was argued that people feel better once they make a plan of how to resolve a situation. In an investigation of AIDS caregivers Moskowitz, Folkman, Collette,

and Vittinghoff (1996) found that although little could be done to control the outcome of AIDS illness, the caregivers actually used problem-focused coping more often towards the end of their partner's illness. This was positively associated with positive affect over the same period. Although the caregivers initially felt helpless Moskowitz and colleagues (1996) highlighted the significance of gaining control in situations that were largely perceived as uncontrollable and the adaptational benefits this could have.

Other research has confirmed the association between task-focused coping strategies and positive affect (Folkman & Lazarus, 1985; Hasida et al., 2005; Ntoumanis & Biddle, 1998). In line with the evidence above there is growing support for the idea that task-focused forms of coping are more often associated with positive emotions (see Carver & Scheier, 1994; Folkman & Lazarus, 1980; 1988; Folkman & Moskowitz, 2004; Hart & Cooper, 2002; Hasida et al., 2005; Lowe & Bennett, 2003; Moskowitz et al., 1996; Nelson & Simmons, 2003; Seligman & Csikszentmihalyi, 2000; Simmons & Nelson, 2001) This appears to be an emerging area for coping research. Therefore the following hypothesis is suggested:

Hypothesis 5a. Task-focused coping strategies will be positively associated with positive affect.

Studies have confirmed that that the seeking of social support for instrumental reasons and the seeking of social support for emotional reasons often combine to form a distinct factor (Carver, 1997; Carver et al., 1989; Hasida et al., 2005). However these two scales contain both problem and emotion-focused components, which although conceptually distinct are often used in tandem (Carver, 1989). Social support can therefore be a "double edged sword" as it has both problem and emotion-focused components with potential to either foster or hinder task-focused coping (Carver et al., 1989 p. 269). Folkman and Lazarus (1985) proposed that social support works hand-in-hand with task-focused forms of coping and therefore may be a facilitator of effective coping. Research has since confirmed that social support is related to positive affect (Hasida et al., 2005; Ntoumanis & Biddle, 1998).

The military has a people-oriented social culture with an emphasis on teamwork. At times military personnel spend long periods away from their friends and families and may also be exposed to particularly difficult working conditions. Social support therefore plays an important role in military life and social support coping has been associated with psychological well-being in military personnel (Limbert, 2004). Therefore the following hypothesis is offered:

Hypothesis 5b. Social support will be positively associated with positive affect.

### ***Coping and Negative Affect***

Although there is emerging literature linking task-focused coping and social support strategies to affective outcomes (Folkman & Lazarus, 1985; 1988; Hasida et al., 2005; Limbert, 2004; Moskowitz et al., 1996; Ntoumanis & Biddle, 1998) there is much more evidence linking avoidance with negative outcomes (Carver & Scheier, 1994). Folkman and Lazarus (1988) found that the emotion-focused coping strategy of distancing one's self was associated with a decrease in positive emotions. They proposed that avoiding a situation might be difficult to sustain because environmental cues are often present reminding one of the situation. In addition, distancing may not allow task-focused strategies such as active problem solving and therefore may worsen the situation. This research is consistent with other studies that have found emotion-focused coping, avoidance in particular, to be associated with negative affective outcomes (Hasida et al., 2005; Ntoumanis & Biddle, 1998). The following hypothesis is therefore proposed:

Hypothesis 6. Avoidance will be positively associated with negative affect.



## ***Long Term Outcomes***

### **Intention to Turnover**

Ongoing affective states can lead to long-term individual (e.g. health) and organisational (e.g. absence and intention to turnover) outcomes (Van Katwyk et al., 2000). Both absence and turnover have been proposed as important occupational outcomes due to their links with organisational functioning (Pelled & Xin, 1999)

Intention to turnover (ITO) signifies one's propensity to leave an organisation and is strongly related to actual turnover (Hom & Griffeth, 1995). The costs of voluntary turnover are great, with organisations losing a significant investment in training and experience with each employee departure (Thoreson, Kaplan, Barsky, Warren, & de Chermont, 2003). The examination of relevant organisational outcomes is central to occupational stress research and the relationship between emotions and ITO is an important link in the occupational stress process.

A number of studies have included ITO as a variable when investigating organisational well-being (Cote & Morgan, 2002; Shaw, 1999) but few have considered the relationship between positive and negative emotions and ITO (Thoreson et al., 2003). Research into job satisfaction has found that those more satisfied in their jobs are more likely to be higher in positive affect and less likely to leave their job than less satisfied people who are more likely to be higher in negative affect and more likely to leave (Thoreson et al., 2003). In a meta-analytic review Thoreson and colleagues (2003) found positive affect to be negatively related to ITO and negative affect to be positively related to ITO. However, the strongest association was between negative affect and ITO. Similarly, Pelled & Xin (1999) found only negative affect was related to turnover. Again, the research focus on negative emotions and their relationship with stress may explain the stronger negative affect-ITO relationship and is worthy of consideration.



Affect may be an important antecedent to relevant organisational outcomes and thus the following hypotheses are proposed:

Hypothesis 7. Positive affect will be negatively associated with intention to turnover.

Hypothesis 8. Negative affect will be positively associated with intention to turnover.

## **Health Outcomes**

Illness affects both the individual and the organisation. In terms of individual consequences an important long-term outcome is physical health. It is widely accepted that over time stress can lead to adverse health effects (Nelson & Simmons, 2003). Simmons and Nelson (2001) examined the relationship between eustress (defined as the positive response to work demands) and health in 158 hospital nurses. They found that hope (the belief that one has the will and the way to accomplish one's goals, conceptually similar to eustress) was positively related with the nurses' perceptions of their own health (Simmons & Nelson, 2001). Folkman and Moskowitz (2000) cite a body of research suggesting that positive affect may serve as a buffer against adverse physiological consequences of stress. A recent study of people affected by AIDS (Moskowitz, 2003) found that positive affect significantly lowered risk of mortality. Thus, positive affect may be an important antecedent of physical health. This is an area that has not been extensively investigated but has yielded some interesting findings that warrant further research. In line with the research to date the following hypotheses are offered:

Hypothesis 9a. Positive affect will be negatively associated with illness frequency due to perceived illness.

Hypothesis 9b. Negative affect will be positively associated with illness frequency due to perceived illness.

Hypothesis 10a. Positive affect will be negatively associated with days off work due to perceived illness.

Hypothesis 10b. Negative affect will be positively associated with days off work due to perceived illness.

Both coping and emotions are essential components of transactional theory. Research has supported the link between coping strategies and affective outcomes. There is also support for the role of affectivity in determining long-term outcomes that may impact on individual and organisational effectiveness. Again, the majority of research has tended to investigate and report the role of negative coping styles or affective states on well-being, thus there is a need for more research on the positive aspects of the stress process.

Unique to the transactional approach is the notion that stress reactions are influenced by situational and individual factors. Cognitive hardiness is proposed to play an important role in this process and will be discussed in the following chapter.

## **Chapter 7**

### **Cognitive Hardiness**

This chapter will review the concept of cognitive hardiness and examine the relationship between hardiness and well-being in the context of occupational stress management.

Cognitive Hardiness is a personality construct comprised of the related characteristics of commitment, control, and challenge (Kobasa, 1979), often referred to as the 3Cs of hardiness (Maddi, 2002). People high in commitment are typically involved in their work, family and interests; people high in challenge tend to view life changes as opportunities to learn; and people high in control typically believe they have influence over events in life (Nowack, 1990). Together the components of hardiness combine to represent the day-to-day attitudes and beliefs that are held by an individual (Nowack, 1990).

#### ***Origins of Cognitive Hardiness***

The concept of cognitive hardiness has existed for over 25 years and grew from existential psychology (Maddi, 2002). Grounded in existential theory is the notion that *existential courage*, or the ability to choose the future even though the outcomes may be uncertain, leads to personal satisfaction and growth (Maddi, 2002).

In the 1970s Maddi and colleagues began a 12 year longitudinal study on stress reactions with the Illinois Bell Telephone Company (Maddi, 2002). The project was brought about because Maddi took issue with the view that stress is necessarily damaging. Maddi (2002) proposed that while stress may be harmful for some people it is not always to be avoided and some people may actively seek and be stimulated by stress. This pioneering research found that the relationship between stress and illness was moderated by cognitive hardiness, which emerged as a useful and interesting variable worthy of further study.

## ***Hardiness and Occupational Stress***

There is increasing evidence that cognitive hardiness is a negative predictor of psychological distress and self-reported illness, but is a positive predictor of well-being (Beasley, Thompson, & Davidson, 2003; Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982; Kobasa, Maddi, & Puccetti, 1982; Nowack, 1990). Studies have found the following associations between cognitive hardiness and occupational stress. Cognitive hardiness was a positive predictor of performance in military Officer Cadets (Westman, 1990). Professional athletes playing at the international level scored significantly higher on measures of hardiness than their non-international counterparts (Golby & Sheard, 2004). Hardiness has also been associated with higher cohesion levels in Norwegian Navy Officer Cadets (Bartone, Johansen, Eid, Brun, & Laberg, 2002), as well as with active engagement in meaningful work during a military deployment (Britt, Alder, & Bartone, 2001). Although the exact relationship of cognitive hardiness to well-being and performance outcomes is still debated it is nonetheless an exciting area of research.

## ***Hardiness Training***

Increases in technology, struggle to meet work-life balance and ever-changing environments are just some of the stressors faced in the workplace. Maddi (2002) believes that hardiness is what many organisations need to combat occupational stressors and proposed that the skills and attitudes of hardiness can be taught. Hardiness training teaches participants transformational coping, conceptually similar to task-focused coping, which consists of skills focused toward active engagement with difficulties. Maddi, Kahn, and Maddi (1998) proposed that in order to decrease the appraised stressfulness of an encounter an individual needs to take an active task-focused approach rather than using regressive coping which avoids the problem. It is proposed that hardy individuals are more likely to use transformational rather than regressive coping (Maddi, 1999a; Maddi & Hightower, 1999).

Maddi et al. (1998, p. 79) proposed that the skills of transformational coping can be taught via hardiness training which “engages cognition, emotion and action in coping effectively with a stressor”. It involves reflecting on how encounters have been appraised thereby gaining insight and understanding into why situations were stressful, placing the stressors in perspective, and then coming up with a plan to solve current stressful situations. Finally, teachers provide feedback to participants on their action plans in an effort to enhance the individual’s self-perceived hardiness. This approach although relatively new has been shown to increase levels of hardiness (Maddi et al., 1998).

### ***The Applicability of Hardiness to Organisations***

The NZ Army is an organisation that prides itself on providing a challenging and stimulating environment for its personnel. Army personnel also pride themselves on accepting both physical and mental challenges (e.g. the Maori Haka is a traditional dance-like challenge and is often seen as an integral part of NZ military culture) and embrace adversity when required.

The ethos and values of the NZ Army are: courage, commitment, comradeship and integrity (Chief of Army, 2006). These values (see Appendix A) have striking similarities with the three Cs of cognitive hardiness: commitment, control, and challenge. But how hardy are Army personnel? Does the Army develop hardy personnel through its values and environment, or are hardy personnel attracted to the Army? Maddi (2002, p. 176) believes that “hardiness develops in people who are encouraged by those around them that they can turn adversity into opportunity and who observe themselves actually making this happen”. It is likely that the NZ Army both attracts and develops cognitive hardiness in its personnel. Understanding the construct of cognitive hardiness and its applications at both the individual and organisational levels can aid in fostering and developing what Maddi refers to as “HardiOrganizations” (Maddi, 2002).

Many military personnel are exposed to potentially high levels of stress while conducting their duty. It is important to determine which characteristics (e.g. resilience, coping or personality) are important in determining whether positive or negative affective outcomes result from exposure to stressors. This information can then be used during training to improve the psychological well being of military personnel.

### ***Hardiness and Appraisal***

Cognitive hardiness has been identified as having a potential influence on the primary appraisal process (Ouellette-Kobasa, Maddi, Puccetti, & Zola, 1985). Theoretically hardy individuals are more optimistic when appraising stress, seeing it as a challenge whereas less hardy individuals tend to be more pessimistic and find change threatening (Ouellette-Kobasa et al., 1985).

Cognitive hardiness is an enduring characteristic and therefore not restricted to the context of a situation (Nowack, 1990). In contrast cognitive appraisal determines an individual's perception of a demand and can change from encounter to encounter and as the situation changes. Support for the link between cognitive hardiness and primary appraisal appears to be more conceptual than empirical, as a search of the literature did not find any empirical research relating cognitive hardiness to primary appraisal. The present research will attempt to investigate this relationship further.

Theoretically, individuals high in cognitive hardiness should be more likely to appraise a situation as a challenge rather than a threat and therefore the following hypotheses are proposed:

Hypothesis 11. Cognitive hardiness will be positively associated with challenge appraisals

Hypothesis 12. Cognitive hardiness will be negatively associated with threat appraisals.

## ***Hardiness and Coping***

Kobasa, Maddi, and Courington (1981) proposed that personality characteristics which encouraged optimism in the cognitive appraisal process combined with a task-focused approach would result in better adaptation to stressful encounters. They proposed that coping is influenced by personality and were interested in identifying those personality characteristics most influential in reducing the impact of potentially stressful events.

One personality characteristic that facilitates coping is hardiness (Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982; Maddi, 1999a; Maddi & Hightower, 1999; Ouellette-Kobasa et al., 1985). It is proposed that hardy individuals are more inclined to use a proactive adaptive coping style whereby they turn a potentially stressful situation into a manageable one (Soderstrom, Dolbier, Leiferman, & Steinhardt, 2000, p. 314). In a study of 124 managers at a large utilities company Maddi (1999a) found that hardy managers were more likely to engage in task-focused types of coping in a work setting. Consistent with this research other studies have also found hardiness to be directly related to task-focused types of coping (Maddi & Hightower, 1999; Soderstrom et al., 2000). This does not preclude the use of other coping strategies that may enhance the overall coping approach. For example the seeking of instrumental social support (e.g. information or helpful guidance) is seen as a variable that facilitates task-focused “transformational” types of coping (Maddi & Hightower, 1999, p.102). Although there is little research examining the specific relationship between cognitive hardiness and social support coping it is logical that hardy individuals would use the resources available to them in an active effort to engage in the task.

Less hardy individuals are not as likely to adopt task-focused strategies of coping when compared with hardy individuals and are more inclined toward avoidance because they are less committed, feel they are unable to control situations, and generally feel threatened as opposed to challenged when faced with difficult situations (Maddi, 1999a; Maddi & Hightower, 1999). In an investigation comparing optimism and hardiness with coping, hardiness was associated with



more task-focused types of coping and less avoidance than optimism and this resulted in lower levels of stress (Maddi & Hightower, 1999). Other research has confirmed that less hardy individuals are more likely to engage in avoidance coping (Maddi, 1999a). These results are consistent with other research that has shown hardiness to be negatively related to avoidance (Soderstrom et al., 2000).

Therefore it is proposed that:

Hypothesis 13a. Cognitive hardiness will be positively associated with task-focused coping strategies.

Hypothesis 13b. Cognitive hardiness will be positively associated with social support.

Hypothesis 14. Cognitive hardiness will be negatively associated with avoidance.

### ***Hardiness and Emotions (Affect)***

Although the mechanisms through which cognitive hardiness exerts influence on the stress process are not clear (Klag & Bradley, 2004; Soderstrom et al., 2000) there is a body of research suggesting that hardy individuals are less likely to experience psychological distress and more likely to experience positive well-being (Beasley et al., 2003; Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982; Kobasa, Maddi, & Puccetti, 1982; Nowack, 1990). Thus it is proposed that:

Hypothesis 15. Cognitive hardiness will be positively associated with positive affect.

Hypothesis 16. Cognitive hardiness will be negatively associated with negative affect.



In summary the research discussed thus far has examined stress from a transactional perspective. Stress is a complex process and may be influenced by internal (individual differences) or external (situational) factors. Utilising a transactional approach it is therefore possible that internal and external factors can influence cognitive appraisal and coping processes. The next chapter will examine the mediating and moderating roles of individual differences in the stress process.

## **Chapter 8**

### **The Role of Coping, Affect and Hardiness in the Stress Process**

One cannot consider the stress and well-being relationship from a transactional perspective without considering the role of intervening variables. In transactional models internal (individual differences) and external (situational) variables affect the cognitive appraisal process, influencing the reaction, intensity, duration and outcomes of an encounter. Although psychological research often claims to examine the role of intervening variables, commonly referred to as mediators or moderators (Baron & Kenny, 1986), most do not include any statistical measures of effect (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The empirical study of intervening variables is important so that theoretical relationships among variables can be determined.

To clarify, definitions of both moderator and mediator variables will be discussed. A mediating variable is a third variable through which an independent variable is able to influence a dependent variable (Baron & Kenny, 1986). For example, mediation occurs when a variable such as cognitive hardiness intervenes between two variables (e.g. coping and affect) and accounts for all or part of the relationship between the two variables. A moderating variable affects the direction or the strength of a relationship between an independent and a dependent variable (Baron & Kenny, 1986). (For a more detailed description of moderator and mediator effects refer to the Method Chapter).

#### ***Coping***

Although many researchers believe that coping affects emotional outcomes it is most often the reverse relationship that has been investigated (Folkman & Lazarus, 1988). Research has yielded some support for the role of coping as a mediator of emotional outcomes, which has prompted transactional researchers to call for more studies to investigate the effects of coping on emotion as well as the traditional emotion-coping relationships (Folkman & Lazarus, 1988).

Coping, from a transactional view, is not a moderator but a mediator of emotional outcomes (Lazarus, 1999). From a transactional perspective it is the cognitive appraisal process that influences emotion, which in turn influences the type of coping response elicited. This consequently alters the person-environment relationship and leads to affective outcomes (Folkman & Lazarus, 1988). Viewed in this way coping is a mediator of emotions as it occurs within the encounter and changes the original appraisal and the associated emotion. However there is little research that has sought to investigate the role of coping as a mediator of emotional outcomes. With the above considerations in mind it is proposed that coping will mediate the appraisal-emotion relationship:

Hypothesis 17a. Task-focused coping strategies will mediate the relationship between challenge appraisals and positive affect.

Hypothesis 17b. Social support will mediate the relationship between challenge appraisals and positive affect.

Hypothesis 18. Avoidance will mediate the relationship between threat appraisals and negative affect.

### ***Emotions (Affect)***

Research reviewed in Chapter 6 suggests that both coping and outcomes (health and intention to turnover) are strongly associated with affect. Although there is little research on coping and organisational outcomes such as intention to turnover there is an extensive literature that links coping with health related outcomes (see Lazarus, 1999 for a review). However, the evidence discussed suggests that emotions play an important role linking individual and organisational outcomes and therefore the following hypotheses are proposed:

Hypothesis 19a. Positive affect will mediate the task-focused coping and intention to turnover relationship.

Hypothesis 19b. Positive affect will mediate the social support and intention to turnover relationship.

Hypothesis 20. Negative affect will mediate the avoidance and intention to turnover relationship.

### ***Cognitive Hardiness***

A considerable body of research has been undertaken in the last 25 years establishing cognitive hardiness as an important variable in the psychological and physical health relationship (Beasley et al., 2003). There appears to be a significant amount of evidence for a direct influence of cognitive hardiness on psychological and physical outcomes. A recent study examining a sample of Israeli Prisoners of War and combat veterans found evidence that hardiness had a direct effect on levels of strain, and was inversely related to PTSD and other psychiatric symptoms (Zakin, Solomon, & Neria, 2003). Bartone (1999) studied military personnel in both peacekeeping and war and found evidence that hardiness was a significant protector against stress-related illness, particularly under high stress conditions. However, Bartone (1999) also reported that a number of personnel experienced high levels of stress with no ill effects, suggesting that while hardiness plays a part in the stress illness relationship, it may not be the only variable influencing the process.

Other research has also supported a direct role for cognitive hardiness. For example, cognitive hardiness was found to have a direct effect on well-being, represented by decreased scores on measures of psychological and somatic distress (Beasley et al., 2003). This is consistent with other research that has found cognitive hardiness to be negatively predictive of psychological distress and a positive predictor of well-being (Nowack, 1990).

Although there is support for the direct effects of cognitive hardiness on outcomes there are also strong grounds for proposing that cognitive hardiness might mediate the relationship between appraisal and coping and between coping and affect. However, the properties of moderator and mediator variables are often confused and in many cases the terms have been used interchangeably (Baron & Kenny, 1986). A review of the cognitive hardiness literature highlighted the different terminology used e.g. “direct, indirect, and modifying

effects” (Soderstrom et al., 2000), “main and moderator effects models” and also “direct effects and buffering models” (Beasley et al., 2003), “main, moderating, and mediating” (Klag & Bradley, 2004). This creates some difficulty when examining the literature investigating direct, moderator and mediator effects.

Although some literature suggests that cognitive hardiness mediates the relationship between stress and illness (Klag and Bradley, 2004), a closer inspection of the research reveals that coping is more often the proposed mediator between cognitive hardiness and health and the mediating role of cognitive hardiness appears to have been largely ignored. This is somewhat misleading, hence Baron & Kenny’s (1986) observation that the properties of mediator variables are often confused. It is also consistent with the findings of MacKinnon and colleagues (2002) who after reviewing 14 different methods to test mediation, reported that there is no multidisciplinary agreement as to what constitutes a mediating effect.

There may be a number of reasons why the mediating role of cognitive hardiness does not appear to have undergone scrutiny. It may be that mediating role of cognitive hardiness has been misreported as a moderating one. It could simply be due to the fact that cognitive hardiness has been the key focus of research and coping has been considered a mediator of cognitive hardiness. Or, considering the relatively short history of cognitive hardiness as a concept, it might be that the role of cognitive hardiness as an individual difference mediator (as in the transactional model) has not been investigated extensively.

Although there is little evidence examining cognitive hardiness as a mediator in the transactional model of stress, the transactional model proposes that individual difference variables may influence the stress process at any stage of an encounter (Lazarus & Folkman, 1984). From the research reviewed earlier there are grounds for proposing that primary and secondary appraisals are associated (Carver & Scheier, 1994; Hasida et al., 2005; Skinner & Brewer, 2002), as are secondary appraisals and affective outcomes (Folkman & Lazarus, 1985; 1988; Hasida et al., 2005; Limbert, 2004; Moskowitz et al., 1996; Ntoumanis & Biddle, 1998). However there are also strong grounds for an association of cognitive

hardiness with all of the variables above (Beasley et al., 2003; Kobasa, 1979; Kobasa et al., 1981; Kobasa, Maddi, & Kahn, 1982; Kobasa, Maddi, & Puccetti, 1982; Maddi, 1999b; Maddi & Hightower, 1999; Maddi et al., 1998; Ouellette-Kobasa et al., 1985; Soderstrom et al., 2000). It is proposed that cognitive hardiness may act as a mediator (delivery mechanism) between primary and secondary appraisals and also between secondary appraisals and affect. Therefore, the following hypotheses are offered:

Hypothesis 21a. The relationship between challenge appraisals and task-focused coping will be mediated by cognitive hardiness.

Hypothesis 21b. The relationship between challenge appraisals and social support will be mediated by cognitive hardiness.

Hypothesis 22. The relationship between threat appraisals and avoidance will be mediated by cognitive hardiness.

Hypothesis 23a. The relationship between task-focused coping and positive affect will be mediated by cognitive hardiness.

Hypothesis 23b. The relationship between social support and positive affect will be mediated by cognitive hardiness.

Hypothesis 24. The relationship between avoidance and negative affect will be mediated by cognitive hardiness.

There is also a body of research suggesting that cognitive hardiness has moderating effects. For example, Kobasa's (1979) retrospective study on IBT employees demonstrated that in a group of high stress executives, low illness rates were associated with higher cognitive hardiness. Therefore it was proposed that people high in hardiness are healthier because hardiness moderates the effects of strain (Soderstrom et al., 2000). Additional prospective research has also confirmed the moderating effects of cognitive hardiness on strain and health (Kobasa, Maddi, & Kahn, 1982). Other research also supports the moderating

effects of cognitive hardiness on strain and illness (Kobasa, Maddi, & Puccetti, 1982), and research has also found that cognitive hardiness is a stronger moderator than social support and physical exercise in the stress-illness relationship (Ouellette-Kobasa et al., 1985). However, a review of this research proposes that the moderating effects of cognitive hardiness on strain are not as strong as the direct effects on health (Funk, 1992; Gentry & Kobasa, 1984).

Beasley and colleagues (2003) also found that cognitive hardiness had a moderating effect on well being by buffering the effects of negative life events for females, and reducing the direct effect of emotion-oriented coping on depression for males and females, and anxiety for females. Although the moderator effect of cognitive hardiness on coping was small in the Beasley et al, (2003) study, it provided some support for the moderating effects of cognitive hardiness.

Overall, evidence that hardiness has a moderating effect on health and well-being is still equivocal (Beasley et al., 2003; Klag & Bradley, 2004; Soderstrom et al., 2000). The following hypotheses are proposed in order to clarify the role of cognitive hardiness in the stress process.

Hypothesis 25a. The relationship between challenge appraisals and task-focused coping will be moderated by cognitive hardiness.

Hypothesis 25b. The relationship between challenge appraisals and social support will be moderated by cognitive hardiness.

Hypothesis 26. The relationship between threat appraisals and avoidance will be moderated by cognitive hardiness.

Hypothesis 27a. The relationship between task-focused coping and positive affect will be moderated by cognitive hardiness.

Hypothesis 27b. The relationship between social support and positive affect will be moderated by cognitive hardiness.

Hypothesis 28. The relationship between avoidance and negative affect will be moderated by cognitive hardiness.

The next chapters present a research study undertaken to test the transactional model of stress and the role of cognitive hardiness, coping, and affect in the stress process.



## Summary of Hypotheses

Hypothesis 1. Threat appraisals will be positively associated with negative affect.

Hypothesis 2. Challenge appraisals will be positively associated with positive affect.

Hypothesis 3a. Challenge appraisals will be positively associated with the use of task-focused coping.

Hypothesis 3b. Challenge appraisals will be positively associated with the use of social support.

Hypothesis 4. Threat appraisals will be positively associated with the use of avoidance.

Hypothesis 5a. Task-focused coping strategies will be positively associated with positive affect.

Hypothesis 5b. Social support will be positively associated with positive affect.

Hypothesis 6. Avoidance will be positively associated with negative affect.

Hypothesis 7. Positive affect will be negatively associated with intention to turnover.

Hypothesis 8. Negative affect will be positively associated with intention to turnover.

Hypothesis 9a. Positive affect will be negatively associated with illness frequency due to perceived illness.

Hypothesis 9b. Negative affect will be positively associated with illness frequency due to perceived illness.

Hypothesis 10a. Positive affect will be negatively associated with days off work due to perceived illness.

Hypothesis 10b. Negative affect will be positively associated with days off work due to perceived illness.

Hypothesis 11. Cognitive hardiness will be positively associated with challenge appraisals

Hypothesis 12. Cognitive hardiness will be negatively associated with threat appraisals.

Hypothesis 13a. Cognitive hardiness will be positively associated with task-focused coping strategies.

Hypothesis 13b. Cognitive hardiness will be positively associated with social support.

Hypothesis 14. Cognitive hardiness will be negatively associated with avoidance.

Hypothesis 15. Cognitive hardiness will be positively associated with positive affect.

Hypothesis 16. Cognitive hardiness will be negatively associated with negative affect.

Hypothesis 17a. Task-focused coping strategies will mediate the relationship between challenge appraisals and positive affect.

Hypothesis 17b. Social support will mediate the relationship between challenge appraisals and positive affect.

Hypothesis 18. Avoidance will mediate the relationship between threat appraisals and negative affect.

Hypothesis 19a. Positive affect will mediate the task-focused coping and intention to turnover relationship.

Hypothesis 19b. Positive affect will mediate the social support and intention to turnover relationship.

Hypothesis 20. Negative affect will mediate the avoidance and intention to turnover relationship.

Hypothesis 21a. The relationship between challenge appraisals and task-focused coping will be mediated by cognitive hardiness.

Hypothesis 21b. The relationship between challenge appraisals and social support will be mediated by cognitive hardiness.

Hypothesis 22 The relationship between threat appraisals and avoidance will be mediated by cognitive hardiness.

Hypothesis 23a. The relationship between task-focused coping and positive affect will be mediated by cognitive hardiness.

Hypothesis 23b. The relationship between social support and positive affect will be mediated by cognitive hardiness.

Hypothesis 24. The relationship between avoidance and negative affect will be mediated by cognitive hardiness.

Hypothesis 25a. The relationship between challenge appraisals and task-focused coping will be moderated by cognitive hardiness.

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Hypothesis 27b. The relationship between social support and positive affect will be moderated by cognitive hardiness.

Hypothesis 28. The relationship between avoidance and negative affect will be moderated by cognitive hardiness.

## **Chapter 9**

### **Method**

#### ***Questionnaire***

A cross-sectional survey procedure was used to collect data. The questionnaire comprised six self-report sections covering demands, primary and secondary appraisal, cognitive hardiness and outcomes (affect, intention to turnover, and health), (See Appendix B for the full text of the Information Sheet and the Questionnaire). Before answering the questions on appraisal and coping, participants were asked to think about the most stressful situation that they had experienced at work or as a result of work in the last few weeks, briefly describe the situation, and then respond to the primary and secondary (coping) appraisal questions with that situation in mind.

#### ***Data Analysis***

All questionnaire data was entered into the Statistical Package for the Social Sciences (SPSS), version 12.0, which was then used to analyse the data. The data was examined for violations of normality. A Principle Components Analysis was carried out on the Cognitive Hardiness questionnaire as the factor structure of the cognitive hardiness scale is debated (Sinclair & Tetrick, 2000). All other questionnaire items came from scales with established factor structures.

Mediation and moderation were tested using the procedures proposed by Baron and Kenny (1986) and outlined below. According to Baron and Kenny (1986) in order to test for mediation three regression equations need to be calculated:

1. Regression of the mediator on the independent variable.
2. Regression of the dependent variable on the independent variable.
3. Regression of the dependent variable on both the mediator and independent variables.

The three-step regression process can be used to establish the links for a mediation model (see Figure 3). In order for mediation to occur Baron and Kenny (1986) state that four criteria must be met: (1) the independent variable must affect the mediator at step one, (2) at step two the independent variable must affect the dependent variable, (3) in the third regression equation the previously significant relation between the independent and the dependent variables (i.e. step 2) must be reduced (i.e. partial mediation) or non-significant (full mediation) while, (4) the mediator variable remains significant (Baron & Kenny, 1986).

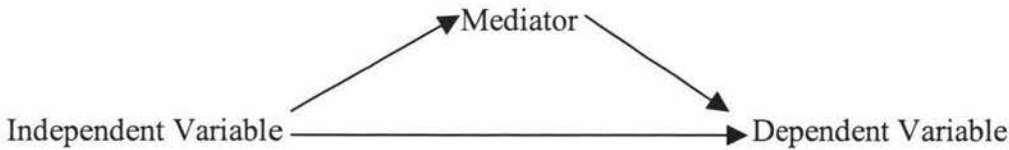


Figure 3. *Mediation Model (Baron and Kenny, 1986)*

A moderating variable (see Figure 4 overleaf) is a third variable that affects the direction or the strength of a relationship between an independent and a dependent variable (Baron & Kenny, 1986). As opposed to a mediating variable, which demonstrates why an effect occurs, a moderator identifies when certain effects occur (Baron & Kenny, 1986).

Baron & Kenny's (1986) guidelines were used to test moderation with the procedure being based on that used by Clarke and Singh (2005). The independent and proposed moderator variables were centered before testing for interaction effects by subtracting the sample means from all individuals' scores. This procedure reduces the effects of multicollinearity (Clarke & Singh, 2005, p. 264). Hierarchical regression analysis was then used to establish linear and moderator effects. The procedure involved two steps. Step one tested for linear effects and consisted of entering "variable A", "variable B" and the dependent variable. At step two the interaction (variable A  $\times$  variable B) was included to test for any moderating effects.

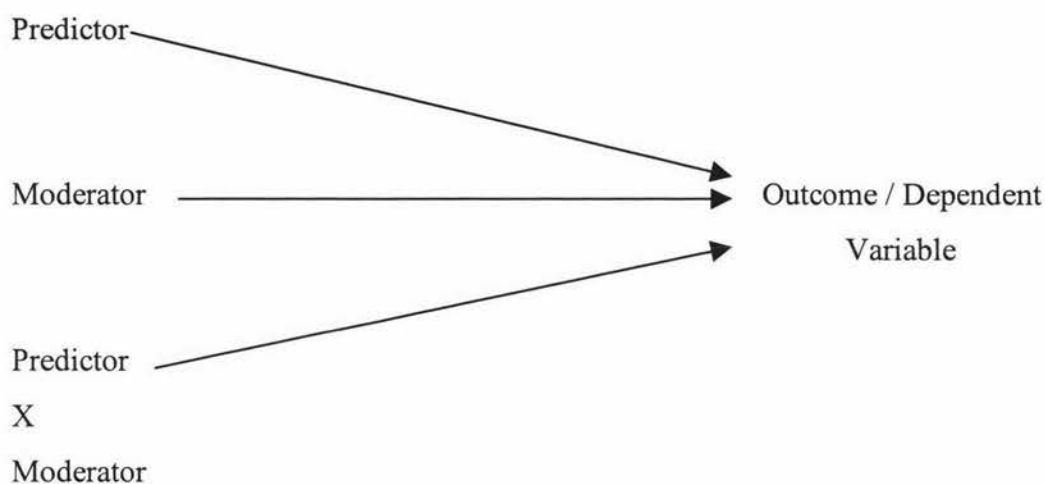


Figure 4. *Moderator Model (Baron and Kenny, 1986)*

### ***Procedure***

Permission to conduct the study was sought and granted from the Massey University Human Ethics Committee (approval number MUAHEC 04/085). Permission to access participants was also granted from the Army Chief of General Staff Human Resources (ACGS HR) in accordance with the regulations laid out in the Defence Force Order 21/2002 Authority to Conduct Personnel Research (Chief of Defence Force, 2002).

From a potential pool of 4372 Regular Force (full-time) personnel 2538 were in the rank levels of interest (see Appendix C) (Headquarters New Zealand Defence Force, 2004). The study was restricted to full time Regular Force (RF) personnel, the majority being located in military camps in Waiouru, Linton, Trentham, and Burnham. The rank groups of interest included Junior Non Commissioned Officers who will be referred to as junior soldiers ( $n = 174$ ), Senior Non Commissioned Officers and Warrant Officers who will be referred to as senior soldiers ( $n = 108$ ), Lieutenants and Captains who will be referred to as junior officers ( $n = 89$ ), and those with rank of Major or above who will be referred to as senior officers ( $n = 59$ ). These ranks were included to represent respondents with a range of seniority and experience in the organisation.

New Zealand Army database figures confirmed the following numbers of personnel in the above listed rank groups posted to Linton Military Camp as at November 11, 2004: junior soldiers = 396; senior soldiers = 217; junior officers = 81, senior officers = 26 (Total Linton based personnel eligible for study = 724). All available personnel in the above rank groups were requested to the Linton Camp Conference Centre. The Linton personnel who attended the conference centre received an information sheet inviting them to participate in the research and a copy of the questionnaire (Appendix B). In total 271 questionnaires were returned from 276. A further 261 questionnaires and information sheets were then distributed by mail to the senior soldier and officer groups based in other locations in New Zealand. These rank groups were selected as the junior soldiers were well represented in the first sample ( $N = 174$ ). From the mail distribution an additional 168 from 261 questionnaires were returned, giving a response rate of 65%.

### ***Participants***

In total 439 questionnaires were returned from a total of 537 giving an overall response rate of 82%. Two hundred and seventy one participants were based at Linton Military Camp in Palmerston North, New Zealand. The remainder ( $N = 168$ ) came from other military locations throughout New Zealand. This response rate is well above average for a questionnaire (Lachapelle & Hadjistavropoulos, 2005).

### ***Measures***

#### **Threat and challenge appraisals**

The Cognitive Appraisal Scale (CAS) was used to measure threat and challenge appraisals (Skinner & Brewer, 2002). The measure consists of four threat appraisal items (e.g. "I was thinking about the negative consequences of performing badly"), and four challenge appraisal items (e.g. "I was looking forward to testing my knowledge, skills, and abilities"). Responses ranged from 1 (Not at all) to 5 (Very much). Separate scales were constructed by calculating the mean score for each of the four threat and four challenge items. The



reliability co-efficient for the Threat scale was  $\alpha = .71$ , and for the Challenge scale was  $\alpha = .76$ .

## **Coping**

The Brief COPE (Carver, 1997) is a shortened version of the Full COPE (Carver et al., 1989) and was used to measure coping style. The Brief COPE consists of 28 items that measure 14 distinct coping scales (2 items per scale). There has been some criticism of the Brief Cope for containing just 2 items per scale and so a third item for each scale was included for a total of 42 items. Extra items were drawn from the Full COPE (Carver et al., 1989).

Responses ranged from 1 (Not at all) to 5 (Very much). Based on the theoretical and empirical work by Carver and colleagues (Carver, 1997; Carver et al., 1989), task-focused coping was defined as the use of Active Coping, Planning, and Positive Reframing. Social support was defined as the use of Emotional Support and Instrumental Support, which is consistent with both the full and Brief COPE versions (Carver, 1997). Avoidance was defined as the use of Self Distraction, Denial, Substance Use, and Behavioural Disengagement. Mean scores were used to construct each scale. Task-focused coping was comprised of 9 items with a reliability co-efficient of  $\alpha = .69$ . Social support was comprised of 6 items with a reliability co-efficient of  $\alpha = .74$ , Avoidance was comprised of 12 items with a reliability co-efficient  $\alpha = .67$ .

## **Positive and Negative Affect**

The Job-Related Affective Well-Being Scale, JAWS (Van Katwyk et al., 2000) is a 30 item scale that assesses context-specific emotional reactions that people have to their job. The JAWS measures 15 positive (e.g. "my job made me feel cheerful") and 15 negative emotions (e.g. "my job made me feel discouraged").

A five-point scale was used to assess how often participants had experienced each emotion at work over a 30 day period. Responses ranged from 0 (Never) to 4 (Very often). Mean scores were calculated for each of the 15 positive and 15 negative affect items. The reliability co-efficients for the present study were  $\alpha = .91$  (negative affect) and  $\alpha = .94$  (positive affect).

## **Intention to Turnover**

Participants were asked how long they intended to remain in the organisation (intention to turnover). Options ranged from 1 (leave “within six months”) to 6 (leave “between 10-15 years”). Items were reverse coded so that high scores indicated short-term intentions to turnover.

## **Health**

Health outcomes were measured using a 10 item questionnaire (Lobb, McNeill, Bentley, Swann, & Muller, 2005) consisting of 5 questions asking how many days the participant had off work in the last twelve months due to common health problems (e.g. “In the last twelve months I have had \_\_\_\_\_ days off because I had a cold/flu”) and 5 questions asking how many days the person had experienced the common health problems without taking time off work (e.g. “in the last twelve months I have been sick but not taken time off work because of cold/flu \_\_\_\_\_ times). The first five questions were added together to form a *Days Off* (days off work due to illness) scale and the second block of five questions were added to form a *Times Sick* scale (times sick where no days were taken off work)

## **Cognitive Hardiness**

Cognitive hardiness was measured using Nowack’s (1990), 30 item Cognitive Hardiness Scale (CHS). Responses ranged from 1 (Strongly agree) to 5 (Strongly disagree). Some items (e.g. “when all else appears bleak, I can always turn to my family and friends for support”) were reverse coded so that an endorsement of “strongly agree” would change from a “1” to a “5”. Thus high scores were indicative of high hardiness. The 30 items were summed so that a mean cognitive hardiness score (ranging from 1-5) was calculated for each participant. A principal component analysis revealed a single factor solution. The reliability co-efficient for the present study was  $\alpha = .75$

Additional questions were included (Appendix B) but are not presented as part of this thesis.

## Chapter 10

### Results

#### Demographics

Table 1 summarises the demographic information of participants.

##### Gender

Of the 439 participants 80.4% were male and 17.5% were female (2.1% missing). Gender distribution in the sample did not differ significantly from the NZ Army gender distribution  $\chi^2 = 0.79$ ,  $df = 1$ ,  $p > .05$ .

##### Rank

In terms of rank distribution the sample did not differ significantly from the NZ Army as a whole  $\chi^2 = 0.92$ ,  $df = 3$ ,  $p > .05$ .

##### Age

Of the 439 participants 15.9% of the sample were under 25, 46.0% were 25-34, 31.2% were 34-44 and 4.8% were over 45. In comparison to the NZ Army as a whole, the youngest age group was under-represented  $\chi^2 = 14.61$ ,  $df = 3$ ,  $p < .05$ .

##### Length of service

The mean length of service in the sample was 12 years. Compared to the NZ Army as a whole, the sample under-represented those with 0-4 years of service  $\chi^2 = 28.61$ ,  $df = 5$ ,  $p < 0.001$ .

##### Ethnicity

Ethnicity groupings of the participants were based on the NZDF ethnicity categories and were consistent with the NZ Army ethnicity distribution. The majority of participants identified as New Zealanders (60.0%), New Zealanders of European descent (23.8%), New Zealanders of Maori descent (25.9%), Pacific Islander (4.4%), or Asian (1.2%). Because multiple response categories were possible, chi square testing to compare the sample to the NZ Army as a whole was not conducted.

Table 1

*Demographic Information of Respondents (N = 439)*

	<b>Present Sample</b>	<b>NZ Army Distribution</b>
	Respondents (percentage)	Respondents (percentage)
<b><u>Gender</u></b>		
Male	353 (80.4%)	3791 (86.7%)
Female	77 (17.5%)	581 (13.3%)
Missing data	9 (2.1%)	0 (0%)
<i>Total</i>	<b>439 (100%)</b>	<b>4372 (100%)</b>
<b><u>Rank</u></b>		
Junior soldiers	174 (39.6%)	1018 (41.8%)
Senior soldiers	108 (24.6%)	705 (28.9%)
Junior officers	89 (20.3%)	388 (15.9%)
Senior officers	59 (13.4%)	327 (13.4%)
Missing data	9 (2.1%)	0 (0%)
<i>Total</i>	<b>439 (100%)</b>	<b>2438 (100%)</b>
<b><u>Age</u></b>		
Under 25 years	70 (15.9%)	1765 (40.4%)
25-34 years	202 (46%)	1421 (32.5%)
34-44 years	137 (31.2%)	956 (21.8%)
Over 45	21 (4.8%)	230 (5.3%)
Missing data	9 (2.1%)	0 (0%)
<i>Total</i>	<b>439 (100%)</b>	<b>4372 (100%)</b>
<b><u>Length of Service</u></b>		
0-4 years	53 (12.1%)	2082 (47.6%)
5-8 years	115 (26.2%)	742 (17%)
9-12 years	77 (17.5%)	397 (9.1%)
13-15 years	39 (8.9%)	246 (5.6%)
16-20 years	91 (20.7%)	590 (13.5%)
Above 20 years	47 (10.7%)	315 (7.2%)
Missing data	17 (3.9%)	0 (0%)
<i>Total</i>	<b>439 (100%)</b>	<b>4372 (100%)</b>
<b><u>Ethnicity<sup>1</sup></u></b>		
	<i>Multiple Response</i>	
New Zealander	257 (60%)	
New Zealand European	102 (23.8%)	2433 (55.7%)
New Zealand Maori	111 (25.9%)	1103 (25.2%)
Pacific Islander	19 (4.4%)	163 (3.7%)
Asian	5 (1.2%)	30 (0.7%)
Other	5 (1.2%)	305 (7%)
Missing data		338 (7.7%)
<i>Total Personnel Response</i>	<b>429</b>	<b>4372</b>

<sup>1</sup>Participants could endorse multiple categories

## Group Differences

Because of the hierarchical structure of the military, different rank brackets vary in the amount of responsibility and control they have in their roles. In order to establish whether there were any significant differences in appraisal, coping, cognitive hardiness or affect between rank groups a Oneway Analysis of Variance (ANOVA) was conducted with planned comparisons to identify the sources of any group differences.

Table 2 shows the mean scores for primary appraisal, coping, cognitive hardiness and affect variables. Statistically significant differences (refer to Table 2) were found among the different rank groups for task-focused coping,  $F_{3,377} = 6.06$ ,  $p < 0.001$ , social support  $F_{3,377} = 3.39$ ,  $p < 0.05$ , avoidance,  $F_{3,377} = 17.19$ ,  $p < 0.001$ , cognitive hardiness,  $F_{3,385} = 13.33$ ,  $p < 0.001$ , positive affect,  $F_{3,416} = 6.11$ ,  $p < 0.001$ , and negative affect,  $F_{3,418} = 13.81$ ,  $p < 0.001$ .

### Soldiers

The ANOVA (Table 2) showed that there were no significant differences between rank groups for threat and challenge appraisals.

Planned comparisons found that when compared to senior soldiers, junior soldiers used less task-focused coping ( $\psi = -.19$ ,  $se .09$ ,  $t_{243} = -2.05$ ,  $p = .04$ , 95% CI  $-.37 < \psi < -.01$ ), and more avoidance ( $\psi = .46$ ,  $se .08$ ,  $t_{224} = 5.55$ ,  $p = .007$ , 95% CI  $.30 < \psi < .62$ ). There were no significant differences in the use of social support ( $\psi = -.09$ ,  $se .13$ ,  $t_{244} = -.67$ ,  $p = .51$ , 95% CI  $-.34 < \psi < .17$ ).

Junior soldiers reported higher cognitive hardiness than senior soldiers ( $\psi = .28$ ,  $se .05$ ,  $t_{242} = 5.60$ ,  $p = .0001$ , 95% CI  $.18 < \psi < .38$ ).

Junior soldiers reported less positive affect ( $\psi = -.28$ ,  $se .08$ ,  $t_{200} = -3.32$ ,  $p = .001$ , 95% CI  $-.43 < \psi < -.11$ ), and more negative affect than senior soldiers ( $\psi = .29$ ,  $se .09$ ,  $t_{188} = 3.39$ ,  $p = .001$ , 95% CI  $.12 < \psi < .46$ ).

Table 2

*ANOVA. Differences Between Rank Groupings*

	<u>Junior Soldiers</u>	<u>Senior Soldiers</u>	<u>Junior Officers</u>	<u>Senior Officers</u>	<i>F</i>	<i>df</i>
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
Challenge	3.17 (.97)	2.97 (.94)	3.07 (.94)	2.95 (1.03)	1.12	3,381
Threat	2.95 (.98)	2.95 (1.02)	3.09 (.95)	2.73 (.90)	1.52	3,381
Task Coping	3.21 (.73)	3.40 (.67)	3.47 (.52)	3.62 (.70)	6.06***	3,377
Social support	2.61 (.97)	2.70 (1.03)	2.78 (.83)	3.08 (.89)	3.39*	3,377
Avoidance	2.01 (.71)	1.55 (.58)	1.62 (.83)	1.49 (.58)	17.19***	3,377
Cognitive Hardiness	3.19 (.45)	2.91 (.34)	2.98 (.25)	3.08 (.29)	13.33***	3,385
Positive Affect	2.91 (.61)	3.18 (.68)	3.12 (.64)	3.25 (.72)	6.11***	3,416
Negative Affect	2.78 (.61)	2.49 (.73)	2.37 (.52)	2.28 (.66)	13.81***	3,418

\* $p < .05$ , \*\*  $p < .01$ , \*\*\* $p < .001$ .

## Officers

The ANOVA (Table 2) found no significant differences between rank groups for threat or challenge appraisals. Planned comparisons for this group did not show any significant differences for task-focused coping ( $\psi = -.15$ ,  $se .10$ ,  $t_{134} = -.148$ ,  $p = .142$ , 95% CI  $-.36 < \psi < .05$ ), avoidance ( $\psi = .13$ ,  $se .09$ ,  $t_{134} = 1.47$ ,  $p = .145$ , 95% CI  $-.05 < \psi < .30$ ) positive affect ( $\psi = -.13$ ,  $se .11$ ,  $t_{145} = -1.21$ ,  $p = .229$ , 95% CI  $-.36 < \psi < .09$ ) or negative affect ( $\psi = .09$ ,  $se .10$ ,  $t_{146} = .87$ ,  $p = .08$ , 95% CI  $-.11 < \psi < .28$ ).

Significant differences were found between junior and senior officers for social support coping (see Table 2). Compared to senior officers, junior officers used less social support ( $\psi = -.30$ ,  $se .15$ ,  $t_{133} = -2.0$ ,  $p = .047$ , 95% CI  $-.60 < \psi < -.01$ ).

Junior officers reported less cognitive hardiness than senior officers ( $\psi = .10$ ,  $se .05$ ,  $t_{137} = -2.19$ ,  $p = .03$ , 95% CI  $.19 < \psi < .01$ ).

## **Means, Standard Deviations, and Correlations**

Table 3 presents the means, standard deviations, and correlation coefficients between the primary appraisal, coping, cognitive hardiness, and outcome variables. Before examining the hypothesised relationships some general findings will be considered.

Challenge appraisals were negatively associated with negative affect. Threat and challenge appraisals were not correlated with each other. Positive affect and negative affect were negatively associated.

With regards to coping, task-focused coping was positively associated with social support and negatively associated with avoidance. Avoidance was negatively correlated with challenge appraisals and positive affect. Of interest is that of the three forms of coping only avoidance was associated (negatively) with cognitive hardiness.

Health outcomes in terms of illness frequency where no days were taken off work (*times sick*) were positively correlated with threat appraisals and negatively with challenge appraisals and cognitive hardiness.

### ***Hypothesis Testing***

Threat appraisals were positively associated with negative affect and challenge appraisals were positively associated with positive affect and so hypotheses 1 and 2 were supported.

Hypotheses 3a and 3b were supported. Challenge appraisals were positively associated with task-focused coping and social support. Hypothesis 4 was also supported, as threat appraisals were positively associated with avoidance.



**Table 3*****Means, Standard Deviations, and Correlations***

	1	2	3	4	5	6	7	8	9	10	11	Mean	S.D.
1 Challenge	1.00											3.07	.96
2 Threat	.06	1.00										2.95	.97
3 Task-Focused Coping	.46***	-.02	1.00									3.37	.68
4 Social Support	.18***	.06	.43**	1.00								2.73	.95
5 Avoidance	-.13**	.13*	-.18**	.06	1.00							1.74	.65
6 Cognitive Hardiness	.19***	-.18**	.08	-.06	-.18**	1.00						3.05	.38
7 Positive Affect	.30***	-.04	.36**	.14**	-.32**	.23**	1.00					3.06	.67
8 Negative Affect	-.19**	.12**	-.29**	-.07	.53***	-.32**	-.58**	1.00				2.55	.66
9 Days Off	-.01	.02	-.10	-.03	.14**	.08	-.03	.10*	1.00			3.85	9.25
10 Times Sick	-.13*	.18**	.01	.03	.07	-.13*	-.16**	.16**	.15**	1.00		6.88	14.64
11 Intention to Turnover (ITO)	-.07	-.01	-.11*	-.06	.13*	.01	-.26**	.19**	-.01	-.04	1.00	2.76	2.24

\* p&lt;.05, \*\*p&lt;.01, \*\*\* p&lt;.001.

Hypotheses 5a and 5b were supported, as task-focused coping and social support were positively associated with positive affect. Hypothesis 6 that avoidance would be positively associated with negative affect was also supported.

Intention to turnover was associated positively with negative affect, and negatively with positive affect and thus hypotheses 7 and 8 were supported.

As hypothesised, illness frequency *times sick* where no days were taken off work was negatively related to positive affect and positively related to negative affect and so support was found for hypotheses 9a and 9b.

Hypothesis 10a that positive affect would be negatively related to days taken off work due to illness *days off* was not supported. However, hypothesis 10b that negative affect would be positively related to days taken off work due to illness *days off* was supported.

Hypotheses 11 and 12 were supported. The results found a positive association between cognitive hardiness and challenge appraisals and a negative association between cognitive hardiness and threat appraisals. Unexpectedly, hypotheses 13a and 13b that cognitive hardiness would be positively associated with task-focused coping and social support were not supported. However cognitive hardiness was negatively associated with avoidance and therefore hypothesis 14 was supported. Cognitive hardiness was positively associated with positive affect and negatively associated with negative affect and so hypotheses 15 and 16 were supported.

Figure 5 (overleaf) presents the significant bivariate associations between variables.

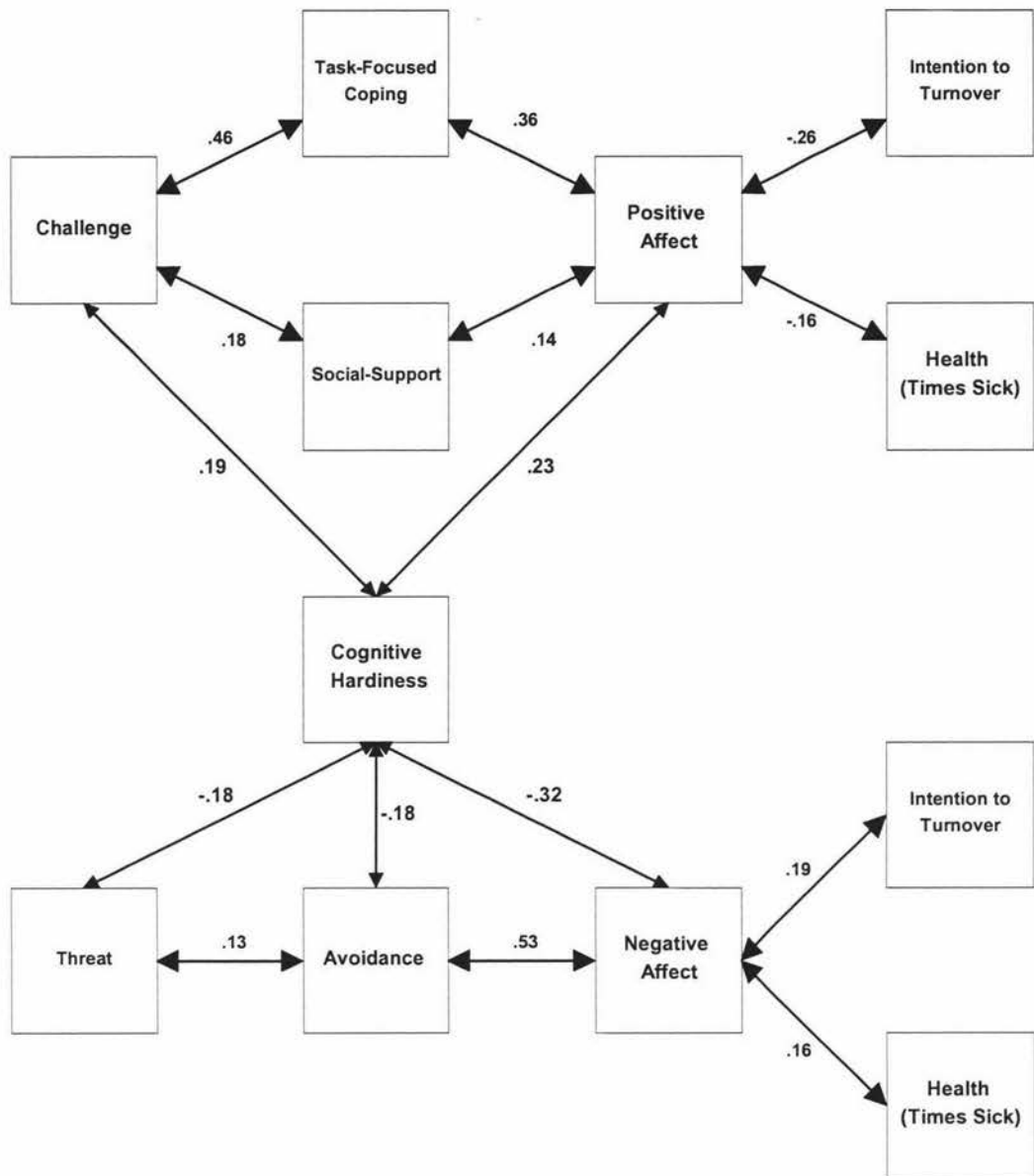


Figure 5. *Bivariate Associations*

# Mediation Analyses

## *Coping as a mediator between primary appraisal and affect*

The next stage in examining the stress model was to investigate whether coping acted as a mediator between primary appraisal and affect (see table 4a for a summary of these hypotheses and 4b for full results).

Table 4a

*Summary of Hypotheses for Coping as a Mediator between Primary Appraisal and Affect.*

	<i>Independent Variable</i>	<i>Mediator</i>	<i>Dependent Variable</i>
Hypothesis 17a	Challenge Appraisal	Task-Focused Coping	Positive Affect
Hypothesis 17b	Challenge Appraisal	Social Support	Positive Affect
Hypothesis 18	Threat Appraisal	Avoidance	Negative Affect

Hypotheses 17a stated that task-focused coping would mediate the relationship between challenge appraisal and positive affect. Assumptions for mediation were met with challenge appraisals accounting for a significant amount of variance in the proposed mediator (task-focused coping,  $\beta = .46$ ) and the dependent variable (positive affect,  $\beta = .30$ ) (see Table 4b). When both challenge and task-focused coping were entered into the regression equation both remained significant. However, the relationship between the independent (challenge) and the dependent (positive affect) variables was reduced. This indicates that task-focused coping partially mediated the appraisal-affect relationship and so hypothesis 17a was supported (see Table 4b).

Table 4b

*Results of Coping as a Mediator between Primary Appraisal and Affect*

Dependent Variable <sup>1</sup>	Independent variable <sup>1</sup>	beta	Sobel test	df
<b><i>Hypothesis 17a</i></b>				
1. <i>Task-focused coping</i>	Challenge	.46***		1,374
2. Positive Affect	Challenge	.30***		1,382
3. Positive Affect	Challenge	.18**		
	<i>Task-focused coping</i>	.28***	4.56***	2,373
<b><i>Hypothesis 17b</i></b>				
1. <i>Social support</i>	Challenge	.18***		1,373
2. Positive Affect	Challenge	.30**		1,382
3. Positive Affect	Challenge	.29***		
	<i>Social support</i>	.09	1.65	2,372
<b><i>Hypothesis 18</i></b>				
1. <i>Avoidance</i>	Threat	.13*		1,372
2. Negative Affect	Threat	.12**		1,383
3. Negative Affect	Threat	.05		
	<i>Avoidance</i>	.53***	2.45**	2,371

\* p&lt;.05, \*\* p&lt;.01, \*\*\* p&lt;.001

<sup>1</sup> The proposed mediator is italicised

Hypothesis 17b proposed that social support would mediate the relationship between challenge appraisal and positive affect. At steps one and two (see Table 4b) respectively the independent variable (challenge appraisal) was associated with the mediator (social support) and the dependent variable (positive affect). At step three when the independent (challenge) and mediator (social support) were entered into the regression equation, the proposed mediator did not significantly affect the dependent variable (positive affect) and therefore mediation could not be established and no support for hypothesis 17b was found (see Table 4b).

Hypothesis 18, that the relationship between threat appraisal and negative affect would be mediated by avoidance was supported. Regression of the mediator (avoidance) on the independent variable (threat) was significant as was the relationship between the independent variable (threat appraisal) and the dependent variable (negative affect). However, when negative affect was regressed against both threat appraisal and avoidance the previously significant relationship between threat appraisal and negative affect was no longer significant. Avoidance fully mediated the threat appraisal-negative affect relationship.

In summary, task-focused coping was found to partially mediate the challenge appraisal-positive affect relationship while avoidance was found to fully mediate the threat appraisal-negative affect relationship.

***Affect as a mediator between coping and outcomes***

The next step was to examine the role of affect as a mediator between coping and intentions to turnover (see table 5a).

Table 5a

*Summary of Hypotheses for Affect as a Mediator between Coping and Intention to Turnover*

	<i>Independent Variable</i>	<i>Mediator</i>	<i>Dependent Variable</i>
Hypothesis 19a	Task- Focused Coping	Positive Affect	ITO
Hypothesis 19b	Social Support	Positive Affect	ITO
Hypothesis 20	Avoidance	Negative Affect	ITO

Mediated results for hypothesis 19a to 20 are shown in table 5b. For hypothesis 19a the independent variable (task-focused coping) was significantly associated with the mediator (positive affect) and the dependent variable (intention to turnover). When the dependent variable (intention to turnover) was regressed against both task-focused coping and positive affect the relationship between the independent and dependent variables was no longer significant ( $\beta = -.03$ ) and thus hypothesis 19a was supported (see Table 5b).

The same analysis was conducted for hypothesis 19b. However, social support was not significantly associated with the dependent variable (intention to turnover) at step two. Therefore the conditions proposed by Baron & Kenny (1986) were not met and support for hypothesis 19b was not found.

The avoidance-outcome relationship was mediated by negative affect with the relationship between the independent variable (avoidance) and the dependent variable (intention to turnover) reduced  $\beta = -.01$  and not significant. Thus hypothesis 20 was supported as negative affect mediated the avoidance coping intention to turnover relationship.

In summary, positive affect was found to fully mediate the relationship between task-focused coping and intention to turnover but not social support and intention to turnover. Negative affect also mediated the relationship between avoidance and intention to turnover.

Table 5b

*Results of Affect as a Mediator between Coping and Intention to Turnover*

Dependent Variable <sup>1</sup>	Independent variable <sup>1</sup>	beta	Sobel test	df
<b><i>Hypothesis 19a</i></b>				
1. <i>Positive affect</i>	Task-focused coping	.36**		1,374
2. Intention to turnover	Task-focused coping	-.11*		1,381
3. Intention to turnover	Task-focused coping	-.03		
	<i>Positive affect</i>	-.24***	-2.04*	2,373
<b><i>Hypothesis 19b</i></b>				
1. <i>Positive affect</i>	Social support	.14**		1,374
2. Intention to turnover	Social support	-.06		1,381
3. Intention to turnover	Social support	-.03		
	<i>Positive affect</i>	-.25***	-1.12	2,373
<b><i>Hypothesis 20</i></b>				
1. <i>Negative affect</i>	Avoidance	.53***		1,375
2. Intention to turnover	Avoidance	.13*		1,380
3. Intention to turnover	Avoidance	-.01		
	<i>Negative affect</i>	.24***	2.40*	2,374

\* p&lt;.05, \*\* p&lt;.01, \*\*\* p&lt;.001

<sup>1</sup> The proposed mediator is italicised



***Cognitive hardiness as a mediator between primary appraisal and coping***

Table 6a summarises the testing for the mediating role of cognitive hardiness between primary appraisal and coping while Table 6b presents the results of the mediation analysis.

Table 6a

*Summary of Hypotheses for Cognitive Hardiness as a Mediator between Primary Appraisal and Coping*

	<i>Independent Variable</i>	<i>Mediator</i>	<i>Dependent Variable</i>
Hypothesis 21a	Challenge Appraisal	Cognitive Hardiness	Task-focused Coping
Hypothesis 21b	Challenge Appraisal	Cognitive Hardiness	Social Support
Hypothesis 22	Threat Appraisal	Cognitive Hardiness	Avoidance

Hypotheses 21a and 21b, that cognitive hardiness would mediate the relationship between challenge appraisal and task-focused coping and social support respectively were not supported. At step one the independent variable (challenge appraisal) had significant associations with the proposed mediator, cognitive hardiness ( $\beta = .19$ ). Challenge appraisals were also significantly associated with task-focused coping ( $\beta = .46$ ) and social support ( $\beta = .18$ ) at step 2. However when the independent variable and the mediator were regressed together in the third step cognitive hardiness did not significantly affect the dependent variables (task-focused coping or social support) and therefore no mediating role could be established.

Hypothesis 22, that cognitive hardiness would mediate the relationship between threat appraisal and avoidance was supported (see Table 6b). At steps one and two threat appraisal was significantly associated with the mediator (cognitive hardiness,  $\beta = -.18$ ) and the dependent variable (avoidance,  $\beta = .13$ ). When the independent and the mediator were entered into the regression together the effect of the independent variable was no longer significant ( $\beta = .10$ ). In summary, cognitive hardiness was found to mediate the relationship between threat appraisal and avoidance coping but was not a mediator of challenge appraisal and task-focused coping, or social support.

Table 6b

*Results for Cognitive Hardiness as a Mediator between Primary Appraisal and Coping*

Dependent variable <sup>1</sup>	Independent variable <sup>1</sup>	beta	Sobel test	df
<b><i>Hypothesis 21a</i></b>				
1. <i>Cognitive hardiness</i>	Challenge appraisal	.19***		1,356
2. Task-focused coping	Challenge appraisal	.46***		1,374
3. Task-focused coping	Challenge appraisal	.46***		
	<i>Cognitive hardiness</i>	-.002	0.05	2,347
<b><i>Hypothesis 21b</i></b>				
1. <i>Cognitive hardiness</i>	Challenge appraisal	.19***		1,356
2. Social support	Challenge appraisal	.18***		1,373
3. Social support	Challenge appraisal	.20***		
	<i>Cognitive hardiness</i>	-.09	1.58	2,347
<b><i>Hypothesis 22</i></b>				
1. <i>Cognitive hardiness</i>	Threat appraisal	-.18**		1,356
2. Avoidance	Threat appraisal	.13*		1,372
3. Avoidance	Threat appraisal	.10		
	<i>Cognitive hardiness</i>	-.16*	2.25*	2,347

\* p&lt;.05, \*\* p&lt;.01, \*\*\* p&lt;.001

<sup>1</sup> The proposed mediator is italicised

***Cognitive hardiness as a mediator between coping and affect***

For the following hypotheses coping was the independent variable and affect was the dependent variable with cognitive hardiness, as above, being the mediator. Table 6c summarises the analysis while the results are presented in Table 6d.

Table 6c

*Summary of Hypotheses for Cognitive Hardiness as a Mediator between Coping and Affect*

	<i>Independent Variable</i>	<i>Mediator</i>	<i>Dependent Variable</i>
Hypothesis 23a	Task-Focused Coping	Cognitive Hardiness	Positive Affect
Hypothesis 23b	Social Support	Cognitive Hardiness	Positive Affect
Hypothesis 24	Avoidance	Cognitive Hardiness	Negative Affect

Hypotheses 23a and 23b were not supported. At step one the independent variables (task-focused coping and social support respectively) were not significantly associated with the mediator, cognitive hardiness ( $\beta = .08$ ,  $\beta = -.06$ ). Therefore, cognitive hardiness could not play a mediation role as it failed to meet the first of the conditions proposed by Baron and Kenny (1986).

Hypothesis 24 stated that the relationship between avoidance and negative affect would be mediated by cognitive hardiness. At step one, avoidance was negatively associated with cognitive hardiness ( $\beta = -.18$ ), and at step two, avoidance was significantly associated with negative affect ( $\beta = .53$ ). At step three, when both the independent variable and the mediator were entered into the regression together, the effects of both remained significant. However, the independent variable was reduced ( $\beta = .49$ ) and so partial mediation was found and hypothesis 24 was supported.

In summary, cognitive hardiness did not mediate the relationship between task-focused coping and positive affect or social support and positive affect, but partially mediated the relationship between avoidance and negative affect.

Table 6d

*Results for Cognitive Hardiness as a Mediator between Coping and Affect*

Dependent variable <sup>1</sup>	Independent variable <sup>1</sup>	beta	Sobel test	df
<b><i>Hypothesis 23a<sup>2</sup></i></b>				
1. Cognitive hardiness	Task-Focused Coping	.08 ns <sup>2</sup>		
2. Positive affect	Task-Focused Coping			
3. Positive affect	Task-Focused Coping <i>Cognitive hardiness</i>			
<b><i>Hypothesis 23b<sup>2</sup></i></b>				
1. Cognitive hardiness	Social Support	-.06 ns <sup>2</sup>		
2. Positive affect	Social Support			
3. Positive affect	Social Support <i>Cognitive hardiness</i>			
<b><i>Hypothesis 24</i></b>				
1. Cognitive hardiness	Avoidance	-.18**		1,348
2. Negative affect	Avoidance	.53***		1,375
3. Negative affect	Avoidance	.49***		
	<i>Cognitive hardiness</i>	- .23***	2.80**	2,347

\* p<.05, \*\* p<.01, \*\*\* p<.001

<sup>1</sup> The proposed mediator is italicised

<sup>2</sup> Hypotheses 23a & 23 b were not supported at step one and therefore subsequent testing was not conducted

## **Cognitive Hardiness as a Moderator**

The role of cognitive hardiness as a moderator between appraisal and coping in addition to coping and affect was examined. The results of the hierarchical regression analysis showing the main and interaction effects are presented in Appendix D.

The first series of hypotheses examined the moderating role of cognitive hardiness in the relationship between primary appraisal and coping. Hypothesis 25a stated that the relationship between challenge appraisal and task-focused coping would be moderated by cognitive hardiness. Challenge appraisal was significantly associated with task-focused coping but cognitive hardiness was not nor was there a significant interaction between challenge appraisal and cognitive hardiness (see Appendix D, Table 1). Hypothesis 25a was not supported as cognitive hardiness did not moderate the relationship between challenge appraisal and task-focused coping.

Hypothesis 25b stated that the relationship between challenge appraisal and social support would be moderated by cognitive hardiness. Challenge appraisal accounted for significant variance in social support but cognitive hardiness did not (see Appendix D, Table 2). The interaction term did not explain significant amounts of variance in social support and so hypothesis 25b was not supported.

Hypothesis 26 examined the relationship between threat appraisal, cognitive hardiness and avoidance. Cognitive hardiness accounted for significant variance in avoidance but threat appraisal did not (see Appendix D, Table 3). The introduction of the interaction term did not account for significant variance in avoidance and so hypothesis 26 was not supported.

The next series of hypotheses examined the moderating role of cognitive hardiness in the relationship between coping and affective outcomes. Hypothesis 27a stated that the relationship between task-focused coping and positive affect would be moderated by cognitive hardiness (see Appendix D, Table 4). Both task-focused coping and cognitive hardiness accounted for significant variance in positive affect, however the introduction of the interaction term did not account for significant variance in positive affect. Thus, there was no moderating effect found for cognitive hardiness.

Appendix D (Table 5) shows that both social support and cognitive hardiness accounted for significant variance in positive affect but the introduction of the interaction term did not. Thus, hypothesis 27b was not supported as the relationship between social support and positive affect was not moderated by cognitive hardiness.

Lastly, the relationship between avoidance and negative affect was examined (Appendix D, Table 6). Avoidance and cognitive hardiness were significantly associated with negative affect. However the interaction term did not account for significant variance in negative affect and so cognitive hardiness was not found to moderate the relationship between avoidance and negative affect and no support for hypothesis 28 was found.

## **The Transactional Model**

The full model based on the present findings shows the mediated relationships between variables, and is presented in Figure 6.

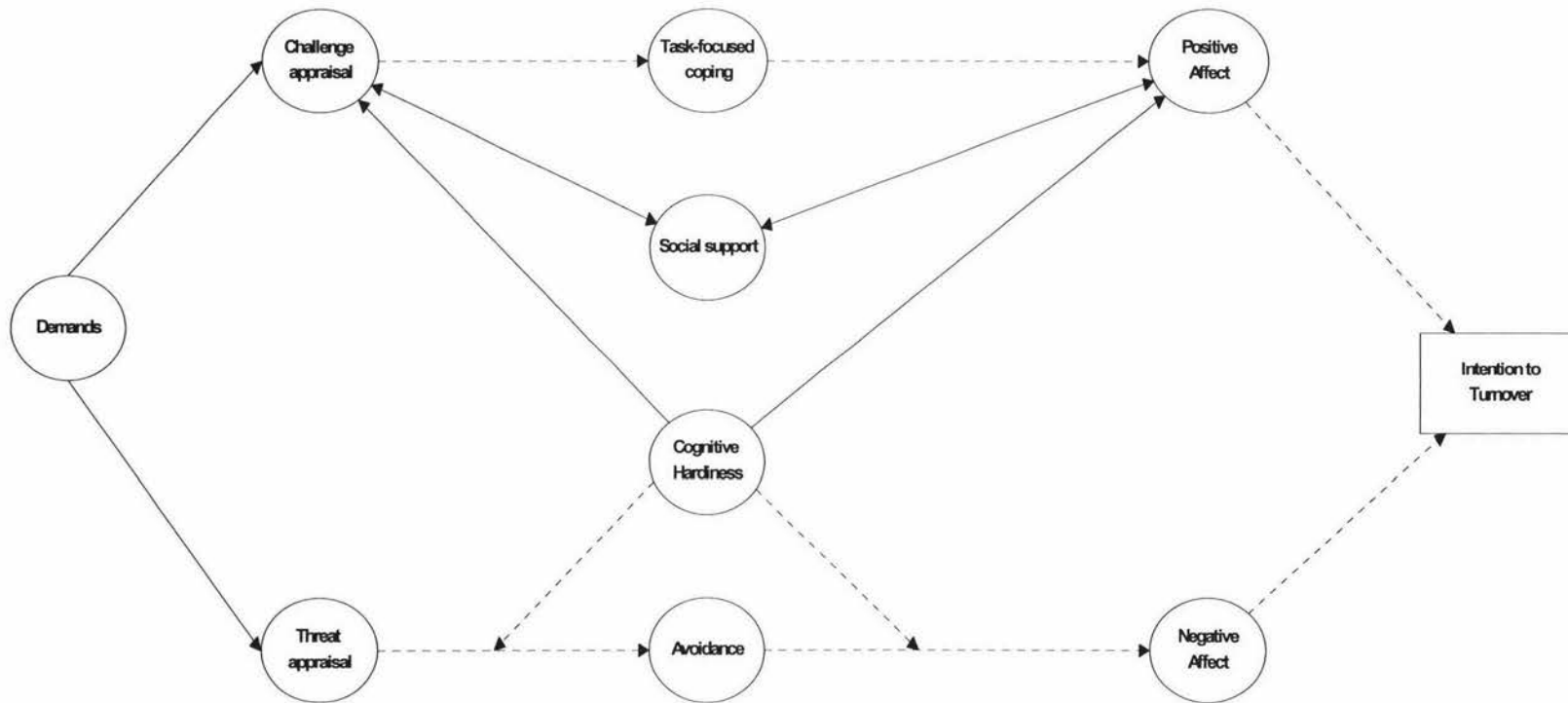


Figure 6. *A Transactional Model of Occupational Stress*

<sup>1</sup>Solid lines show direct relationships between variables and dotted lines demonstrate mediated pathways between variables.

## **Chapter 11**

### **Discussion**

Awareness of occupational stress has become prevalent in organisations and recent legislative changes in New Zealand have increased the focus of organisations to the management of stress in the workplace. Despite the growing acceptance of transactional models of stress, they have had relatively little empirical attention in the context of work-related stress (Cooper et al., 2001; Elliot, Chartrand, & Harkins, 1994). Typically, the fundamental processes of appraisal are neglected (Troup & Dewe, 2002). The current research undertook an investigation of the major components of the transactional model in an occupational setting. The research examined how primary and secondary appraisal processes affected individual and organisational outcomes. The research extended transactional models by investigating both mediating and moderating processes.

Before discussing the main hypotheses the implications of group differences will be considered.

### **Group Differences**

There were no significant differences between groups with regard to primary appraisals. This finding is unexpected as Lazarus (1999) proposed that primary appraisal is linked to confidence and varies considerably between individuals. Lazarus (1999) also proposed the tendency to appraise demands as threats or challenges is linked to trait differences. This suggests that further work is needed to establish the extent to which appraisal is relatively stable and perhaps affected by personality traits such as optimism and affectivity (Clarke & Singh, 2005; Lazarus, 1999). The results suggest that primary appraisal may be less affected by variables such as rank and experience than expected. However, further research is needed that considers the nature of the stressors that different groups face and how these influence appraisal.



Senior soldiers reported using significantly more task-focused coping and less avoidance than junior soldiers. This suggests that the experience and maturity that traditionally comes with rank in the military may facilitate adaptive coping strategies. This finding has important implications for training and development programmes aimed at building adaptive coping strategies. In comparison there were no differences in task-focused coping or avoidance between junior and senior officers although junior officers reported using less social support than their senior and typically older counterparts. This notion is consistent with previous research that found older people were more likely to use social support coping as a result of being more skilled in interpersonal coping (Folkman & Lazarus, 1988). The lack of differences in social support between the soldier groups suggests that this rank group may not have had the skills or opportunities to utilise this strategy. Further investigations should examine the influence of rank and role groupings on coping strategies.

The reported use of avoidance was low across all of the groups compared with levels of task-focused coping and social support. Overall this sample appeared to have an adaptive approach to stress using what are often seen as adaptive coping strategies (Zeidner & Saklofske, 1996). It may be that by nature of their occupation participants are more inclined to adopt task-focused coping. Future studies should investigate the processes by which task-focused coping is developed as in this sample it appears to be a good indicator of adaptive functioning.

Cognitive hardiness appeared to decrease with experience for the soldier group with junior soldiers reporting higher levels of cognitive hardiness than senior soldiers. This may be a reflection of the different types of work roles associated with junior and senior soldiers. Generally, junior soldiers tend to be in more hands-on leadership roles while senior soldiers may be in a variety of positions including office jobs. This gives a new direction for future research that can explore the impact of work roles on cognitive hardiness and the extent to which different job roles require or facilitate the development of cognitive hardiness.

Senior officers reported higher levels of cognitive hardiness than junior officers. This finding suggests that resilience may increase with rank and experience. However, it is interesting to note that while senior officers reported higher levels of cognitive hardiness when compared to junior officers, senior soldiers reported lower levels of cognitive hardiness than junior soldiers. It is likely that the military life exposes officers to a variety of demanding situations over their career consequently building levels of resilience. However, the same premise could be assumed for the soldier groups. Again the nature of the work roles needs to be explored more fully.

Negative affect decreased and positive affect increased with experience for the soldier group. Senior soldiers tended to use more task-focused coping and less avoidance than junior soldiers suggesting that they may negotiate stressors more effectively through adaptive coping. Similarly, there were significant differences between junior and senior officers with regards to affect. Senior officers reported more positive affect and less negative affect than junior officers although unlike the soldier group there were no differences in task-focused coping or avoidance in this rank group. It could be that the senior ranked personnel (soldiers and officers) in general, were better than the junior ranks (soldiers and officers) at negotiating stressful situations and experiencing positive outcomes as a result. However, the mechanism by which this occurs appears to be different for the two groups. Senior officers reported higher levels of cognitive hardiness and used social support more than junior officers. This lends support to the notion that these two constructs are important in experiencing positive outcomes in this rank grouping.

## **The Transactional Model**

The results of this study support the notion that there are two separate pathways related to the appraisal of work-related demands. The negative pathway involves threat appraisals, maladaptive coping (avoidance), negative affect and negative outcomes. This pathway has traditionally been studied in the context of work-related stress and is well established. In contrast the positive pathway involves challenge appraisals, adaptive coping (task-focused and social support), positive affect and positive outcomes and suggested that even highly stressful work-related situations can have positive outcomes if negotiated appropriately. This study completes the

picture of work-related stress; it shows that stressors do not necessarily lead to strain and it also provides support for Lazarus and Folkman's (1984) full model. Implications of these findings will be discussed.

### *The Negative Pathway*

The present research provides support for the links of the negative pathway. Threat appraisals have been found to be associated with a lack of confidence in one's abilities, a lack of perceived control over a particular situation and emotion-focused coping strategies (Folkman & Lazarus, 1985; Lazarus & Folkman, 1984). The present study supports research that has found threat appraisals to be related to avoidance (Folkman & Lazarus, 1985; Hasida et al., 2005; Troup & Dewe, 2002). Avoidance in this study was characterised by denial, self-distraction, substance use and behavioural disengagement, which are often viewed as less adaptive forms of coping. It has been proposed that these coping strategies may preclude the use of more beneficial forms of coping and do not facilitate problem solving (Carver et al., 1989).

Threat appraisals had an important influence on the selection of coping strategies and emotional outcomes. However, their association with negative affective outcomes was indirect. Individuals who appraised a situation as a threat were more likely to report negative affective outcomes through increased use of avoidance. Previous research has reported appraisals of threat to be related to negative emotional outcomes (Anshel et al., 1997; Feldman et al., 2004; Folkman & Lazarus, 1985; Skinner & Brewer, 2002; Tomaka et al., 1993). The present research suggests that the pathway to negative affective outcomes is not necessarily direct.

The correlations between threat appraisals and negative affect and between avoidance and negative affect do not preclude the role of other variables in the stress process. However, they suggest that threat appraisals have an important role in the process by which work-related demands are related to negative affective outcomes. Although no causal attributions can be made with the present cross-sectional study the findings converge with a solid body of evidence linking avoidance with negative emotional outcomes and provide support for a novel contribution of threat appraisal to negative affect through increased use of avoidance.

### ***The Positive Pathway***

As well as supporting the established links between threat appraisals, maladaptive coping and negative affect, the present research also provides support for the role of challenge appraisals, adaptive coping and positive affect, a much newer area of research.

The present study confirmed that, like threat appraisals, challenge appraisals are important with regards to the selection of coping strategies. Demands perceived as challenges rather than threats were more likely to be associated with the use of adaptive task-focused coping and social support and were negatively associated with avoidance. Occupational stressors, when perceived as a challenge, are more likely to be associated with better outcomes (Folkman & Lazarus, 1988; Hasida et al., 2005; Moskowitz et al., 1996; Ntoumanis & Biddle, 1998; Park et al., 2004). This finding supports the adaptive role of task-focused coping and social support. The strong correlations between task-focused coping and social support were similar to those found in previous studies (Folkman & Lazarus, 1985) and suggest that these two types of coping may work in tandem. In this study social support was comprised of both instrumental and emotional support and thus had elements of problem and emotion-focused coping. Therefore, although the present research does not imply causation it provides support for the premise that effective coping is not necessarily restricted to either problem or emotion-focused typologies and likely results from a combination of the two (Folkman & Moskowitz, 2004).

The links between challenge appraisal and positive outcomes have been neglected with studies typically examining negative stressor-strain relationships (Hart & Cooper, 2002; Nelson & Simmons, 2003; Seligman & Csikszentmihalyi, 2000; Simmons & Nelson, 2001). The present findings support the growing body of research linking challenge appraisals with positive outcomes (Folkman & Lazarus, 1985; Hasida et al., 2005; Skinner & Brewer, 2002; Tomaka et al., 1993). The present study also broadens the domain of challenge appraisal, typically examined in performance settings such as examinations or sport, into an occupational setting.

The mediating role of coping in the relationship between challenge appraisal and positive affective outcomes has received little attention. Challenge appraisals were found to be associated with positive affective outcomes through increased use of task-focused coping strategies. These findings support a positive pathway comprised of challenge appraisals, task-focused coping and positive affect. As with the results for threat appraisals, these findings go beyond simple cause and effect relationships by examining the role of intervening variables. The results show that the stress process is complex and cannot be accurately represented by just direct relationships.

These findings have important implications for employers who are responsible for managing the stress of their employees. The presence of challenge in the workplace may be as important as the absence of threats in terms of experiencing workplace stress. Stress can be motivating and inspiring and organisations need to encourage active engagement, not just “stress prevention”, in the workplace as well as providing employees with the skills to identify and then negotiate stressful demands.

The correlations between challenge and positive affect and between task-focused and social support coping do not preclude the role of other variables. However, the research supports the role of challenge appraisals and adaptive coping strategies in contributing to positive affective outcomes. Again, although no causal attributions can be made the present findings provide empirical support for a positive pathway through the stress process and broaden the scope of typical stress research to include positive outcomes in an occupational setting.

## **Outcomes**

An important step in the study of stress is the examination of outcomes. Traditionally, stress research has not considered that outcomes of stress might be positive (Cavanaugh et al., 2000). The present study sought to investigate outcomes relevant to both individual and organisational functioning.

The association between *days off* work due to illness and negative affect was supported although the association was weak. This may reflect an organisational

culture that tends toward getting on with work even when the going gets tough. Nonetheless, the research found an association between negative affect and *days off* work due to illness, which suggests that negative affect might be linked to health outcomes and supports other findings linking health to affective outcomes (Simmons & Nelson, 2001) and levels of stress (Cohen et al., 1993).

Both positive affect and negative affect were associated with *times sick* where no days were taken off work. This finding is interesting and fits well with the hypothesis that the organisational culture was such that employees were more inclined to work through illness. Although the direction of causation in this relationship was not established the negative association between positive affect and *times sick* suggests that in general individuals high in positive affect were less likely to experience or report adverse physical symptoms

Intention to turnover was positively associated with negative affect and negatively associated with positive affect, supporting the notion that negative emotions prompt a desire to withdraw or escape from the situation causing distress while positive emotions can be associated with engagement rather than withdrawal (Pelled & Xin, 1999). Positive affect appears to be an important antecedent of engagement in work. The findings suggest that increasing positive affect at work may be as important for retaining employees as reducing negative affect. Positive affect mediated the relationship between task-focused coping and intention to leave and provide support for the role of affective states and relevant organisational outcomes. Support was also found for the negative pathway, with negative affect mediating the relationship between avoidance and intention to leave. This research adds to the growing body of evidence linking affect with turnover intentions.

## **Cognitive Hardiness**

One of the aims of this study was to examine cognitive hardiness as it was considered to be relevant to the military culture (Bartone, 1999; 2003; Bartone et al., 2002; Britt et al., 2001; Westman, 1990) and has potential widespread applicability in occupational psychology (Maddi, 2002; Maddi & Khoshaba, 2003; Maddi, Khoshaba, & Pammenter, 1999; Pollack, Paton, Smith, & Violanti, 2003).



Cognitive hardiness was positively associated with challenge appraisals and negatively associated with threat appraisals, suggesting that hardy individuals were more likely to appraise stressful situations as challenges rather than threats. Unexpectedly, cognitive hardiness was not associated with either task-focused coping or social support, the two forms of coping that are conceptually most similar to “transformational coping” as proposed by Maddi and colleagues (Maddi et al., 1998 p. 79). Cognitive hardiness was negatively associated with avoidance strategies, as has been found in previous studies (Maddi, 1999a; Maddi & Hightower, 1999; Soderstrom et al., 2000). The lack of correlation between cognitive hardiness and adaptive coping might be due to an influence from the junior soldier population (the largest group) who in general perceived themselves as more hardy than any other group but used adaptive coping techniques the least. It could be that junior soldiers perceive themselves to be harder because of their perceptions of what the army culture requires.

Hardiness was positively associated with positive affect and negatively with negative affect. Previous studies have supported a direct or moderating role for cognitive hardiness in the stress process but few have investigated the mediating role of this variable. In the present study, mediation was found for the negative but not the positive pathways in the model. Cognitive hardiness did not mediate the relationships between challenge appraisals and adaptive coping or between adaptive coping and positive affect. However, the relationship between threat appraisal and avoidance was mediated by cognitive hardiness, and the relationship between avoidance and negative affect was partially mediated by cognitive hardiness. The findings suggest that a lack of hardiness may be associated with increased vulnerability to work-related stress through its association with maladaptive threat appraisals and increased avoidance.

The current research found that cognitive hardiness did not moderate the stress process. Overall, cognitive hardiness appears to play an important role in the pathways linking demands to negative outcomes, but does not appear to be related to the pathways linking demands to positive outcomes. The findings are consistent with previous studies which have found direct effects for cognitive hardiness and positive

psychological outcomes (Bartone, 1999; Klag & Bradley, 2004; Westman, 1990; Zakin et al., 2003) but do not support a moderating role for cognitive hardiness and only provide some support for a mediating role. Implications of these findings will be discussed below.

### ***Limitations***

One limitation of the present study is that it was conducted in a military setting. The military culture is well known for its direct and task-focused nature and for gaining satisfaction from identifying and successfully accomplishing tasks. The positive role of task-focused coping in this study is consistent with this culture and with many other occupational cultures where problem-focused strategies are encouraged but these findings may not generalise to other work settings or to situations where demands are not amenable to active task-focused coping strategies.

The study used a cross-sectional approach which may not have captured the complexity of coping. Coping is a process that unfolds over time during a stressful encounter. Cross-sectional self-report data risks omitting a great deal of this complexity as well as introducing other methodological problems such as recall bias and a possible confound between coping and outcomes (Lazarus, 1999; Lazarus, DeLongis, Folkman, & Gruen, 1985). The study design was chosen as a balance between pure theory-driven process research and practical conceptual applications. While cross-sectional data might not capture the intricacies of coping, the relatively large sample size and the theoretical basis for the research provides support for general adaptive patterns in coping.

### ***Implications for Research***

The link between cognitive appraisals and coping responses has a growing body of empirical evidence (Folkman & Lazarus, 1980; 1985; Park et al., 2004; Park et al., 2001). Further research is needed to clarify the exact nature of the relationship between primary appraisal, coping and outcomes. This will enable a better understanding of the stress process in occupational settings. Individual differences may be important determinants of primary appraisal (Anshel et al., 1997) including factors such as self-efficacy (Bandura, 1997) and cognitive hardiness (Gentry &



Kobasa, 1984). The role of these individual differences in the stress process requires research.

The interactions among different forms of coping still require clarification. Problem-focused coping is often associated with positive emotion but the present findings suggest that both problem-focused and emotion-focused social support coping were associated with positive affect. Emotion-focused coping may enhance the use of problem-focused coping strategies and act as a facilitator of adaptive coping (Folkman & Lazarus, 1985; Lazarus, 1999). Further investigations are needed to clarify these relationships, especially the role of social support and emotion-focused coping in the generation of positive emotions. Longitudinal or prospective studies are noticeably absent from the coping field. These types of studies are needed to identify the stable traits and process-oriented states that lead to positive and negative outcomes (Lazarus, 2000). Tracking coping patterns over a variety of situations is time and resource intensive but will ultimately lead to identification of coping components that can then be integrated into a coherent whole (Lazarus, 1999).

More research is also needed into affective states and their associations with organisational outcomes. Employees who experience positive affect are more likely to engage in their work while those experiencing negative affect are more likely to withdraw (Pelled & Xin, 1999) but research is needed to confirm the precursors of positive affective outcomes.

Affect is often said to be an important antecedent of health outcomes as stressful events are associated with changes in the immune system which are thought to lead to negative health effects (Segerstrom & Miller, 2004) but little is known about the pathways that lead to positive health outcomes. The subjective element of the stress process links the person and the environment and could potentially map out a pathway from psychological stressors to individual health outcomes. The role of positive affect and its relationship with health outcomes is under-researched compared to negative affect and more work on this is needed (Nelson & Simmons, 2003; Simmons & Nelson, 2001).

The mechanism by which cognitive hardiness influences the stress process is still unclear. The negative association of hardiness with threat appraisals and avoidance suggests that hardiness may mitigate the use of maladaptive strategies and serve as a protective mechanism. However, hardiness did not help build adaptive coping strategies, although it was associated with increased challenge appraisals and positive affect. More studies are needed to examine hardiness and coping. Hardiness might have direct effects on stress and illness, mediating effects on stress and illness through coping, or a moderating effect (Klag & Bradley, 2004). The present research found evidence for both direct and mediating effects. Future research should further investigate the possible mechanisms whereby hardiness influences the stress process. These may be direct, mediating or moderating and warrant further attention. Clarification is needed in the measurement of hardiness and its dimensions as well as construction and testing of robust hardiness measures (Sinclair & Tetrick, 2000).

Although hardiness is an appealing and exciting construct with a number of potential applications to organisations, the hardiness concept has a relatively short history and requires further attention. Maddi, Khoshaba, and Pammenter (1999) proposed that characteristics of hardiness such as questioning and encouraging change may not be welcomed in some organisational cultures. Research needs to examine how organisations influence the stress process through their values and cultures.

Further analysis of the research presented is required using structural equation modelling. However, practical considerations meant that this was outside the scope of this thesis.

In summary, the present research shows stress to be a complex process. Future research should aim to capture the complexity of the stress process. Identification of the mechanisms that lead to individual and organisational outcomes will enable greater understanding of the stress process.

### ***Implications for Practice***

Although transactional paradigms are appealing there has been debate as to how they should be applied to work settings, with some researchers suggesting that transactional methods of examining stress are too radical for traditional stress

research (Dewe & Trenberth, 2004). The present research provides support for a transactional model of stress and show that these models can successfully be applied to occupational settings.

Transactional models place emphasis on subjective interpretation of work-related demands and on the contextual and individual factors that affect appraisal. Organisations need interventions that can equip staff with the skills to identify stressors and select the appropriate coping strategies. Ironically context and meaning are important for this to occur and the question arises as to the extent to which organisations can manage the meaning that their employees place on work-related demands. This does not negate organisations' duty of care to manage work-related hazards, including stressors. Organisations need to realise that appraisal links the person with the environment and that stress is relational, but also that the matching of demands and resources can facilitate adaptive stress appraisals.

Stress programmes need to shift away from identifying only those features of the workplace that lead to negative outcomes and to concentrate on identifying where there may be opportunities for challenges or positive outcomes. Policies that promote challenges, team work and individual well-being are likely to be associated with positive affective states which may be associated with a range of positive outcomes. Organisations can aim to build adaptive coping strategies and a team culture that thrives on challenges, as well as putting into place strategies that minimise exposure to potential workplace stressors.

Cognitive hardiness is a construct that can be applied to organisations as well as individuals. The so called "HardiOrganizations" are characterised by a culture and organisational structure that contributes to developing hardy individuals and teams (Maddi, 2002). The hardy organisational climate in turn facilitates cognitive hardiness whereby people are more optimistic and search for solutions to problems through an action-oriented approach to their work. The advent of specific "hardiness" training programmes is relatively new but preliminary results suggest that these are effective (Maddi et al., 1998). Organisations should aim to build supportive climates and cultures for mitigating adverse consequences of stress by helping employees develop and apply adaptive coping strategies and encourage

policies that foster hardy attitudes. Maddi, Khoshaba and Pammeter (1999) propose that organisations can build resilience in their personnel through values, which should incorporate the three Cs of hardiness: commitment, control, and challenge. Individuals with the 3Cs will then interact and inspire others to adopt transformational attitudes that turn stressful events into positive ones.

Organisations could also look at the possibility of enhancing performance through specific resilience focused training as well as managing the balance between demands and resources. Personal meaning is a feature of hardiness and strategies that prompt individuals to reinterpret stressors and their meaning are important in building resilience (Bartone, 2003). There is growing empirical evidence linking hardiness to active engagement in work and a sense of meaning that leads to increases in perceived benefits (Bartone et al., 2002; Britt et al., 2001). Hardiness training has both individual and organisational benefits. Employees who find meaning in their roles are likely to be actively involved in their work and also more productive.

Bartone (2003) proposes that organisations can influence how demands are perceived and interpreted through leadership. This has particular application to a military setting where teamwork and cohesion are critical, and where leaders are clearly identified and have high levels of control over policy, strategy and direction. A commander has potential to make a significant impression on their subordinates, peers and superiors. Bartone (2003) puts this down to a hardy commander's ability to reframe negative events and inspire people to seek meaning and enjoyment out of potential stressful events.

The concept of organisational responsibility is important. An emphasis on building resilience in employees is important but not at the expense of ignoring the management of organisational stressors. New Zealand legislation requires proactive management of workplace hazards including stressors and this should not be overlooked by an over-emphasis on the management of individual differences.

## ***Summary***

The present research has demonstrated that the personal meaning of a stressful situation has important implications in terms of negotiating adaptive or maladaptive pathways through the stress process. Lazarus and Folkman's (1984) transactional model was effectively applied to a workplace setting and went some way to explain the complex relationships among cognitive appraisal, coping and individual and organisational outcomes of the stress process.

## ***Conclusion***

Lazarus (1994, p. 10) proposed that transactional models will enable researchers to "road map" the types of situations that are stressful for certain employees or groups and then introduce strategies or interventions to cater for them. Although inherently complex, the transactional approach is useful in identifying these individual and collective patterns of the stress process. A transactional approach centred on cognitive appraisal provides a comprehensive and meaning-based model that enables understanding of stress and coping. Researchers need to continue to discover how individual cognitive and affective variables impact on the stress process.

## References

- Alfredsson, L., Karasek, R. A., & Theorell, T. G. T. (1982). Myocardial infarction risk and psychosocial work environment: An analysis of the male Swedish working force. *Social Science and Medicine*, 16, 463-467.
- Alpass, F., Long, N., MacDonald, C., & Chamberlain, K. (1999). The Moskos Institution-Occupation Model: Effects on individual work related perceptions and experiences in the military. *Journal of Political and Military Sociology*, 27(1), 67-80.
- Anshel, M. H., Robertson, M., & Caputi, P. (1997). Sources of acute stress and their appraisals and reappraisals among Australian police as a function of previous experience. *Journal of Occupational and Organizational Psychology*(70), 337-356.
- Bandura, A. (1997). *Self efficacy: The exercise of control*. New York: W.H. Freeman.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173 - 1182.
- Bartone, P. T. (1999). Hardiness protects against war-related stress in army reserve forces. *Practice and Research*, 51(2), 72-82.

Bartone, P. T. (2003). Hardiness as a resiliency resource under high stress conditions.

In D. Paton, J. M. Violanti & L. M. Smith (Eds.), *Promoting capabilities to manage posttraumatic stress: Perspectives on resilience* (pp. 59-73). Illinois:

Charles C Thomas.

Bartone, P. T., Johansen, B. H., Eid, J., Brun, W., & Laberg, J. C. (2002). Factors influencing small-unit cohesion in Norwegian navy officer cadets. *Military Psychology, 14*(1), 1-22.

Beasley, M., Thompson, T., & Davidson, J. (2003). Resilience in response to life stress: The effects of coping style and cognitive hardiness. *Personality and Individual Differences, 34*(1), 77-95.

Beehr, T., & Glazer, S. (2005). Organizational role stress. In J. Barling, K. Kelloway & M. Frone (Eds.), *Handbook of work stress* (pp. 7 - 35). Thousand Oaks: Sage Publications Inc.

Behson, S. J. (2002). Coping with family-to-work conflict: The role of informal work accommodations to family. *Journal of Occupational Health Psychology, 7*(4), 324-341.

Bongard, S., & al Absi, M. (2005). Domain-specific anger expression and blood pressure in an occupational setting. *Journal of Psychosomatic Research, 58*, 43-49.

- Boyar, S. L., Maertz, J. C., Pearson, A. W., & Keough, S. (2003). Work-family conflict: A model of linkages between work and family domain variables and turnover intentions. *Journal of Managerial Issues*, *XV*(2), 175 - 190.
- Breznitz, S. (1980). Stress in Israel. In H. Selye (Ed.), *Selye's guide to stress research* (Vol. 1). New York: Van Nostrand Reinhold Company.
- Britt, T. W., Alder, A. B., & Bartone, P. T. (2001). Deriving benefits from stressful events: The role of engagement in meaningful work and hardiness. *Journal of Occupational Health Psychology*, *6*(1), 53-63.
- Burke, R. J., & Greenglass, E. R. (1995). A longitudinal examination of the cherniss model of psychological burnout. *Social Science and Medicine*, *40*(10), 1357-1363.
- Cable, D. M., & Edwards, J. R. (2004). Complementry and supplementry fit: A theoretical and empirical integration. *Journal of Applied Psychology*, *89*(5), 822-834.
- Caldwell, S., Herold, D., & Fedor, D. (2004). Toward an understanding of the relationships among organizational change, individual differences, and changes in person-environment fit: A cross-level study. *Journal of Applied Psychology*, *89*(5), 868-882.
- Cannon, W. B. (1929). *Bodily changes in pain, hunger, fear, and rage*. (Second ed.). New York: Appleton.



Carpenter, B. N. (Ed.). (1992). *Personal coping: Theory, research, and application*.  
Westport: Greenwood Publishing Group.

Carver, C. S. (1997). You want to measure coping but your protocol's too long:  
Consider the Brief COPE. *International Journal of Behavioural Medicine*,  
4(1), 92-100.

Carver, C. S., & Scheier, M. F. (1994). Situational coping and coping dispositions in  
a stressful transaction. *Journal of Personality and Social Psychology*, 66(1),  
184-195.

Carver, C. S., Scheier, M. F., & Weintraub, K. J. (1989). Assessing coping strategies:  
A theoretically based approach. *Journal of Personality and Social  
Psychology*, 56(2), 267-283.

Cavanaugh, M., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An  
empirical examination of self-reported work stress among U.S. managers.  
*Journal of Applied Psychology*, 85(1), 65-74.

Chang, E., & Hancock, K. (2003). Role stress and role ambiguity in new nursing  
graduates in Australia. *Nursing and Health Sciences*, 5, 155-163.

Chief of Army. (2006). New Zealand Army Strategic Plan. Wellington, New  
Zealand: New Zealand Defence Force.

- Chief of Defence Force. (2002). Defence force order 21/2000, *Authority to conduct personnel research*. Wellington, New Zealand: New Zealand Defence Force.
- Clarke, D., & Singh, R. (2005). The influence of pessimistic explanatory style on the relation between stressful life events and hospital doctors' psychological distress. *Social Behaviour and Personality*, 33(3), 259-272.
- Clarke, S., & Cooper, C. (2004). *Managing the risk of workplace stress*. London: Routledge.
- Cohen, S., Kessler, R. C., & Gordon, L. (Eds.). (1997). *Strategies for measuring stress in studies of psychiatric and physical disorders*. New York: Oxford.
- Cohen, S., Tyrell, D. A. J., & Smith, A. P. (1993). Negative life events, perceived stress, negative affect, and susceptibility to the common cold. *Journal of Personality and Social Psychology*, 64(1), 131-140.
- Collins, S., & Long, A. (2003). Too tired to care? The psychological effects of working with trauma. *Journal of Psychiatric and Mental Health Nursing*, 10, 17-23.
- Cooper, C., & Dewe, P. (2004). *Stress: A brief history*. Cornwall.
- Cooper, C., Dewe, P. J., & O'Driscoll, M. P. (2001). *Organizational stress: A review and critique of theory, research, and applications*. Thousand Oaks, California: Sage.

- Cote, S., & Morgan, L. (2002). A longitudinal analysis of the association between emotion regulation, job satisfaction, and intentions to quit. *Journal of Organizational Behavior*, 23, 947-962.
- Daniels, K., & Harris, C. (2005). A daily diary study of coping in the context of the job demands-control-support model. *Journal of Vocational Behavior*, 66, 219-237.
- de Croon, E. M., Sluiter, J. K., Blonk, R. W. B., Broersen, J. P. J., & Frings-Dresen, M. H. W. (2004). Stressful work, psychological job strain, and turnover: A 2-year prospective cohort study of truck drivers. *Journal of Applied Psychology*, 89(3), 442-454.
- de Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. (2003). "The very best of the millennium": Longitudinal research and the demand-control-(support) model. *Journal of Occupational Health Psychology*, 8(4), 282-305.
- DeLongis, A., Coyne, J. C., Dakof, G., Folkman, S., & Lazarus, R. S. (1982). Relationship of daily hassles, uplifts, and major life events to health status. *Health Psychology*, 1, 119-136.
- Dettenborn, L., James, G. D., Berge-Landry, H. V., Valdimarsdottir, H. B., Montgomery, G. H., & Bovbjerg, D. H. (2005). Heightened cortisol responses to daily stress in working women at familial risk for breast cancer. *Biological Psychology*, 69(2), 167-179.

- Dewe, P., & Guest, D. E. (1990). Methods of coping with stress at work: A conceptual analysis and empirical study of measurement issues. *Journal of Organizational Behavior*, 11(2), 135-150.
- Dewe, P., & Trenberth, L. (2004). Work stress and coping: Drawing together research and practice. *British Journal of Guidance & Counselling*, 32(2), 143-156.
- Drach-Zahavy, A., & Erez, M. (2002). Challenge versus threat effects on the goal-performance relationship. *Organizational Behavior and Human Decision Processes*(88), 667-682.
- Eby, L. T., Casper, W. J., Lockwood, A., Bordeaux, C., & Brinley, A. (2005). Work and family research in IO/OB: Content analysis and review of the literature (1980-2002). *Journal of Vocational Behavior*, 66, 124-197.
- Edwards, J. R., Caplan, R. D., & Van Harrison, R. (1998). Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. Cooper (Ed.), *Theories of organizational stress*. Oxford: Oxford University Press.
- Edwards, J. R., & Cooper, C. (1990). The person-environment fit approach to stress: Recurring problems and some suggested solutions. *Journal of Organizational Behavior*, 11(4), 293-307.

- Elliot, T. R., Chartrand, J. M., & Harkins, S. W. (1994). Negative affectivity, emotional distress, and the cognitive appraisal of occupational stress. *Journal of Vocational Behavior*, 45, 185-201.
- Elshaug, C., Knott, V., & Mellington, T. (2004). Psychological injury in the workplace: Prevention and best-practice intervention. *Journal of Occupational Health and Safety: Australia and New Zealand*, 20(6), 523-534.
- Endler, N. S., & Parker, J. D. A. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology*, 58(5), 844 - 854.
- Falba, T., Teng, H., Sindelar, J., & Gallo, W. (2005). The effect of involuntary job loss on smoking intensity and relapse. *Addiction*, 100(9), 1330-1339.
- Feldman, P. J., Cohen, S., Hamrick, N., & Lepore, S. J. (2004). Psychological stress, appraisal, emotion and cardiovascular response in a public speaking task. *Psychology and Health*, 19(3), 353-368.
- Folkman, S. (1992). Making the case for coping. In B. N. Carpenter (Ed.), *Personal coping: Theory, research, and application* (pp. 31-46). Westport: Praeger Publishers.
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behaviour*, 21(3), 219-239.

- Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology*, 48(1), 150-170.
- Folkman, S., & Lazarus, R. S. (1988). Coping as a mediator of emotion. *Journal of Personality and Social Psychology*, 54(3), 466-475.
- Folkman, S., & Moskowitz, J. T. (2000). Positive affect and the other side of coping. *American Psychologist*, 55(6), 647-654.
- Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology*, 55, 745-774.
- French, J. R., Caplan, R. D., & Harrison, R. V. (1982). *The mechanisms of job stress and strain*. London: Wiley.
- Funk, S. C. (1992). Hardiness: A review of theory and research. *Health Psychology*, 11, 335-345.
- Gentry, W. D., & Kobasa, S. C. (1984). Social and psychological resources mediating stress-illness relationships in humans. In W. D. Gentry (Ed.), *Handbook of behavioural medicine* (pp. 87-116). New York: Guilford.
- Golby, J., & Sheard, M. (2004). Mental toughness and hardiness at different levels of rugby league. *Personality and Individual Differences*, 37, 933-942.

- Gubb Mitchell Crawshaw & Partners. (2003). *Workplace Stress*, from <http://nzplc.massey.ac.nz/legal/default.asp?page=docs/workstress/stresscases.htm>
- Hart, P., & Cooper, C. (2002). Occupational stress: Toward a more integrated framework. In N. Anderson, D. Ones, H. K. Sinangil & C. Viswesvaran (Eds.), *Handbook of industrial, work and organizational psychology, volume 2: Organizaional psychology* (pp. 93-114). California: Sage.
- Hasida, B-Z., Dana, Y., & Dorit, O. (2005). Coping strategies and leadership in the adaptation to social change: The Israeli Kibbutz. *Anxiety, Stress, and Coping*, 18(2), 87-103.
- Headquarters New Zealand Defence Force. (2003). *New Zealand Defence Force ongoing attitude survey*. Wellington: New Zealand Defence Force.
- Headquarters New Zealand Defence Force. (2004). *New Zealand Defence Force monthly figures: December 2004*. Wellington: New Zealand Defence Force.
- Herbert, T., Cohen, S., Marsland, A., Bachen, E., Rabin, B., Muldoon, M., et al. (1994). Cardiovascular reactivity and the course of immune response to an acute psychological stressor. *Psychosomatic Medicine*.

- Holahan, C. J., Moos, R. H., & Schaefer, J. A. (1996). Coping, stress resistance and growth: Conceptualizing adaptive functioning. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, applications* (pp. 24-43). New York: John Wiley & Sons.
- Holmes, N. D. (2001). Age and responses to the events of September 11, 2001, *Dissertation Abstracts International Section A: Humanities and Social Sciences* (Vol. 65 12A, 2005, pp. 4473): US: Univ Microfilms International.
- Holmes, T. H., & Masuda, M. (1974). Life changes and illness susceptibility. In D. S. Dohrenwend & B. P. Dohrenwend (Eds.), *Stressful life events: Their nature and effects* (pp. 45-72). New York: Wiley.
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*(11), 213-218.
- Hom, P. W., & Griffeth, R. W. (1995). *Employee turnover*. Cincinnati: South-Western College Publishing.
- Jex, S. (2002). *Organizational psychology: A scientist - practitioner approach*. New York: John Wiley & Sons.
- Jex, S., & Crossley, C. (2005). Organizational consequences. In J. Barling, K. Kelloway & M. Frone (Eds.), *Handbook of work stress* (pp. 575-599). Thousand Oaks: Sage.



- Jones, F., & Kinman, G. (2001). Approaches to studying stress. In F. Jones & J. Bright (Eds.), *Stress: Myth, theory, and research* (pp. 17-45): Pearson Education Limited.
- Jones, J. R., Hodgson, J. T., Clegg, T. A., & Elliot, R. C. (1998). *Self-reported work-related illness in 1995 - Results from a household survey*. Sudbury: HSE Books.
- Kanner, A., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparisons of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine*, 4, 1-39.
- Karademas, E. C., & Kalantzi-Azizi, A. (2004). The stress process, self-efficacy expectations, and psychological health. *Personality and Individual Differences*, 37(5), 1033-1043.
- Karasek, R. A. (1979). Job demands, job decision latitude and mental strain: Implications for job redesign. *Administrative Science Quarterly*(24), 285-308.
- Karasek, R. A. (1990). Lower health risk with increased job control among white collar workers. *Journal of Organizational Behavior*(11), 171-185.
- Karasek, R. A., & Theorell, T. G. T. (1990). *Healthy work*. New York: Basic Books.

- Karasek, R. A., Theorell, T. G. T., Schwartz, J., Pieper, C., & Alfredsson, L. (1982). Job, psychological factors and coronary heart disease. *Advanced Cardiology*(29), 62-67.
- Kemeny, M. E. (2003). The psychobiology of stress. *Current Directions in Psychological Science*, 12(4), 124-129.
- Klag, S., & Bradley, G. (2004). The role of hardiness in stress and illness: An exploration if the effect of negative affectivity and gender. *British Journal of Health Psychology*(9), 137-161.
- Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, 37(1), 1-11.
- Kobasa, S. C., Maddi, S. R., & Courington, S. (1981). Personality and constitution as mediators in the stress-illness relationship. *Journal of Health and Social Behaviour*, 22, 368-378.
- Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology*, 42(1), 168-177.
- Kobasa, S. C., Maddi, S. R., & Puccetti, M. C. (1982). Personality and exercise as buffers in the stress-illness relationship. *Journal of Behavioral Medicine*, 5(4), 391-404.

- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurements, and implications. *Personnel Psychology*(49), 1-49.
- Kruk, J., & Aboul-Enein, H. Y. (2004). Psychological stress and the risk of breast cancer: A case-control study. *Cancer Detection and Prevention*, 28(6), 399-408.
- Lachapelle, D. L., & Hadjistavropoulos, T. (2005). Age-related differences among adults coping with pain: Evaluation of a developmental life-context model. *Canadian Journal of Behavioural Science*, 37(2), 123-137.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Lazarus, R. S. (1990). Theory-based stress measurement. *Psychological Inquiry*, 1(1), 3-13.
- Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.
- Lazarus, R. S. (1994). Psychological stress in the workplace. In P. L. Perrewe & R. Crandall (Eds.), *Occupational Stress: A Handbook* (pp. 3-14). Washington DC: Taylor & Francis.
- Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. New York: Springer.

- Lazarus, R. S. (2000). Toward better research on stress and coping. *American Psychologist*, 55(6), 665-673.
- Lazarus, R. S., DeLongis, A., Folkman, S., & Gruen, R. (1985). Stress and adaptational outcomes: the problem of confounded measures. *American Psychologist*(40), 770-779.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer Publishing Company.
- LePine, J. A., LePine, M. A., & Jackson, C. (2004). Challenge and hindrance stress: Relationships with exhaustion, motivation to learn, and learning performance. *Journal of Applied Psychology*, 89(5), 883-891.
- Limbert, C. (2004). Psychological well-being and job satisfaction amongst military personnel on unaccompanied tours: The impact of perceived social support and coping strategies. *Military Psychology*, 16(1), 37-51.
- Lobb, B., McNeill, R., Bentley, T., Swann, M., & Muller, R. (2005). *Measurement of occupational well-being in "blue collar" industries*. Paper presented at the Proceedings of the 8th Human Factors in Organisational Psychology Design Symposium, Hawaii.
- Lowe, R., & Bennett, P. (2003). Exploring coping reactions to work-stress: Application of an appraisal theory. *Journal of Occupational and Organizational Psychology*(76), 393-400.

- Lukassen, J., & Beaudet, M. (2005). Alcohol dependence and depression among heavy drinkers in Canada. *Social Science and Medicine*, 61, 1658-1667.
- Lyne, K., & Roger, D. (2000). A psychometric re-assessment of the COPE questionnaire. *Personality and Individual Differences*, 29(2), 321-335.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7(1), 83-104.
- Maddi, S. R. (1999a). The personality construct of hardiness: Effects on experiencing, coping, and strain. *Consulting Psychology Journal*, 51(2), 83-94.
- Maddi, S. R. (1999b). The personality construct of hardiness: I. Effects on experiencing, coping, and strain. *Consulting Psychology Journal: Practice and Research*, 51(2), 83-94.
- Maddi, S. R. (2002). The story of hardiness: Twenty years of theorizing, research, and practice,. *Consulting Psychology Journal: Practice and Research*, 54(3), 173-185.
- Maddi, S. R., & Hightower, M. (1999). Hardiness and optimism as expressed in coping patterns. *Consulting Psychology Journal: Practice and Research*, 51(2), 95-105.

- Maddi, S. R., Kahn, S., & Maddi, K. L. (1998). The effectiveness of hardiness training. *Consulting Psychology Journal: Practice and Research*, 50(2), 78-86.
- Maddi, S. R., & Khoshaba, D. M. (2003). Hardiness training for resiliency and leadership. In D. Paton, J. M. Violanti & L. M. Smith (Eds.), *Promoting capabilities to manage posttraumatic stress: Perspectives on resilience* (pp. 43-58). Illinois: Charles C Thomas.
- Maddi, S. R., Khoshaba, D. M., & Pammenter, A. (1999). The hardy organization: Success by turning change to advantage. *Consulting Psychology Journal: Practice and Research*, 51(2), 117-124.
- Marchand, A., Demers, A., & Durand, P. (2005). Does work really cause distress? The contribution of occupational structure and work organization to the experience of psychological distress. *Social Science and Medicine*, 61, 1-14.
- McEwen, B. S. (1998). Protective and damaging effects of stress mediators. *The New England Journal Of Medicine*, 338(3), 171-179.
- McEwen, B. S. (2002). Protective and damaging effects of stress mediators: the good and bad sides of the response to stress. *Metabolism: Clinical And Experimental*, 51(6, Supplement 1), 2-4.

- McGowan, J. (2004). *An appraisal-coping model of occupational stress outcomes: Distress and eustress*. Unpublished Masters Thesis, Massey University, Auckland, New Zealand.
- Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, 61(1), 20-52.
- Moskowitz, J. T. (2003). Positive affect predicts lower risk of AIDS mortality. *Psychosomatic Medicine*, 65, 620-626.
- Moskowitz, J. T., Folkman, S., Collette, L., & Vittinghoff, E. (1996). Coping and mood during AIDS-related caregiving and bereavement. *Annals of Behavioural Medicine*, 18, 49-57.
- National Occupational Health and Safety Commission. (2002). *Compendium of workers' compensation statistics 2000-2001*. Canberra: Commonwealth of Australia.
- Nelson, D. L., & Simmons, B. L. (2003). Eustress: An elusive construct, an engaging pursuit. In P. L. Perrewe & D. C. Ganster (Eds.), *Research in Occupational Stress and Well Being* (Vol. 3, pp. 265-322): JAI.
- New Zealand Defence Force. (2005). New Zealand Army Publication, NZ P77. Wellington: New Zealand Defence Force.

- New Zealand Occupational Safety and Health Service. (2003). *Healthy work: Managing stress in the workplace*: Department of Labour.
- New Zealand Occupational Safety and Health Service. (2005). *Stress prosecution a first*, from <http://www.osh.dol.govt.nz/news/press/2005/PR050413.shtml>
- Nowack, K. M. (1990). Initial development of an inventory to assess stress and health risk. *American Journal of Health Promotion*, 4(3), 173 - 180.
- Ntoumanis, N., & Biddle, J. H. (1998). The relationship of coping and its perceived effectiveness to positive and negative affect in sport. *Personality and Individual Differences*, 24(6), 733-788.
- Ouellette-Kobasa, S. C., Maddi, S. R., Puccetti, M. C., & Zola, M. A. (1985). Effectiveness of hardiness, exercise and social support as resources against illness. *Journal of Psychosomatic Research*, 29(5), 525-533.
- Park, C., Armeli, S., & Tennen, H. (2004). Appraisal-coping goodness of fit: A daily internet study. *Personality and Social Psychology Bulletin*, 30(5), 558-569.
- Park, C., Folkman, S., & Bostrom, A. (2001). Appraisals of controllability and coping in caregivers and HIV + men: Testing the goodness-of- fit hypothesis. *Journal of Consulting and Clinical Psychology*, 69(3), 481-488.



- Parker, J. D. A., & Endler, N. S. (1996). Coping and defense: A historical review. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, applications* (pp. 3-23). New York: John Wiley & Sons.
- Pelled, L. H., & Xin, K. R. (1999). Down and out: An investigation of the relationship between mood and employee withdrawal behavior. *Journal of Management*, 25(6), 875-895.
- Peterson, C. (Ed.). (2003). *Work stress: Studies of the context, content and outcomes of stress*. New York: Baywood Publishing Company, Inc.
- Pollack, C., Paton, D., Smith, L., & Violanti, J. M. (2003). Training for resilience. In D. Paton, J. M. Violanti & L. Smith (Eds.), *Promoting capabilities to manage posttraumatic stress* (pp. 89-102). Illinois: Charles C Thomas.
- Rodriguez, I., Bravo, J., Peiro, J. M., & Schaufeli, W. (2001). The demands-control support model, locus of control and job satisfaction: A longitudinal study. *Work & Stress*, 15(2), 97-114.
- Rosengren, A., Hawken, S., Ounpuu, S., Sliwa, K., Zubaid, M., Almahmeed, W. A., et al. (2004). Association of psychosocial risk factors with risk of acute myocardial infarction in 11119 cases and 13648 controls from 52 countries (the INTERHEART study): case-control study. *The Lancet*, 364, 953-962.
- Rylander, R. (2004). Physiological aspects of noise-induced stress and annoyance. *Journal of Sound and Vibration*, 277, 471-478.

- Schwarzer, R., & Schwarzer, C. (1996). A critical survey of coping instruments. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, applications* (pp. 107-132). New York: Wiley.
- Scully, J. A., Tosi, H., & Banning, K. (2000). Life event checklists: Revisiting the social readjustment rating scale after 30 years. *Educational and Psychological Measurement*, 60(6), 864-876.
- Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin*, 130(4), 601-630.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14.
- Selye, H. (1974). *Stress without distress*. Philadelphia: J B Lippincott Company.
- Selye, H. (1976). *The stress of life: Revised edition*. New York: McGraw-Hill.
- Selye, H. (Ed.). (1980). *Selye's guide to stress research*. New York: Van Nostrand Reinhold Company.
- Shaw, J. (1999). Job satisfaction and turnover intentions: The moderating role of positive affect. *The Journal of Social Psychology*, 139(2), 242-244.

- Simmons, B. L., & Nelson, D. L. (2001). Eustress at work: The relationship between hope and health in hospital nurses. *Health Care Management Review, 26*(4), 7-18.
- Sinclair, R. R., & Tetrick, L. E. (2000). Implications of item wording for hardiness structure, relation with neuroticism, and stress buffering. *Journal of Research in Personality, 34*(1), 1-25.
- Skinner, N., & Brewer, N. (2002). The dynamics of threat and challenge appraisals prior to stressful achievement events. *Journal of Personality and Social Psychology, 83*(3), 678-692.
- Skinner, N., & Brewer, N. (2004). Adaptive approaches to competition: Challenge appraisals and positive emotion. *Journal of Sport and Exercise Psychology, 26*, 283-305.
- Soderstrom, M., Dolbier, C., Leiferman, J., & Steinhardt, M. (2000). The relationship of hardiness, coping strategies, and perceived stress to symptoms of illness. *Journal of Behavioral Medicine, 23*(3), 311 - 328.
- Somerfield, M. R., & McCrae, R. R. (2000). Stress and coping research: Methodological challenges, theoretical advances, and clinical applications. *American Psychologist, 55*(6), 620-625.

- Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology, 3*(4), 356-367.
- Steptoe, A., Lipsey, Z., & Wardle, J. (1998). Stress, hassles and variations in alcohol consumption, food choice and physical exercise: A diary study. *British Journal of Health Psychology, 3*, 51-63.
- Tennen, H., Affleck, G., Armeli, S., & Carney, M. A. (2000). A daily process approach to coping: Linking theory, research, and practice. *American Psychologist, 55*(6), 626-636.
- Thoreson, C. J., Kaplan, S. A., Barsky, A. P., Warren, C. R., & de Chermont, K. (2003). The affective underpinnings of job perceptions and attitudes: A meta-analytic review and integration. *Psychological Bulletin, 129*(6), 914-945.
- Tomaka, J., Blascovich, J., Kelsey, R. M., & Leitten, C. L. (1993). Subjective, physiological, and behavioral effects of threat and challenge appraisal. *Journal of Personality and Social Psychology, 65*(2), 248-260.
- Tomaka, J., Blascovich, J., Kibler, J., & Ernst, J. M. (1997). Cognitive and physiological antecedents of threat and challenge appraisal. *Journal of Personality and Social Psychology, 73*(1), 63-72.

- Troup, C., & Dewe, P. (2002). Exploring the nature of control and its role in the appraisal of work stress. *Work & Stress, 16*(4), 335-355.
- Van Katwyk, P. T., Fox, S., Spector, P. E., & Kelloway, E. K. (2000). Using the job-related affective well-being scale (JAWS) to investigate affective responses to work stressors. *Journal of Occupational Health Psychology, 5*(2), 219-230.
- Verquer, M., Beehr, T., & Wagner, S. (2003). A meta-analysis of relations between person-organization fit and work attitudes. *Journal of Vocational Behavior, 63*, 473-489.
- Wainwright, D., & Calnan, M. (2002). *Work stress: The making of a modern epidemic*. Buckingham: Open University Press.
- Watson, D., Clarke, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Watson, D., & Pennebaker, J. W. (1989). Health complaints, stress and distress: Exploring the central role of negative affectivity. *Psychological Review, 96*(2), 234-254.
- Westman, M. (1990). The relationship between stress and performance: The moderating effect of hardiness. *Human Performance, 3*(3), 141-155.

Zakin, G., Solomon, Z., & Neria, Y. (2003). Hardiness, attachment style, and long term psychological distress among Israeli POWs and combat veterans.

*Personality and Individual Differences*, 34(5), 819-829.

Zeidner, M., & Saklofske, D. (1996). Adaptive and maladaptive coping. In M.

Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research,*

*applications* (pp. 505 - 531). New York: Wiley.

## **Appendix A: The New Zealand Army Values**

“*Courage* is both moral and physical. Those with moral courage make difficult decisions and possess the conviction to stand by them. Those with physical courage overcome their fear in the face of danger”.

“*Commitment* is putting others before self and contributing to the team”.

“*Comradeship* is the basis of all Army teams. It means looking after your mates and realising that more can be achieved as a team than individuals”.

“*Integrity* requires honesty, sincerity, reliability, unselfishness and consistency of approach”.

(Chief of Army, 2006)

## **Appendix B: Information Sheet and Questionnaire**

Levels of stress in the military are known to be high, but less is known about the process individuals go through in determining what is stressful and not stressful. This research is being conducted in order to understand how military personnel respond to and deal with potentially stressful situations. The research will provide valuable feedback that will be used for improving stress management procedures within the NZ Army. A summary of the findings will be made available Army wide in early 2005.

This study is supported by the NZ Army and has command approval as per DFO 21/2002. It also forms part of my research for my Masters Degree in Industrial and Organisational Psychology through Massey University.

You are invited to participate in this research. I would appreciate it very much if you would complete the attached questionnaire and return it in the enclosed envelope in the internal mail system. The questionnaire is anonymous and will take approximately 10 -15 minutes. If there are any questions you do not wish to answer please leave those answers blank. The questionnaire is anonymous and all responses are entirely confidential. The data will be reported so that you cannot be identified in any way.

This project has been reviewed and approved by the Massey University Human Ethics Committee, ALB Application 04/085.

If you have any concerns about the conduct of this research, please contact Associate Professor Kerry Chamberlain, Chair, Massey University Human Ethics Committee: Albany, telephone 09 414 0800 x 9078, email [humanethicsalb@massey.ac.nz](mailto:humanethicsalb@massey.ac.nz)

If you have any other queries or wish to know more about the study please contact myself or my supervisor at the addresses below:

Dr Dianne Gardner  
School of Psychology  
Massey University, Auckland  
Tel. 09 414 0800 extn 9034  
Email: [D.H.Gardner@massey.ac.nz](mailto:D.H.Gardner@massey.ac.nz)

Thank you very much for your help and support.

**M.C. CARSTON**

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## Stress and Well Being in the Military

Thank you very much for taking the time to complete this survey.

As you know, the NZ Army is interested in the well being of its personnel and the stress levels they face as a day-to-day function of doing their job. To date, much of the research currently done by the military identifies what is stressful, but not why it is stressful.

The aim of this survey is to extend the current research on stress within the NZ Army to find out what processes people go through in determining whether something is perceived as stressful or not. This research will help to improve the current policies and training in place with the aim of improving the psychological well being of all military personnel.

**Responses to this survey are completely confidential. Your individual answers will not be able to be identified. Please do not include your name or any contact details.**

Once you have completed the survey please return it to me in the envelope provided or, if you have received this survey in person, please drop it in the box provided. A summary of the findings will be made available through the Defence electronic network in early 2005.

You should find the questions straightforward to answer. Usually all you need to do is circle a number or tick a box. In total the survey should take about 10 - 15 minutes to complete. Please try to answer all the questions in one sitting. Do not spend too much time thinking about your answer; the first response that comes to mind is usually the most accurate for you. There are no right or wrong answers.

After completion please either put the questionnaire in the box at the door if you have received this questionnaire directly from me, or if you have received the questionnaire by mail return it in the envelope provided through internal mail to:

Capt M.C. Carston  
Field Psychologist  
HQ 2LFG  
Linton

Alternatively you can send to

FREEPOST 166505  
Capt. Mike Carston  
C/ - School of Psychology  
Massey University  
Private Bag 102 904  
NSMC  
Auckland

Below is a list of common beliefs people hold. Please indicate how strongly you agree or disagree with each statement by circling the appropriate number.

	Strongly Agree	Agree	Neither Agree or disagree	Disagree	Strongly Disagree
1. My involvement in non-work activities and hobbies provides me with a sense of meaning and purpose.	1	2	3	4	5
2. By taking an active part in political and social affairs, people can strongly influence world events and politics.	1	2	3	4	5
3. When all else appears bleak, I can always turn to my family and friends for help and support.	1	2	3	4	5
4. I prefer to do things that are risky, exciting, and adventurous rather than adhere to the same comfortable routine and lifestyle.	1	2	3	4	5
5. Becoming a success is mostly a matter of working hard; luck plays little or no role.	1	2	3	4	5
6. There are relatively few areas about myself in which I feel insecure, highly self-conscious, or lacking in confidence.	1	2	3	4	5
7. In general, I tend to be a bit critical, pessimistic and cynical about most things in work and life.	1	2	3	4	5
8. It would take very little change in my present circumstances at work to cause me to leave my present organisation.	1	2	3	4	5
9. I do not feel satisfied with my current involvement in the day-to-day activities and well-being of my family and friends.	1	2	3	4	5
10. In general, I would prefer to have things well planned out in advance rather than deal with the unknown.	1	2	3	4	5
11. Most of life is wasted in meaningless activities.	1	2	3	4	5
12. I often feel awkward, uncomfortable or insecure interacting with others socially.	1	2	3	4	5
13. I rarely find myself saying out loud or thinking that I'm not good enough or capable of accomplishing something.	1	2	3	4	5
14. I am committed to my job and work activities that I am currently pursuing.	1	2	3	4	5
15. I tend to view most work and life changes, disappointments and setbacks as threatening, harmful or stressful rather than challenging.	1	2	3	4	5

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
16. Just for variety's sake, I often explore new and different routes to places that I travel to regularly (e.g. home, work).	1	2	3	4	5
17. Others will act according to their own self-interests no matter what I attempt to say or do to influence them.	1	2	3	4	5
18. If I get a chance to see how others have done something or get the opportunity to be taught what to do, I am confident that I can be successful at most things.	1	2	3	4	5
19. I expect some things to go wrong now and then, but there is little doubt in my mind that I can effectively cope with just about anything that comes my way.	1	2	3	4	5
20. Overall, most of the things that I am involved in (e.g. work, community, social relationships) are not very stimulating, enjoyable, and rewarding.	1	2	3	4	5
21. I am likely to get frustrated and upset if my plans do not unfold as I hoped, or if things do not happen the way I really want them to.	1	2	3	4	5
22. There is a direct relationship between how hard I work and the success and respect I will have.	1	2	3	4	5
23. I don't feel that I have accomplished much lately that is really important or meaningful with respect to my future goals and objectives in life.	1	2	3	4	5
24. I often think that I am inadequate, incompetent or less important than others with whom I work and that I know.	1	2	3	4	5
25. Many times I feel that I have little or no control and influence over things that happen to me.	1	2	3	4	5
26. If anything else changes or goes wrong in my life right now, I feel that I might not be able to effectively cope with it.	1	2	3	4	5
27. When change occurs at work or home I often find myself thinking that the worst is going to happen.	1	2	3	4	5
28. At the moment, things at work and at home are fairly predictable and any more changes would just be too much to handle.	1	2	3	4	5

29. You can't really trust that many people because most individuals are looking for ways to improve their welfare and happiness at your expense.	1	2	3	4	5
30. Most of the meaning in life comes from internal, rather than external definitions of success, achievement and self-satisfaction.	1	2	3	4	5

Below are some statements that describe different emotions that work can make a person feel. Please indicate how often you've experienced each emotion at work over the last 30 days.

Please circle the number that is most appropriate

	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. My job made me feel at ease.	0	1	2	3	4
2. My job made me feel angry.	0	1	2	3	4
3. My job made me feel annoyed.	0	1	2	3	4
4. My job made me feel anxious.	0	1	2	3	4
5. My job made me feel bored.	0	1	2	3	4
6. My job made me feel cheerful.	0	1	2	3	4
7. My job made me feel calm.	0	1	2	3	4
8. My job made me feel confused.	0	1	2	3	4
9. My job made me feel content.	0	1	2	3	4
10. My job made me feel depressed.	0	1	2	3	4
11. My job made me feel disgusted.	0	1	2	3	4
12. My job made me feel discouraged.	0	1	2	3	4
13. My job made me feel elated.	0	1	2	3	4
14. My job made me feel energetic.	0	1	2	3	4
15. My job made me feel excited.	0	1	2	3	4

	Never	Almost Never	Sometimes	Fairly Often	Very Often
16. My job made me feel enthusiastic.	0	1	2	3	4
17. My job made me feel frightened.	0	1	2	3	4
18. My job made me feel frustrated.	0	1	2	3	4
19. My job made me feel furious.	0	1	2	3	4
20. My job made me feel gloomy.	0	1	2	3	4
21. My job made me feel fatigued.	0	1	2	3	4
22. My job made me feel happy.	0	1	2	3	4
23. My job made me feel intimidated.	0	1	2	3	4
24. My job made me feel inspired.	0	1	2	3	4
25. My job made me feel miserable.	0	1	2	3	4
26. My job made me feel pleased.	0	1	2	3	4
27. My job made me feel proud.	0	1	2	3	4
28. My job made me feel satisfied.	0	1	2	3	4
29. My job made me feel relaxed.	0	1	2	3	4

Please indicate how much you agree or disagree with the following statements.

	Strongly disagree 1					Strongly agree 5				
1. If I should find myself in a difficult situation, I think of many ways to get out of it.	1	2	3	4	5					
2. At the present time I am energetically pursuing my goals	1	2	3	4	5					
3. There are lots of ways around any problem that I am facing right now.	1	2	3	4	5					
4. Right now, I see myself as being pretty successful.	1	2	3	4	5					
5. I can think of many ways to reach my current goals.	1	2	3	4	5					
6. At this time I am meeting the goals that I have set for myself.	1	2	3	4	5					

To respond to the statements in the next sections of this questionnaire you must have a specific stressful situation in mind. Take a few moments and think about the most stressful situation that you have experienced **at work or as a result of work** in the past few weeks or so.

By "stressful" we mean any situation where you had to use considerable effort to deal with the situation. Before responding to the statements, think about the details of this stressful situation, such as where it happened, who was involved, how you acted, and why it was important to you. While you may still be involved in the situation, or it could have already happened, it should be the most stressful work situation that you have experienced in the past weeks.

Please briefly describe the stressful situation

As you answer the remaining sections, please keep this stressful situation in mind.

Please indicate how you thought about the stressful situation when you first encountered it.

		Not at all 1			Very much 5		
1.	The stressful situation was important to me.	1	2	3	4	5	
2.	I thought I could cope with the situation.	1	2	3	4	5	
3.	I felt I could control the situation.	1	2	3	4	5	
4.	I was concerned that others would be disappointed in my performance.	1	2	3	4	5	
5.	I focused on the positive benefits I would obtain from the situation.	1	2	3	4	5	
6.	I was concerned about my ability to perform under pressure.	1	2	3	4	5	
7.	I was thinking about the good consequences of performing well.	1	2	3	4	5	
8.	I was looking forward to testing my knowledge, skills and abilities.	1	2	3	4	5	
9.	I worried that I may not be able to achieve the outcome I was aiming for.	1	2	3	4	5	
10.	I was looking forward to the rewards of success.	1	2	3	4	5	
11.	I was thinking about the bad consequences of performing poorly.	1	2	3	4	5	



As with the previous section, please respond to each of the statements with the stressful situation in mind. Please indicate how often you used each coping response with this particular situation.

	Not at all 1			Very much 5		
1. I concentrated on doing something about it.	1	2	3	4	5	
2. I made jokes about it.	1	2	3	4	5	
3. I gave up trying to deal with it.	1	2	3	4	5	
4. I admitted to myself I couldn't deal with it, and stopped trying.	1	2	3	4	5	
5. I learned to live with it.	1	2	3	4	5	
6. I pretended it hadn't really happened.	1	2	3	4	5	
7. I expressed my negative feelings.	1	2	3	4	5	
8. I used alcohol or other drugs to help me get through it.	1	2	3	4	5	
9. I talked to someone about how I was feeling.	1	2	3	4	5	
10. I thought hard about what steps to take.	1	2	3	4	5	
11. I put my trust in God.	1	2	3	4	5	
12. I blamed myself for what had happened.	1	2	3	4	5	
13. I told myself it was all my fault.	1	2	3	4	5	
14. I said to myself "this isn't real".	1	2	3	4	5	
15. I made fun of the situation.	1	2	3	4	5	
16. I prayed or meditated.	1	2	3	4	5	
17. I accepted the reality of the fact that it happened.	1	2	3	4	5	
18. I just got used to the idea that it had happened.	1	2	3	4	5	
19. I looked for something good in what happened.	1	2	3	4	5	
20. I got help and advice from other people.	1	2	3	4	5	
21. I tried to see it in a different light, to make it seem more positive.	1	2	3	4	5	
22. I let my feelings out.	1	2	3	4	5	
23. I asked people who had had similar experiences.	1	2	3	4	5	

24.	I took action to try and make the situation better.	1	2	3	4	5
25.	I used alcohol or other drugs to think about it less.	1	2	3	4	5
26.	I tried to see the funny side of things.	1	2	3	4	5
27.	I daydreamed about other things to take my mind off it.	1	2	3	4	5
28.	I did what had to be done, one step at a time.	1	2	3	4	5
29.	I tried to find comfort in my religion or spiritual beliefs.	1	2	3	4	5
30.	I did something to think about it less, such as going to movies, watching TV, reading or shopping.	1	2	3	4	5
31.	I got emotional support from others.	1	2	3	4	5
32.	I used alcohol or other drugs to make myself feel better.	1	2	3	4	5
33.	I thought of what I could learn from the experience	1	2	3	4	5
34.	I got comfort and understanding from someone.	1	2	3	4	5
35.	I gave up the attempt to cope.	1	2	3	4	5
36.	I turned to work or other activities to take my mind off things.	1	2	3	4	5
37.	I tried to get advice or help from other people about what to do.	1	2	3	4	5
38.	I made a plan of action.	1	2	3	4	5
39.	I said things to let my unpleasant feelings escape.	1	2	3	4	5
40.	I criticized myself.	1	2	3	4	5
41.	I tried to come up with a strategy about what to do.	1	2	3	4	5
42.	I refused to believe that it had happened.	1	2	3	4	5
43.	I feel I coped with the situation effectively.	1	2	3	4	5
44.	I feel positive about the outcomes of the situation.	1	2	3	4	5
45.	I did something else to deal with the situation (please specify) _____					



The following questions are about your health on the job over the last 12 months.  
Please fill in the blanks below.

1. In the last 12 months I have had \_\_\_\_\_ days off because I had a cold/flu
2. In the last 12 months I have had \_\_\_\_\_ days off because I had headaches
3. In the last 12 months I have had \_\_\_\_\_ days off because I had backaches
4. In the last 12 months I have had \_\_\_\_\_ days off because I had nausea/upset stomach
5. In the last 12 months I have had \_\_\_\_\_ days off because I had other physical illness  
(please specify the illness(es))

In the past 12 months I have been sick but **not** taken time off work because of:

1. Cold/flu: \_\_\_\_\_ times
2. Headache: \_\_\_\_\_ times
3. Backache: \_\_\_\_\_ times
4. Nausea/upset stomach: \_\_\_\_\_ times
5. Other (please specify) \_\_\_\_\_ times

## Demographics

- |    |                                   |                      |  |        |        |
|----|-----------------------------------|----------------------|--|--------|--------|
| 1. | Gender                            |                      | Male   |        | Female |
| 2. | Ethnicity (tick applicable boxes) |                      | New Zealander<br>NZ European<br>NZ Maori<br>Pacific Islander<br>Asian<br>Other: Please specify _____ |        |        |
| 3. | Age:                              | Under 25             | 25 – 29  | 30 –34 | 35-39  |
|    |                                   | 40-44                | over 45  |        |        |
| 4. | Rank                              | JNCO                 | SNCO / WO  |        |        |
|    |                                   | Officer (Lt to Capt) | Maj or above   |        |        |
| 5. | Corps_____                        |                      |  |        |        |
| 6. | Length of Service (years)_____    |                      |  |        |        |

7. Location (e.g. Linton, Burnham etc)\_\_\_\_\_

8. Please tick the boxes that apply to you?

Recently promoted

Due for promotion

In a position/role below my rank and experience level

In a position suited to my rank and experience level

In a position suited to my rank but lacking experience to fulfill the role

In a position/role above my rank and experience level

7. What are the two main causes of STRESS in your work?

8. What are the two main causes of SATISFACTION in your work?

9. I intend to leave the Army in (please tick applicable boxes):

Less than six months

6 months to 1 year

Between 1 and 3 years

Between 3 and 6 years

Between 6 and 10 years

Between 10 and 15 years

When I am eligible for Superannuation

When my contract or return of service is fulfilled.

Other (please explain) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Thank you very much for completing this questionnaire.**

After completion please either put the questionnaire in the box at the door if you have received this questionnaire directly from me, or if you have received the questionnaire by mail return it in the envelope provided through internal mail to Capt Mike Carston, HQ2LFG (address is on the front of this questionnaire).

## Appendix C: The Rank Structure of the New Zealand Army

“In military forces it is essential to have leaders and people in authority to ensure the execution of the approved policy in the correct manner and at the correct time. In the army, those who exercise leadership and authority hold *ranks* graded according to the degree of responsibility vested in them” (New Zealand Defence Force, 2005, Chapter 4, sect 1)

“Writing in 1670-1671, that is in the very early days of the British standing army, Sir James Turner stated in his *Pallas Armata* that – ‘*The officers of a company who march out in file or rank are divided into Commissioned and Uncommissioned*’. The latter term has long since become *non-commissioned*” (New Zealand Defence Force, 2005, Chapter 4, sect 1)

The rank groupings below start from most junior to most senior within the New Zealand Army. The rank groupings of interest (junior and senior soldiers and officers) generally represent junior and senior managers/leaders within their respective soldier and officer groupings.

### Soldiers (non-commissioned)

Private	
Lance Corporal	<i>Junior Soldier</i>
Corporal	<i>Junior Soldier</i>
Sergeant	<i>Senior Soldier</i>
Staff Sergeant	<i>Senior Soldier</i>
Warrant Officer Class Two	<i>Senior Soldier</i>
Warrant Officer Class One	<i>Senior Soldier</i>

### Officers (commissioned)

Second Lieutenant	
Lieutenant	<i>Junior Officer</i>
Captain	<i>Junior Officer</i>
Major	<i>Senior Officer</i>
Lieutenant Colonel	<i>Senior Officer</i>
Colonel	<i>Senior Officer</i>
Brigadier	
Major General	
Lieutenant General	

# Appendix D: Cognitive Hardiness as a Moderator

Table 1

*Hypothesis 25a: Analysis of challenge appraisal, cognitive hardiness and their interaction effects on task-focused coping*

	<sup>1</sup> Independent Variable	B	SE B	$\beta$	Partial R <sup>2</sup>	Adjusted R <sup>2</sup>
Step 1						.202
	Challenge	.323	.035	.455**	.22	
	Cognitive Hardiness	-.004	.089	-.002	.001	
Step 2						.200
	Challenge	.321	.035	.453**	.21	
	Cognitive Hardiness	-.002	.090	-.001	.007	
	Challenge x Cognitive Hardiness	-.020	.089	-.011	.005	

\* p<.05, \*\* p<.01, \*\*\* p<.001

<sup>1</sup> All independent variables were centered before the analysis.

Table 2

*Hypothesis 25b: Analysis of challenge appraisal, cognitive hardiness and their interaction effects on social support*

	<sup>1</sup> Independent Variable	B	SE B	$\beta$	Partial R <sup>2</sup>	Adjusted R <sup>2</sup>
Step 1						.035
	Challenge	.194	.053	.196**	.037	
	Cognitive Hardiness	-.236	.136	-.094	.003	
Step 2						.042
	Challenge	.177	.054	.180**	.009	
	Cognitive Hardiness	-.204	.137	-.081	.003	
	Challenge x Cognitive Hardiness	-.258	.136	-.102	.018	

\* p<.05, \*\* p<.01, \*\*\* p<.001

<sup>1</sup> All independent variables were centered before the analysis.

Table 3

*Hypothesis 26: Analysis of threat appraisal, cognitive hardiness and their interaction effects on avoidance*

<sup>1</sup> Independent Variable	B	SE B	$\beta$	Partial $R^2$	Adjusted $R^2$
Step 1					.035
Threat	.066	.036	.100	.017	
Cognitive Hardiness	-.271	.092	-.159**	.031	
Step 2					.033
Threat	.067	.036	.101	.017	
Cognitive Hardiness	-.274	.093	-.160**	.031	
Threat x Cognitive Hardiness	.053	.102	.028	.001	

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

<sup>1</sup> All independent variables were centered before the analysis.

Table 4

*Hypothesis 27a: Analysis of task-focused coping, cognitive hardiness and their interaction effects on positive affect*

<sup>1</sup> Independent Variable	B	SE B	$\beta$	Partial $R^2$	Adjusted $R^2$
Step 1					.160
Task-focused coping	.331	.049	.339**	.126	
Cognitive Hardiness	.345	.088	.196**	.051	
Step 2					.159
Task-focused coping	.334	.049	.343**	.126	
Cognitive Hardiness	.350	.088	.199**	.051	
Task-focused coping x Cognitive Hardiness	-.119	.129	-.046	.001	

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

<sup>1</sup> All independent variables were centered before the analysis.

Table 5

*Hypothesis 27b: Analysis of social support, cognitive hardiness and their interaction effects on positive affect*

<sup>1</sup> Independent Variable	<i>B</i>	<i>SE B</i>	$\beta$	Partial $R^2$	Adjusted $R^2$
Step 1					.070
Social support coping	.110	.037	.157**	.026	
Cognitive Hardiness	.411	.092	.233**	.051	
Step 2					.067
Social support coping	.110	.037	.158**	.026	
Cognitive Hardiness	.412	.092	.234**	.051	
Social support coping x Cognitive Hardiness	.023	.092	.013	.001	

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

<sup>1</sup> All independent variables were centered before the analysis.

Table 6

*Hypothesis 28: Analysis of avoidance, cognitive hardiness and their interaction effects on negative affect*

<sup>1</sup> Independent Variable	<i>B</i>	<i>SE B</i>	$\beta$	Partial $R^2$	Adjusted $R^2$
Step 1					.332
Avoidance coping	.508	.046	.494**	.262	
Cognitive Hardiness	-.400	.079	-.228**	.099	
Step 2					.330
Avoidance coping	.508	.046	.494**	.262	
Cognitive Hardiness	-.400	.080	-.228**	.099	
Avoidance coping x Cognitive Hardiness	.003	.115	.001	.014	

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

<sup>1</sup> All independent variables were centered before the analysis.