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An Appraisal-Coping Model of Occupational Stress Outcomes: Distress and Eustress.

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Abstract

Occupational stress is a significant problem throughout the industrialised world. The prevalence of occupational stress is increasing and the negative consequences of stress for individual health and wellbeing are also acknowledged to be increasing. This attention to the negative aspects of stress is, however, one sided. Stress, if negotiated appropriately, can produce positive responses and outcomes (Nelson & Simmons, 2003). The present research returned to the original stress conceptualisation as proposed by Selye (1976) and addressed the positive response to the stress process, termed '*eustress*'.

The Transactional Model of Stress (Lazarus & Folkman, 1984) was adapted by including eustress as the positive response to the stress process, in contrast to the negative response of distress. The model posits stress to be a process of transaction between an individual and their environment, and proposes two appraisal processes: cognitive appraisal of event meaning and appraisal of coping options. These aspects of stressor negotiation in turn determine the degree of eustress and distress experienced. Eustress and distress are further posited to be antecedents to positive and negative changes in long-term health, morale and social functioning.

One hundred and forty four employees from three New Zealand organizations completed a questionnaire that assessed cognitive appraisals and coping processes used to deal with a stressful event and state affective responses as representative of eustress and distress. Eustress was represented by the work-related affective states of high pleasure/high arousal and hope. The precursors of eustress were challenge appraisal, adaptive coping and increased motivation. A measure of distress and a model of precursors to distress were also proposed but require further research.

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CHAPTER ONE: INTRODUCTION

Much research over the last decade has emphasised the negative consequences of excessive work-related demands on an individual's physical and psychological health and wellbeing. The World Health Organization recognises stress in the workplace to be one of the top ten determinants of ill health in Western civilisation (Wilkinson & Marmot, 1998). In accordance, New Zealand has included the issue of occupational stress in employment legislation. The Health and Safety in Employment Amendment Act 2002 (OSH, 2003) now deems both the employer and the employee responsible for monitoring stressors and managing the level of experienced stress in the work environment. Once the employer is made aware of unreasonable sources of stress, legislation requires that all practicable steps be taken to remove the potential harm from the work environment (OSH, 2003).

As yet there is no single agreed-upon theory or model that defines what stress is and explains how and why it comes into existence. In the present research, stress is defined via Lazarus and Folkman's (1984) Transactional Model, as a "relationship between the person and the environment that is appraised by the person as taxing...and endangering his or her well-being" (Lazarus & Folkman, 1984, p19). Occupational stress arises from workplace demands that are perceived to impact on the individual within the working environment or outside work.

According to this model, stress denotes a process of transaction between a person and an environmental event. The process is initiated when an individual encounters an event (a stressor) that they appraise as having stake against their goals or beliefs. This involves an awareness of the possible negative consequence that could arise. The individual then appraises the event in terms of what it means to them, either as a negative loss or threat, or as a positive challenge. The appraisal of threat occurs when the demands are expected to produce negative consequences. A challenge appraisal occurs when demands are viewed as an

opportunity to extend and prove oneself. Dispositional qualities of the person and also aspects of the environmental context within which this transaction takes place will influence this initial appraisal and later appraisals throughout the stress process.

Whether the initial appraisal is one of challenge or threat, the individual must decide how to cope with the demands. Coping responses can be categorised into strategies that aim to manage an individual's emotional response to the event and strategies that actively attempt to modify some aspect of the situation. The resulting coping strategies employed to deal with the demands are effective dependent on the requirements of the stressor event and the situation/context of the event. This model is set out in Figure 1.

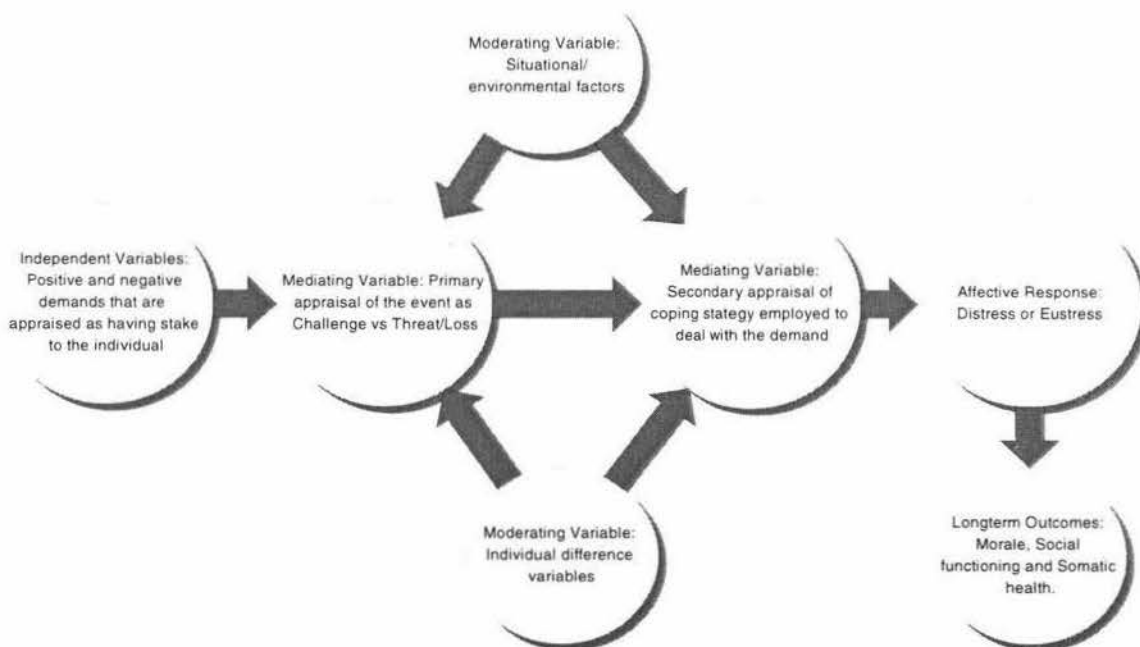


Figure 1. A Model of Occupational Stress Simplified.

As an extension to the Transactional Model of Stress, the present research proposes that depending on the cognitive appraisals and coping responses given, the individual will experience *distress* and/or *eustress*. Eustress represents the

positive psychological and physiological changes that arise in response to the occurrence of positive aspects throughout the stress process. Appraisals of challenge and effective coping produce the eustress response. Over the long term the experience of eustress influences positive changes in the adaptational outcomes (Lazarus & Folkman, 1984) of somatic health, social functioning and morale. Conversely distress represents the negative psychological and physiological changes that arise in response to negative stress process aspects such as threat appraisals and ineffective coping. Distress experienced over the long-term gives rise to the negative stress outcomes commonly discussed in everyday language, for example the negative effects on physical and psychological wellbeing.

CHAPTER TWO: CONSEQUENCES AND PREVALENCE OF STRESS

2.1 Consequences of Stress

2.1.1 Physiological Consequences

The physiological side of the stress process involves the mobilization of energy resources in the body via the sympathetic nervous system and the endocrine (hormonal) system (Quick, Nelson & Quick, 1990). Physiological systems that are required to deal with the demand encountered are mobilized and those not needed are suppressed. These changes embody the evolutionary fight or flight response to threat (Kemeny, 2003). This is represented by several possible physiological changes, such as heightened alertness, elevated heart rate and blood pressure, release of glucose and fatty acids into the blood stream and reduction in some bodily functions such as immune function and digestion. Although this process is a natural survival response, if elicited too frequently or intensely without being resolved, physiological exhaustion can arise (Quick et al., 1990). A substantial amount of research supports a causal relationship between negative work conditions and reductions in individual health (Clarke & Cooper, 2003). Physical effects include: insomnia, loss of appetite, headaches, nausea, cramps, and nervous twitches. The experience of negative stress can also affect an individual's long-term physical health and wellbeing. Research has suggested a link between the experience of long-term stress and increased heart disease (Clarke & Cooper, 2003).

To date, research has tended to suggest that the physiological response to stress involves a uniform pattern that is experienced regardless of how the stressor is negotiated. Alternatively, specificity theory posits that distinct physiological responses will occur depending on stress process aspects including positive and negative cognitive appraisals and coping responses (Kemeny, 2003). Tomaka and others have confirmed repeatedly that threat and challenge appraisals induce

different physiological reactions (Tomaka, Blascovich, Kelsey & Leitten, 1993; Tomaka, Blascovich, Kibler & Ernst, 1997).

2.1.2 Psychological Consequences

Work stress has been linked to changes in an individual's psychological functioning. For example, work-related stress may give rise to job dissatisfaction, tension and anxiety, irritability, anger, inability to concentrate, feeling unable to cope, a loss of interest/motivation, and constant tiredness (Clarke & Cooper, 2003).

Over the long term, stress may affect an individual's level of morale, which includes job satisfaction, happiness and subjective wellbeing. Stress may also affect one's level of social functioning, i.e. an individual's effectiveness in the social and working world (Lazarus & Folkman, 1984). Research has indicated that the experience of negative work-related stress over the long-term is also related to more severe psychological illness such as nervous debility and mental breakdown (Clarke & Cooper, 2003).

2.1.3 Workplace Consequences

Stress in the workplace can also affect organizational functioning. The effects of stress on an employee's physical and psychological health and wellbeing will influence their ability to perform in a given role and to be a productive part of an organizational group. Occupational Safety and Health (2003) note that the following outcomes can occur for the organization as a result of unmanaged employee stress: reduced job performance and productivity, increased turnover and absenteeism, reduced morale and workplace relations, and increased errors and accidents. The Health and Safety Executive, United Kingdom (Earnshaw & Cooper, 2001, as cited in Clarke & Cooper, 2003) estimated sixty percent of all work absences are stress related. This amounts to 40 million lost workdays per

year as a result of work-related stress in the United Kingdom. No New Zealand estimates are available.

2.2 *Prevalence of Occupational Stress*

Throughout the Western world, occupational stress is attracting an increasing awareness in research, legislation and as a result, in organizations. This has provided the backbone for legal claims in both the United Kingdom and the United States against employers for employee ill health as a result of excessive work demands (Clarke & Cooper, 2003). In 1990, a Gallop poll indicated that nearly 50% of all Americans said that job stress affected their health, personal relationships or job performance (Quillian-Wolever & Wolever, 2003). Over the subsequent decade, this proportion is suggested to have increased substantially as the working world has changed. In response to the need for increased organizational competition, improved technology and globalisation, the pace of work has increased. Meanwhile employment stability has decreased with life long employment replaced with non-core employment contracts (Millward & Brewerton, 2000). An analysis of 15 OECD countries by the International Social Survey Program discovered that 80% of employees reported being stressed at work (OECD, 1999, as cited in Clarke & Cooper, 2003). As a consequence, employers are becoming more aware of the need to attend to not just the physical safety of their employees, but also to their psychological wellbeing.

2.2.2 Occupational Stress in New Zealand

According to New Zealand Occupational Safety and Health (OSH; Department Of Labour, 19 February 2004, personal communication), records from the past three years indicate that 281 cases of complaints and incidents have been reported where the agency is a 'stressful situation'. For serious harm and notifiable occupational disease, 46 cases were reported where the mechanism was 'exposure

to mental stress factors' and 69 cases reported where the mechanism was 'mental stress'.

Amendments were made to the New Zealand Health and Safety in Employment Act in 2002, which emphasised the need for workplaces to address occupational stress and its possible negative impact on employee health and wellbeing. These amendments require that employers and employees work together to systematically identify and manage sources of stress that have a known potential to cause harm in the workplace (OSH, 2003). For all stressors that the employer can be reasonably expected to be aware of, all practicable steps must be taken to remove/minimise the source of stress. It is also expected that action against occupational stress should be taken in a preventative manner and not just in reaction to employee physical and psychological ill health experienced as a result of excessive stress.

CHAPTER THREE: DEFINING AND UNDERSTANDING STRESS

The majority of theories and models attempting to explain human stress can be divided into three broad approaches. The first approach covers those theories that view stress as a stimulus to be avoided, an event that occurs in the environment to which every person will react. The second approach covers those theories that view stress as a bodily reaction involving a set of physiological changes that occur in response to demanding events. The final approach involves those theories that view stress as an interaction between a person and an environmental event that poses a demand for that individual.

3.1 The Stressor-Strain Model

The stressor-strain model (stimulus-based approach) implies a direct link between stressors and strain. An example of this approach is the Social Readjustment Rating Scale (Holmes & Rahe, 1967, as cited in Lazarus, 1999) in which stress is viewed as an event in the environment to be avoided. The model provides a list of potential environmental stressors to which every person is suggested to react.

This view has been criticised for a number of reasons. Firstly there is more to 'stress' than just the environmental event. The individual experiencing that event and their reactions must also be acknowledged and understood (Lazarus, 1999). Lazarus contends that there can never be a complete model as it is not possible to list all potential stressors including both traumatic events and daily hassles (1999). The view also neglects to account for any individual difference factors that impact on the stress process, as what is considered stressful is an individual experience dependent on the person involved (Lazarus, 1999).

3.2 Stress as a Physiological Response

The response-based approach defines stress as a physiological response to any stressful event. Dr Hans Selye, a founding medical researcher in the topic of stress from the 1950's onwards proposed the General Adaptation Syndrome (GAS) to explain human stress. Selye defines stress as the "non-specific response to demand placed on the body", an attempt to adjust to normalcy (Selye, 1973, p 692). "Non-specificity" denotes a generalised response that is suggested to occur as a result of any type of injury or activation of any part of the body, physical or psychological (Selye, 1991). Regardless of whether the agent that causes the activity is pleasant or not, or again whether that agent is physiological or psychological, the same physiological pattern of alarm, resilience and finally exhaustion is suggested to occur (Selye, 1973). This physiological mobilization in turn increases disease susceptibility with over-mobilization resulting in long-term ill health (Lazarus & Folkman, 1984). The only relevant aspect of the agent that alters the degree of response experienced is its intensity.

Although the GAS model helps to explain the physiological/medical side of the stress response, this view has also met criticism. The GAS model neglects individual differences that moderate the stress experience (Lazarus, 1999) and fails to consider that the physiological response to stress is dependent on the type of event encountered (Kemeny, 2003). There is also circularity in the definition as stressful events are defined by the appearance of a stress response and the stress response is then defined by the initial stimulus (Lazarus, 1999).

The Yerkes Dodson model (1908, as cited in Le Fevre, Matheny & Kolt, 2003) is a widely referred to model of human stress in management literature. The model posits that a certain amount of stress experienced in the work environment is motivating for the individual and suggests a direct relationship between stress and performance as represented by a bell-shaped curve. As stress increases (x axis), individual performance (y axis) will increase respectively (upward slant of the bell). The peak of the curve represents a maximum level of performance produced

by the optimum level of experienced stress. Once this optimum stress level is attained, any additional increments in stress experienced will produce a decline in performance (downward slant of the bell). Too little stress or excessive stress represents under and over stimulation respectively, resulting in reduced performance.

This management view of an optimum level of stress has however been suggested to be too simplistic to account for the total variation in individual human stress response (Le Fevre et al., 2003). In addition, the model is based on observations of stimulus strength and performance in mice, not human occupational performance.

3.3 *Stress as an Interaction*

The interaction-based approach to stress defines stress as an interaction between a person and an environmental event.

3.3.1 Person-Environment Fit Model

Person-Environment Fit theory proposes that individual level outcomes such as occupational stress are the direct result of the relationship between the person and their environment (Edwards & Cooper, 1990, as cited in Edwards, 1996). Stress is suggested to result when a mismatch occurs between these two variables. Two versions of the approach exist (Edwards, 1996): one proposes the importance of fit between environmental supplies and employee values and another proposes a fit between environmental demands and employee ability. Both types of misfit have been found to be linked to strain (negative stress outcomes) as represented by dissatisfaction and tension (Edwards, 1996).

3.3.2 Demand-Control-Support Model

The Demand-Control-Support model also takes the interaction-based approach to stress and proposes job control (decision latitude) to be an integral moderator of the negative effects of the stress process. Jobs that are high in both control and demand are suggested to provide the best outcomes in terms of low stress and high motivating potential (Karasek, 1979, as cited in Rodriguez, Bravo, Peiro & Schaufeli, 2001). The model has however been criticised due to its simplicity. Even with the inclusion of additional moderators to the model such as social support and the individual difference variable locus of control, research evidence has been inconclusive (Rodriguez et al., 2001).

There are clearly limitations to these models of stress. Cognitive appraisal models of stress, as covered in the next chapter, provide a more comprehensive understanding of the stress process.

CHAPTER FOUR: THE TRANSACTIONAL MODEL OF STRESS

The present research is based on the Transactional Model of Stress (Lazarus & Folkman, 1984). This model defines stress as a process of transaction between an individual, their environment and a demanding event. The process involves two appraisal processes: a primary appraisal of event meaning and a secondary appraisal of coping options. Occupational stress arises from demands experienced in the working environment that affect how one functions at work or outside work.

The model suggests that the immediate outcomes of the stress process are changes in experienced “emotion and stress”. The present research proposes that responses to the stress process can be both positive and negative and aims to determine what the positive and negative stress responses involve and how they arise. Over the long-term, these responses may influence physical and psychological health and also occupational outcomes such as performance, productivity and job satisfaction. These points will be developed further in Chapter Five.

4.1 *Demands/Stressors*

The stress process refers to a transaction between a person and their environment (Lazarus & Folkman, 1984). The term ‘transaction’ rather than interaction is used in order to express a process of adaptation, whereby the person and the environment influence each other in a reciprocal fashion (Lazarus, 1999).

Many aspects of the social, psychological and physical work environment can induce the stress process. These issues, situations and events that present a source or demand/pressure are termed “stressors”. Cooper and Marshel (1976, as cited in Clarke & Cooper, 2003) suggest that workplace stressors (sources of pressure) can be categorized into six broad categories: intrinsic to the job (physical and

psychosocial aspects of the work environment); role in the organization; relationships at work; career development; organizational structure and climate, and home-work interface. Factors in the context of the organization itself, for example communication and administration, can also represent major stressors to an employee (Clarke & Cooper, 2003).

Research by Hart and Cotton (2002) into work-related stress in the police force suggested that although police officers are considered to have an inherently 'stressful role', they were found to encounter similar stressors to those experienced in non-threatening jobs. The major source of work pressure experienced was not the tasks and demands of a police officer's role, but the organizational climate that the individual functions within.

With the changing nature of the working world the following four stressors have also been indicated as increasingly relevant to the employee: job insecurity, work hours, control at work and managerial style (Sparks, Faragher & Cooper, 2001).

4.2 Initiating the Stress Process

For a person-environment relationship to be stressful an environmental event (i.e. an issue, situation or event) must be firstly appraised as '**relevant-stressful**' and thus the event represents a stressor for that individual. The term appraisal is used instead of perception as it denotes an evaluation of personal significance (Lazarus, 1999). Every individual has their own beliefs, expectations, goals and perceptions regarding the resources available to them. These aspects of the person are acknowledged to impact the stress process just as the stressor event itself has impact.

“ It takes both the stressful stimulus condition and a vulnerable person to generate a stress reaction...it is the meaning constructed by the person about what is happening that is crucial to the arousal of stress reactions”(Lazarus, 1999, pp 53-55).

A relevant-stressful appraisal occurs when an event is perceived to hold stake (potential threat) against the individual's goals, beliefs or expectations. The degree of experienced stress is directly related to the perceived importance of what is at stake for that individual (Lazarus, 1999). Once the stress process is initiated with a relevant-stressful appraisal, the stress process of primary appraisal of event meaning and secondary appraisal of coping responses will proceed. This links to the physiological 'fight or flight' response to threat; the body is mobilized physiologically as well as mentally in order to negotiate the event.

Events can also be appraised as '**irrelevant**' or '**relevant benign-positive**' (Lazarus, 1999). Irrelevant appraisal denotes the appraisal of the event as having no perceived implications for wellbeing or goal attainment. Relevant benign-positive appraisal denotes the appraisal of the event as one that can preserve or enhance wellbeing and goal attainment. These appraisals are not part of the stress process as there is no potential threat posed against the individual that must be overcome. The appraisal of an event as benign-positive may also have responses and outcomes similar to those that represent the stress process, however as these events are not negotiated through the stress process (the awareness of potential threat) the responses and outcomes produced cannot be considered equivalent.

Demands, constraints and even positive events such as opportunities can be appraised as relevant-stressful events (Lazarus, 1999). It is not the event itself that initiates the stress process but the individual's cognitive appraisal of what the event means to them. Events are rarely appraised as purely positive or negative and as such both appraisal processes may occur in response to a single event. For example, although a promotion is a positive event, it is often accompanied by some degree of apprehension and nervous tension.

4.3 Primary Appraisal

Once the stress process is initiated with an event appraised as relevant-stressful, the individual must consider the following: "*What does this event mean to me?*"

(Lazarus & Folkman, 1984). Cognitive appraisals include: **Harm/loss**, an appraisal of damage that has already been done; **Threat**, an appraisal of damage that is expected in the future as a result of the event; and **Challenge**, an appraisal of potential mastery and personal growth as a result of potential accomplishment. Threat and challenge appraisals represent distinct constructs and can occur simultaneously to any relevant-stressful event (Lazarus & Folkman, 1984).

In addition to the influence of the stressor event itself and aspects of the person (e.g. beliefs and perceptions), the situation/context in which the relationship takes place and individual differences also moderate cognitive appraisals (Lazarus & Folkman, 1984). The context includes such environmental variables as organizational climate and management support. Individual differences include factors such as culture, experience, wellbeing and personality traits that make that person unique.

The primary cognitive appraisals given to an event help determine the emotional, physiological and behavioural responses to stress. Tomaka et al. (1993) found that threat appraisals were linked to greater subjective stress, relatively less cardiac reactivity and greater vascular activity than challenge appraisals. Challenge appraisals were linked to an increase in cardiac reactivity, decreased vascular activity and also greater perceived and actual performance. Tomaka et al. (1997) found support for a causal direction in which physiological response was influenced by cognitive appraisals of threat and challenge. Quigley, Barrett and Weinstein (2002) found cardiovascular responses to change in correspondence with changing cognitive reappraisals with those who became more challenged through the stress process displaying more cardiac reactivity.

Maier, Waldstein and Synowski (2003) found significant relationships between primary appraisals and DBP (diastolic blood pressure) reactivity. Threat appraisals were related to an increase in DBP but not to cardiovascular reactivity. The subjective experience of stress (*strain*) was greatest for those who experienced threat. Appraisals of threat were found to predict negative affect

(*distress*). Challenge appraisals were found to predict positive affect and also task engagement.

Skinner and Brewer (2002) found that appraisals of challenge were associated with higher coping expectancies and with positive emotion, and that positive emotion and high state challenge benefited performance. Boswell, Olson-Buchanan and Le Pine (2004) found that 'felt challenge', the cognitive appraisal of growth and gain potential, mediated between experienced stress and positive work outcomes.

4.4 Secondary Appraisal

Secondary appraisal involves the appraisal of coping options; evaluating what might and can be done about the environmental event that has been appraised as having stake against the individual's goals and wellbeing (Lazarus & Folkman, 1984). This appraisal process incorporates perceptions regarding available coping options, likely coping success and ability to undertake different coping strategies. Whether a challenge or threat was initially appraised, in order to reduce the stake the event poses to the individual, some form of coping action must be taken. This appraisal again involves moderation by aspects of the person (particularly the resources available to them), the stressor event and also individual difference variables and situational/contextual variables. These variables influence the extent to which the individual perceives himself or herself as being capable of negotiating the demands posed by the stressor event. The outcome of the secondary appraisal process is the *actual* coping strategies employed by the individual to deal with the event (Lazarus & Folkman, 1984).

The terms primary and secondary appraisal do not denote a directional relationship nor are they intended to denote an order of importance within the stress process (Lazarus & Folkman, 1984). Cognitive appraisals and coping choices can be both consciously and automatically made.

4.4.1 Coping Strategies

Coping strategies have been broadly categorized into two domains: Emotion Focussed Coping (EFC) strategies, which attempt to change the meaning of the event and Problem Focussed Coping (PFC) strategies, which attempt to change the characteristics of the actual event or situation. EFC strategies include for example detaching and seeking emotional support (Folkman & Moskowitz, 2004). PFC strategies include such responses as making a plan to manage the demands and actively putting the plan into practice. This dichotomy has been further developed by the inclusion of the coping categories Social Coping and Meaning Focussed Coping in order to better explain the full range of possible coping response styles.

Folkman and Lazarus (1988) developed the Ways of Coping Questionnaire based on the Transactional Model of stress. The questionnaire contains 66 items that assess the use of eight different coping processes used to manage a recent stressful event. The eight subscales include:

1. Confrontive coping: aggressive efforts to alter the situation;
2. Distancing: cognitive efforts to detach oneself;
3. Self-controlling: efforts to regulate one's feelings;
4. Seeking social support: seeking informational/emotional support;
5. Accepting responsibility: acknowledging one's own role in the problem;
6. Escape-avoidance: wishful thinking;
7. Planful problem solving: efforts to alter the situation;
8. Positive reappraisal: focus on personal growth.

Planful problem solving, social support and positive reappraisal have been classified as adaptive forms of coping response (Bjorck, Cuthbertson, Thurman & Yung Soon Lee, 2001). Escape avoidance, confrontive coping, distancing and also self-control and accepting responsibility (due to the negative wording of subscale items) have been classified as maladaptive coping responses.

Coping responses to stressor events are influenced by initial cognitive appraisals in stress process negotiation. Challenge appraisals were found to be predictive of the coping strategies 'problem solving' and 'positive reappraisal', while threat appraisals were predictive of 'escape avoidance' (Bjorck et al., 2001). Although cognitive appraisals had some influence on distress, the main influence was on coping choices, which in turn influenced distress. McCrae (1984) and Bjorck and Cohen (1993) also found that cognitive appraisals of threat, loss or challenge influenced subsequent coping choices. Challenge appraisals were linked to more problem-focussed coping (Bjorck & Cohen, 1993) and also to rational action, perseverance, positive thinking, intellectual denial, restraint, self-adaptation and humour (McCrae, 1984). Threat appraisals were linked to wishful thinking, faith and fatalism (McCrae, 1984).

4.4.2 Consequences of Coping Choice

The majority of coping research has linked emotion focussed coping with an increase in experienced distress (Folkman & Moskowitz, 2004). Lazarus and Folkman (1984) suggest that coping strategies are not inherently bad or inherently ineffective and cannot be categorised as such. The effectiveness of any particular coping response is dependent on its appropriateness to the demands of the stress process and the fit with personal values and style (Lazarus & Folkman, 1984). Within some situations the regulation of emotion may be the only applicable response. In most situations, a combination of both a regulation of emotion (EFC) and direct management of the problem (PFC) is the most effective. Research has shown that EFC can be adaptive in the short term (Stanton, Danoff-Burg, Cameron & Ellis, 1994, as cited in Folkman & Moskowitz, 2004). As confusion surrounds most relevant-stressful events multiple strategies are often used to negotiate a single event.

If coping creates a successful resolution of the stress process, the Transactional Model suggests that positive emotion will occur, whereas if the resolution is undesirable, negative emotion will prevail (Lazarus & Folkman, 1984). Research

has predominantly focussed on the negative emotions and has only recently acknowledged that high levels of positive emotion can co-occur in stressful situations. Coping responses such as relaxation, direct action/problem focussed coping and positive reappraisal can lead to the experience of increased positive affect (Folkman & Moskowitz, 2004). The perception of growth has also been linked to the coping responses of acceptance and positive reinterpretation.

4.5 Reappraisal

After initial coping attempts have been made the individual will *re*-appraise what personal stake and meaning the stressor event holds. The reappraisal of the stressor takes into account new information gathered throughout the stress process (Lazarus & Folkman, 1984) including: coping effectiveness, new environmental information and information from one's own reactions throughout the process. Reappraisal indicates the circularity of the stress process. Unresolved events as a result of ineffective coping will produce negative reappraisals of the stressor event. The stress process is continued and negative aspects (threat appraisals and ineffective coping) are likely to be exacerbated. With positive reappraisals, positive aspects (challenge appraisals and effective coping) are likely to continue until the event is no longer perceived as having stake for that individual. At this point the event is no longer appraised as relevant-stressful and thus no longer denotes a stressor event.

4.6 Mediating/Moderating Variables

As noted earlier, factors from the situation/context in which the event takes place and also individual difference variables will influence how the individual negotiates a stressor event.

4.6.1 The Context of the Stress Process

Environmental and situational variables that create the context of the person/environment transaction will influence the individual's perceptions of the stressor event itself and also their perceptions regarding their ability to manage that event. For example a poor or unsupportive managerial style leads to an increase in perceived work-related *distress* irrespective of actual sources of job pressure (Sparks et al., 2001). Environmental variables such as organizational culture and climate, management and leadership style and support and organizational structure and processes are also important moderators of an individual's negotiation of the person/environment transaction (Hart & Cooper, 2003).

4.6.2 The Influence of Individual Differences

Individual difference variables that affect the stress process include (but are not limited to): ability and experience, age, gender, psychological and physical health, culture and genetic disposition. Almost all person aspects and qualities that make an individual unique can influence their interaction with their environment and stressor events. The concept of resilience denotes those individual difference characteristics that influence positive stress process negotiation by promoting more positive cognitive appraisals and coping choices. The concept of resilience has been defined as "the relatively stable trait characterized by the ability to bounce back from negative experience by flexible adaptation to the ever-changing demands of life" (Fredrickson, Tugade, Waugh & Larkin, 2003, p4). Conversely, vulnerability increases an individual's susceptibility to negative stress process negotiation and negative outcomes. Resiliency and vulnerability characteristics moderate the person/event transaction simultaneously (Paton, Smith, Violanti & Eranen, 2000).

Certain personality characteristics are important moderators of the stress process. Hardiness is an individuals "view of their place in the environment...expressed

through their commitment, challenge and control” (Nelson & Simmons, 2003, p 109). Hardiness consists of a positive hardiness/resilience, the presence of positive characteristics, and a negative hardiness/invulnerability, the absence of negative characteristics (Chan, 2003). It is a key factor underlying why some executives are able to remain healthy under work stress (Quick et al., 1990) and has a direct impact in reducing experienced psychological and somatic stress (Beasley, Thompson & Davidson, 2003) and is an important resistance factor against mental ill-health in combat soldiers (Bartone, 2000).

The personality characteristic of neuroticism has been found to be related to negative stress outcomes while extroversion may be related to the positive outcomes of the stress process (Penley & Tomaka, 2002). Characterised ‘hard-driving’ Type A personality style has been found to be related to elevated negative stress responses and outcomes (Ravicz, 1996). Ravicz found that Type A individuals differed on the personality trait of ego strength, which as a direct result influenced stress outcomes experienced with healthy type A’s being characterised by elevated ego strength.

Nelson and Simmons (2003) and Quick, Quick, Nelson and Hurrell (1997) further suggest the following characteristics as potential sources of resiliency: Optimism, the expectation that good will prevail in the future and that bad events will be few and temporary; Internal Locus of Control (as opposed to external), the belief that outcomes occur as a result of one’s own actions; Sense of Coherence, a sense of purpose in life with demanding events viewed as manageable and meaningful; and Self-reliance, the ability to form interdependent and supportive relationships as a result of a high sense of personal security.

4.7 Outcomes of the Stress Process

Lazarus and Folkman (1984) suggest that the long-term adaptational outcomes of the stress process can be positive as well as negative. However the mechanisms by which the stress process is tied to these positive and negative adaptational

outcomes are not specified further than the experience of “stress and emotion”. The present research attempts to further the Transactional Model by including positive as well as negative stress responses that may precede long-term positive and negative adaptational outcomes.

Throughout the stress process, stress responses will be experienced as a direct result of: threat and challenge appraisals, choice and effectiveness of coping strategies, and cognitive reappraisals. Two distinct types of responses are suggested to exist: Distress, the negative stress response (often, erroneously, considered analogous to stress) and Eustress, the positive stress response. Both responses are represented by specific immediate physiological (hormone, immune system reaction) and emotional/affective changes. The positive affective response to the stress process will be developed further in the next chapter.

CHAPTER FIVE: EUSTRESS

Although past research has predominantly focused on the negative aspects of stress, the positive psychology movement proposes a new angle of thought and research direction. Instead of focusing on human pathology, positive psychology encourages research attention toward *positive* human health, growth and wellbeing (Klaassen, 2001).

A focus on the *negative* aspects of the stress process has meant that intervention often centres on strategies aimed at eliminating stress. It has been argued however that stress is a part of life and cannot be avoided, and that stress can result in beneficial outcomes as well as negative ones (Selye, 1973). Quick et al. (1990) suggest that, if negotiated appropriately, stress can prove to be energizing, stimulating and growth producing for the individual as abilities are extended and new accomplishments made. Cavanaugh, Boswell, Roehling and Boudreau (2000) found support for a two-factor structure of stress. Negative hindrance-related stress was related to negative outcomes such as job search and turnover. Positive challenge-related stress was related to positive outcomes such as job satisfaction.

Human health encompasses more than just avoiding disease and also involves the attainment of positive wellness, “emotional, intellectual, spiritual, occupational, social and physical” (Nelson & Simmons, 2003, p 98). This implies that future occupational stress intervention, instead of aiming to eliminate stress, could focus on constructively managing stress in order to improve individual wellbeing and organizational performance.

5.1 Eustress

5.1.1 Origins of the Eustress Concept

The notion of the human stress process having positive outcomes is not a recent development. Dr Hans Selye, a noted founder of human stress research introduced the term 'eustress' to denote positive stress effects within the General Adaptation Syndrome theory (1976). He suggested that stress is a normal human response to any type of demand placed on the body. Thus stress is not something that should or even can be avoided: "Complete freedom from stress can only be expected after death" (Selye, 1976, p 15). The negative effects are not considered inevitable, but as eventuating when the stress response is elicited too intently or too frequently (Selye, 1974). Selye suggested that stress could produce two types of effect: *distress*, from the Latin *dis* or bad and *eustress*, from the Greek *eu* or good. Whether distress or eustress will eventuate depends on the conditions involved. However Selye suggests a uniform/non-specific physiological process by which these distinct stress effects occur without further differentiating between them. Although many researchers continued the work of Selye on distress, the eustress concept has largely been neglected.

Lazarus and Folkman (1984, p 181) also note that "Stress is not.... inherently maladaptive or deleterious, people can gain strength from stress and grow". Lazarus (1999) suggests that Selye's concept of eustress has similar meanings to the concept of challenge appraisals. As well as suggesting that positive aspects can occur within the stress process Lazarus notes that the adaptational outcomes of stress can be positive as well as negative.

Paton, a leader in traumatic stress research, has suggested that acute stress, if negotiated properly, can lead to the experience of growth for the individual involved (as cited in Paton et al., 2000). Paton's concept of post-traumatic growth may be linked to the concept of eustress as an outcome of chronic stressful events.

Hart and Cooper's (2003) Organizational Health Framework also acknowledges the existence of positive responses and outcomes to the stress process. Positive and negative events experienced at work will influence distress, positive morale and job satisfaction, which in turn influence work performance. Morale is analogous to positive affect and opposite to distress, and thus may be similar to the concept of eustress. More research is needed to understand why demanding work can lead to both distress and morale through aspects of stressor negotiation.

5.1.2 Eustress Revisited

Ignited by the positive psychology movement, the concept of eustress has begun to receive renewed attention over the last decade. Eustress denotes "the healthy, positive, constructive outcome of stressful events and the stress response" (Quick et al., 1997, p 4). Even with the most stressful of events, workers can become engaged with the event and perceive positive eustressful benefit (Campbell-Quick, Cooper, Nelson, Quick & Gavin, 2003).

Eustress is defined as:

“ A positive psychological state arising from one's perception of the person-environment transaction as offering the potential for pleasure, positive consequence, growth or challenge...the appraisal of the transaction as potentially controllable and important to the individual” (Ravicz, 1996, p 19).

This definition denotes the positive appraisal of an event as having the potential to benefit that individual or enhance his/her wellbeing (Nelson & Simmons, 2003).

Distress, on the other hand, is the negative destructive outcome of stress (Quick et al., 1990). Negative appraisals of the person-environment transaction may produce distress (Nelson & Simmons, 2003).

As events can rarely be appraised as purely positive or negative, eustress and distress represent stress *responses* as opposed to alternative effects/outcomes as originally posited by Selye (Nelson & Simmons, 2003).

Mediating variables influence the stress process. Both the environmental stressor and individual factors will influence the perception of the event, which in turn determines the experience of eustress or distress (Le Fevre et al., 2003). There is more to understanding the stress process than a quantitative link between stress experienced and outcomes.

While the experience of distress requires the individual to engage in coping activity to manage the demands posed by the event, eustress is suggested to result in a *savouring* process. This is a passive process of appreciating and enjoying the positively appraised event (Nelson & Simmons, 2003).

The eustress response to the stress process may produce positive changes in wellbeing, growth, flexibility, adaptability and high performance (Quick et al., 1990).

5.1.3 The Concept of Eustress Refined

Returning to the Transactional Model, events are firstly appraised as either irrelevant, relevant benign-positive or relevant-stressful. The definition of eustress as *an appraisal of an event as positive and enhancing* appears to denote the appraisal of an event as relevant benign-positive.

Even though challenge appraisals are recognised as positive and able to produce eustress, both Nelson and Simmons (2003) and Ravicz (1996) suggest they are more accurately categorized as positive appraisals of the event rather than a type of stressful appraisal.

The Transactional Model defines the stress process to involve the appraisal of an event as relevant-stressful, which involves the acknowledgment of the potential threat that may result from the demands encountered. The presented definition of eustress is not indicative of the *stress process*, and as such eustress cannot be conceptualised as the positive *stress* response, but the result of a *positive experience with positive events*. Although positive events may produce positive responses and outcomes, this is not representative of *stress*.

Locke (2003, p 439) also questions the existence of the 'eustress' concept as previously defined. Locke defines stress as "the psychosomatic form in which one experiences threat". As such, he suggests that positive eustress is a contradiction to the experience of threat. It is suggested however, that stress is not the *experience* of threat per se, but the *awareness* of potential threat. The event is appraised to be able to produce negative outcomes, but there is also the potential to prove oneself. Thus stress can exist without actual experienced threat or damage done.

5.1.4 Definition of Eustress

Eustress is defined in the present research as the positive response to the stress process. It is the result of an appraised relevant-stressful event being negotiated positively. Eustress is produced by the individual appraising the acknowledged potential threat as a chance to prove oneself, whereas distress results from continued appraisals of the event as being out of one's control and capability.

Furthermore, as eustress denotes a response to the stress process, some form of coping must occur to reduce the perceived demand. As such eustress involves more than a process of passive savouring as suggested by Simmons and Nelson (2003).

5.2 Indicators of Eustress

Eustress is represented by positive attitudes and positive psychological states. These positive affective states express a positive/motivating involvement with the demands posed by the stressor event (Nelson & Simmons, 2003). Simmons (2000) found eustress and distress to be distinguishable by affective state. The positive psychological states of hope, meaningfulness and positive affect were significant indicators of eustress (Nelson & Simmons, 2003). Meaningfulness pertains to the extent that work appears to make sense emotionally and thus is worth investing in the challenges it provides. Hope is the belief that one has both the will and the way to succeed. State positive affect reflects a condition of pleasurable engagement, energy and enthusiasm.

Eustress is also associated with task engagement, a total absorption in the demands presented by the stressor event (Rose, 1987; Campbell-Quick et al., 2003). Task engagement denotes being “enthusiastically involved in and pleurably occupied by the demands of the work at hand” (Nelson & Simmons, 2003, p 103). Motivation to meet the perceived demands is optimal and ability is extended as a result. This is similar to the concept of flow (Campbell-Quick et al., 2003) in which people are so actively involved in the task that nothing else seems to matter (Csikszentmihalyi, 1990).

Distress on the other hand, is expressed by the experience of negative strain. This state denotes the subjective experience of perceived distress. Indicators of the distress response are negative work attitudes and negative psychological states (Simmons, Nelson & Neal, 2001); for example: negative affect, anger, job alienation and frustration. These states represent the subjective distress experience of strain.

5.2.1 Eustress Research

Pivotal to understanding the long-term health effects of work-related stress is the study conducted by Rose (1987). This study involved a sample of air traffic controllers who were monitored over five years for physiological and affective changes as a result of fluctuations in work-related demand. Even though the role of an air traffic controller is known to be highly stressful, increased work demand was not met with the expected negative outcomes and many displayed a high degree of engagement with their work. While this engagement resulted in an increase in cortisol, an acknowledged indicator of stress, instead of reporting negative stress outcomes, participants displayed positive attitudes towards their self and job and also experienced less frequent illness than those experiencing lower cortisol levels. Rose's concept of engagement is suggested to represent an important aspect associated to the eustress response to stressor demands.

Simmons and Nelson (2001) further validated the eustress concept by addressing occupational stress and eustress in nurses. Lazarus and Folkman's Transactional Model of Stress (1984) was extended by including eustress as the positive response to the stress process, with distress representing the negative stress response. Eustress and distress were found to be separate and distinct constructs. This implies that positive and negative stress are not ends to a single continuum and suggests that both could potentially exist at the same time, as a result of the same stressor. Eustress, as indicated by the affective state of hope, was also related to task engagement and positive perceptions of health. Eustress and distress were suggested to be the *responses* to the stress process, with associated states such as wellbeing and illness being the *products or outcomes* of the stress process.

5.3 Antecedents to Eustress

Eustress is the result of the stress process being channelled toward constructive and positive outcomes. It is more than just the end product of the stress process

(Nelson & Simmons, 2003), and denotes the positive responses that result from positive aspects as they occur throughout stress process negotiation. Eustress is proposed to arise as a result of:

- The cognitive appraisal of challenge to a relevant-stressful event. The individual perceives potential for mastery and growth and as a result feels motivated and confident about the demands to be confronted.
- Effective coping attempts to manage the event. As a result the demands presented by the event are eliminated or reduced.
- Positive reappraisals of the event, post-coping effort, or the appraisal of positive stressor negotiation outcomes as a result of effective stressor management.
- Eustress is also proposed associated to task engagement. As a result, the individual experiences an increased motivation and involvement with the demands.

Distress is conversely the negative response that may arise as a result of negative aspects occurring throughout the stress process.

5.4 Consequences of Eustress

As the stress process unfolds, eustress and distress responses occur continuously and often simultaneously (Simmons & Nelson, 2001). Just as one event can produce both challenge and threat appraisals and the use of multiple coping strategies, so too can positive and negative stress responses occur simultaneously to any one relevant-stressful event (Nelson & Simmons, 2003). The type and strength of stress responses experienced is dependent on how the stress process is negotiated. Both distress and eustress are represented by distinct affective as well as physiological changes. Eustress and distress may in turn impact on an individual's adaptational outcomes of somatic health, morale and social functioning (Lazarus & Folkman, 1984).

More than just decreasing experienced distress, eustress produces an increase in health and wellbeing (Rose, 1987; Edwards & Cooper, 1988). Simmons (2000) found eustress (as indicated by the affective state of hope) to be linked to positive perceptions of subjective health. Returning again to Rose (1987), those individuals who entered a state of engagement were found to experience less frequent illness episodes than other workers.

Edwards and Cooper (1988) present a review of research evidence pertaining to the effects of positive psychological states on health. Positive psychological states were suggested to indicate eustress, which was defined as the positive discrepancy between an individual's perceived and desired state. Positive psychological states produced an improvement in health both directly through physiological processes and indirectly by facilitating coping with stress.

Eustress has also been shown to have a direct positive impact on performance (Tomaka et al., 1993; Skinner & Brewer, 2002), possibly as a result of the increased motivation provided by task engagement. An increase in motivation, work performance and the experience of positive work-related affective states may also increase long-term job satisfaction.

5.5 Full Model of Occupational Stress

The Transactional Model of Stress (Lazarus & Folkman, 1984) is adapted by introducing thinking from Quick et al. (1997); Quick et al. (1990); Simmons (2000); Simmons and Nelson (2001); Simmons et al. (2001) and Nelson and Simmons (2003) with the conceptualisation of a eustress/distress distinction in stress response.

The full model is presented in Figure two. The person-environment relationship section denotes the original model as proposed by the Transactional Model of

Stress (Lazarus & Folkman, 1984). The immediate stress responses section denotes the extension to the model as proposed by the present research.

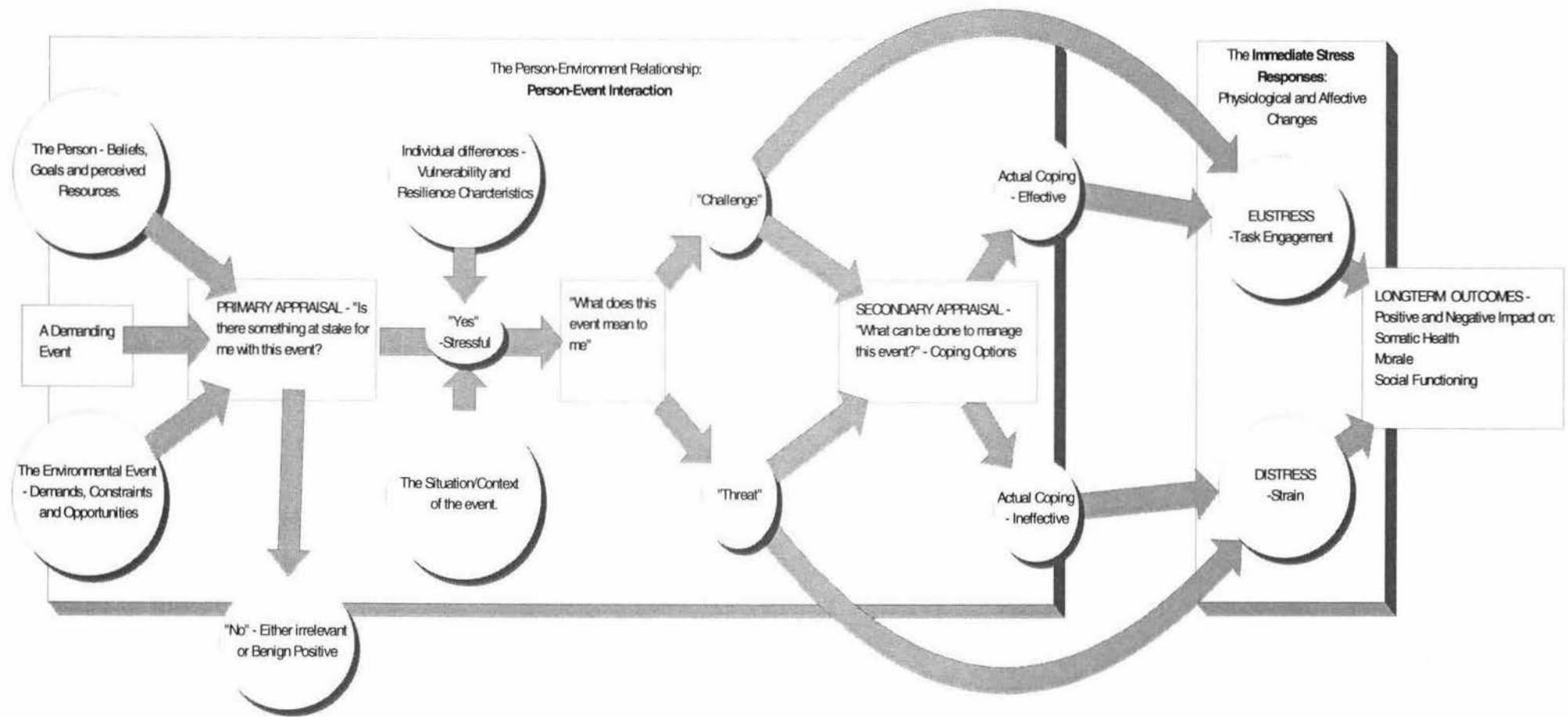


Figure 2. A Model of Occupational Stress

CHAPTER SIX: PRESENT RESEARCH

Stress can be energizing, stimulating and growth producing (Quick et al., 1990). The Transactional Model of Stress is extended by the inclusion of the eustress/distress distinction in order to acknowledge the positive side of the stress process.

The concept of eustress is presently defined as a construct distinct from distress. Eustress represents the positive, healthy and constructive response to the stress process (Quick et al., 1997). Eustress occurs as part of the *stress* process, which includes the appraisal of an event as relevant-stressful and involves the awareness of potential threat.

Eustress and distress mediate between stress process negotiation and the long-term positive and negative adaptational outcomes of stress. Eustress results from the appraisal of challenge, the use of effective coping responses and positive reappraisals of the event and is associated with an engagement in stressor demands. Eustress promotes positive outcomes in individual growth, health and wellbeing.

6.1 Aims and Hypotheses

The present research proposes that eustress is the positive response to the positive aspects of stress process negotiation. Relationships between demands, appraisals, coping choices and stress responses will be assessed. Appraisals of a recent demanding work-related event are assessed in order to identify an event appraised as relevant-stressful and thus relevant to the stress process. The following hypotheses are proposed:

Eustress

H1: Challenge appraisals will be positively associated with adaptive forms of coping: planful problem solving, social support and positive reappraisal.

H2: Challenge appraisals will be positively associated with eustress.

H3: Adaptive forms of coping will be positively associated with eustress.

H4: Task engagement will be positively associated with challenge appraisals, adaptive coping and eustress.

H5: Adaptive coping will mediate the relationship between challenge appraisals and eustress.

H6: Task engagement will mediate the relationship between adaptive coping and eustress.

H7: Subjective evaluations of performance and coping will be positively associated with eustress, challenge appraisal, adaptive coping and task engagement.

Distress

H8: Threat appraisals will be associated with maladaptive forms of coping: escape avoidance, distancing, confrontive coping, self-control and accepting responsibility.

H9: Threat appraisals will be positively associated with distress.

H10: Maladaptive forms of coping will be positively associated with distress.

H11: Maladaptive coping will mediate the relationship between threat appraisals and distress.

H12: Subjective evaluations of performance and coping will be negatively associated with distress, threat appraisal and maladaptive coping.

CHAPTER SEVEN: METHOD

Three New Zealand organizations participated in the study. One was a public sector organization, predominantly full-time administrative, clerical and management type roles, one was a retail business with both part-time and full-time roles and one was a University department including full-time lecturing, research and administrative roles. The study was introduced by a brief synopsis of the research project during a staff meeting or via email. Information given regarding the research gave equivalent emphasis to the positive concept of “challenge” and the negative concept of “stress”. Questionnaires were distributed internally and returned via a freepost envelope. Between four days to one week after distribution, a reminder email was sent within each organization to encourage participation. Response rates for the three organizations were 52% (85 responses), 44% (26 responses) and 34% (33 responses) respectively; a total of 144 responses were obtained.

The questionnaire (see Appendix A) comprised six scales in three sections. Section A included questions about work-related demands (data not included in the present research) and affective states experienced at work. Section B included questions on appraisals, coping, task engagement and subjective outcomes in relation to one specific stressor event. The final section gathered demographic information. A pilot study was conducted and minor modifications made before the questionnaire was distributed.

7.1 Appraisal and Coping

7.1.1 Identification of a Stressful Situation

Before answering the questions on appraisals and coping, participants were asked to identify one specific stressful event they had recently experienced at work and

to answer the questions in relation to that event. The instructions were modified from the Ways of Coping Questionnaire (Folkman & Lazarus, 1988).

Each stressful event was coded for event type and also for whether the event was amenable to adaptive coping. All events were coded by at least two independent coders, with an inter-rater reliability of 95 percent. All events were coded as amenable to active coping. Job demands made up 41% of events; issues with people relationships at work 20%; problems with management style and support made up 10%; and issues negotiating a home-work balance made up 2% of events mentioned. Twenty seven percent of the sample did not indicate their stressful event.

7.1.2 Appraisals

Appraisals of the stressful event were assessed by the eight-item Cognitive Appraisal Scale (CAS; Skinner & Brewer, 2002). Four questions each related to threat and challenge appraisals. Question two was reworded to relate to a work setting ('grade' changed to 'outcome'). Questions were reworded into the past tense to indicate an event that had already been encountered. Although the CAS measure assessed both frequency and intensity for each item, no difference in responses were found between the two measures (Skinner & Brewer, 2002) and so were replaced by a single scale measure of 'agree' to 'disagree'.

The reliability for the challenge subscale was 0.71, this increased to 0.78 with the removal of one item ("consequences of performing well"). The reliability for the threat subscale was 0.72. The minimum and maximum values for both subscales were 1.00 and 6.00.

7.1.3 Coping

The Ways of Coping Questionnaire assessed coping strategies used by participants to manage their stressor event (Folkman & Lazarus, 1988). The

measure assesses actual coping (as opposed to trait coping) by focusing on how the single recently experienced event was negotiated. The scale assesses eight forms of coping response. The eight coping responses along with reliability coefficients are presented in Table 1.

	Reliability
Confrontive coping	0.75
Distancing	0.55
Self-controlling	0.70
Seeking social support	0.67
Accepting responsibility	0.60
Escape avoidance	0.75
Planful problem solving	0.65
Positive reappraisal	0.75

Table 1. Reliability Values for Ways of Coping Scale

The social support and distancing scales did not work in the predicted pattern. Social support correlated positively with threat appraisal and the negative affect subscales. Distancing correlated only with tenure. As a consequence of this and the low reliabilities of each subscale, both of these coping response variables were excluded from further analyses.

Coping data was recoded into adaptive and maladaptive coping. As all of the identified stressors were amenable to active coping, planful problem solving and positive reappraisal were classified as adaptive coping responses. With the removal of item 60 (“I prayed”) the reliability for the adaptive coping scale increased to 0.79, with minimum and maximum values of 3.00 and 36.00 respectively.

Maladaptive coping strategies were escape avoidance, confrontive coping, self-control and accepting responsibility (due to the negative wording of sub-scale

items). The reliability for the maladaptive subscale was 0.89, with minimum and maximum scores of 1.00 and 56.00 respectively.

7.2 Eustress and Distress

The Job Related Affective Wellbeing Scale (JAWS) was used to assess participants' emotional reactions to their work (Van Katwyk, Fox, Spector & Kelloway, 2000). Participants were asked to rate on a scale of 1 to 5 the degree to which they had experienced 30 different emotions over the past 30 days. As the scale focused on recent emotional experience, it tapped state affect and as such is a valid representative of *immediate* stress process responses.

Emotional responses covered two dimensions: pleasure and arousal. Item five ("My job made me feel bored") was removed from the low pleasure/low arousal subscale to increase reliability. Reliability coefficients for the four quadrants were, low pleasure/low arousal, 0.75; low pleasure/high arousal, 0.81; high pleasure/low arousal, 0.82 and high pleasure/high arousal, 0.90.

Hope in relation to workplace demands and goals, was assessed by the State Hope Scale (Simmons & Nelson, 2001). The internal reliability coefficient of this scale was 0.82 with minimum and maximum scores of 12.00 and 30.00 respectively.

7.3 Task Engagement

Participants' task engagement with the stressor was assessed by three items revised from Maier et al. (2003): "*I became very involved in the situation*"; "*I felt motivated by the situation*" and "*The situation was of high interest to me*". The reliability for this scale was 0.65.

7.4 Subjective Performance

Two questions were rated on a six-point scale: *“I feel I coped with the situation effectively”* and *“I feel positive about the outcomes of the situation”*.

CHAPTER EIGHT: RESULTS

8.1 *Participants*

Of the 144 participants, 74 (51%) were male and 67 female (47%). Ages of the participants were categorised with 18 participants (11%) less than 21 years, 50 (35%) between 21 and 36 years, 54 (38%) between 37 and 55 years, and 21 (25%) above 55 years in age. Three respondents did not indicate age or gender. The mean time spent within their current organization was six and a half years (SD = 7.32).

8.2 *Defining Variables*

Appendix B shows the means, standard deviations and correlations for all of the scales assessed by the questionnaire.

8.2.1 *Coping*

Correlations supported the adaptive/maladaptive dichotomy. Planful problem solving and positive reappraisal correlated positively with challenge appraisal, state hope and the positive JAWS subscale high pleasure high arousal (HpHa). Escape avoidance, self-control and accepting responsibility correlated positively with threat appraisal and the negative JAWS subscales. Confrontive coping correlated positively with the negative JAWS subscales.

8.2.2 Eustress and Distress

All thirty items from the Job Related Affective Wellbeing Scale and the six items from the State HOPE Scale were subjected to principal component analysis with a varimax rotation (Appendix C).

All of the positive affect items from the JAWS scale loaded onto the same factor. The six items from the HOPE scale loaded onto a separate factor. Items from the high arousal subscale loaded at higher levels than the low arousal items. The component plot confirmed that the high and low arousal items formed separate groups, and the hope items formed yet another group close to the high pleasure/high arousal items.

As a result, eustress was defined as a multidimensional construct represented by the affective state of high pleasure/high arousal and state hope. The reliability of the eustress measure, which consisted of the eleven items combined, was 0.88 with minimum and maximum values of 18.00 and 53.00 respectively.

The affective state represented by high pleasure/low arousal is defined as enjoyment. The minimum and maximum values of the enjoyment measure were 1.20 and 5.00 respectively, with a reliability of 0.82.

For the negative affect items, factor analysis did not differentiate between high and low arousal. As a result distress is defined by the affective state of low pleasure, over all degrees of arousal. All fifteen negative items of the JAWS scale were used to represent distress. The reliability coefficient for distress was 0.92, with minimum and maximum scores of 14.00 and 67.00 respectively.

8.2.3 Engagement

As a result of low scale reliability, items within this scale were assessed independently. The first item, involvement, was related to the distress process and the second item, motivation, to the eustress process. Item one, "I became very involved in the situation", correlated positively with threat appraisal and with the negative JAWS subscales. Item two, "I felt motivated by the situation", correlated positively with challenge appraisal, planful problem solving, positive reappraisal, the positive JAWS subscales and hope

Item one is suggested to tap a negative state of forced involvement in negotiating the stressor event and is representative of the construct of subjective strain, central to the distress response. Item two, motivation, is suggested to tap the positive state of absorption that results from intense motivation and is representative of the construct of task engagement, associated with eustress.

Item three, "the situation was of high interest to me" showed no interpretable patterns and was not used in further analysis.

8.2.4 Subjective Performance

Item two, performance, was used as single item measure of subjective performance. Item two correlated significantly with challenge appraisals, planful problem solving, positive reappraisal, the positive JAWS subscales, hope and motivation. Subjective performance also correlated negatively with escape avoidance and the negative JAWS subscales. Item one, coping, showed no interpretable patterns and was not used in further analysis.

8.3 Organizational Differences

There were significant differences between the three organizations on tenure ($F(2,132)= 15.62, p<0.001$); challenge appraisal ($F(2,128)= 5.37, p<0.05$); adaptive coping ($F(2,122)= 4.72, p< 0.05$); eustress ($F(2,137)= 5.37, p< 0.05$) and enjoyment ($F(2,138)= 5.80, p< 0.005$). Differences in tenure are explained by differences in the age of organization itself. The youngest organization (with the youngest staff) was higher in challenge appraisal, adaptive coping, eustress and enjoyment. This is explained by a fresh, upbeat and fun business culture. However, as demographic differences were not hypothesised to affect appraisal processes, to increase statistical power data from the three organizations was analysed collectively.

8.4 Correlations

Appendix D shows the means, standard deviations and correlations for the variables defined and created in the present research.

Challenge appraisals and eustress were negatively correlated with tenure. Maladaptive coping was positively correlated with adaptive coping. Enjoyment was negatively correlated with maladaptive coping, distress and positively correlated with eustress and motivation. Involvement was positively correlated with adaptive coping and motivation.

8.5 Eustress

Hypothesis one stated that challenge appraisals would be positively associated with adaptive coping. This was supported with a significant correlation ($r=.36, 122 \text{ df}, p<0.01$).

Hypothesis two stated that challenge appraisals would be positively associated with eustress. This was supported with a significant correlation ($r=.25$, 126 df, $p<0.01$).

Hypothesis three stated that adaptive coping would be positively associated with eustress. This was supported with a significant correlation ($r=.37$, 121 df, $p<0.01$).

Hypothesis four stated that task engagement would be positively associated with challenge appraisal, adaptive coping and eustress. Task engagement is represented presently by the variable motivation. This was supported with motivation correlating significantly with challenge appraisal ($r=.44$, 129 df, $p<0.01$), adaptive coping ($r=.43$, 124 df, $p<0.01$) and eustress ($r=.25$, 127 df, $p<0.01$).

8.5.1 Mediated Regression

Relationships between variables in the model were also assessed for mediated regression. The mediated regression procedure recommended by Baron and Kenny (1986) was used.

Hypothesis five stated that adaptive coping would mediate the relationship between challenge appraisals and eustress. As the first step in testing for mediated regression, the dependent variable (eustress) was regressed on the independent variable (challenge appraisal). As this step was found to be significant ($B=.25$, $p<0.01$), the mediator (adaptive coping) was regressed on the independent variable. This was also significant ($B=.36$, $p<0.01$). In the final step, the dependent variable (eustress) was regressed on both the independent variable (challenge appraisal) and the mediator (adaptive coping). The impact of adaptive coping remained significant ($B=.32$, $p<0.01$). However the impact of challenge appraisal was reduced and no longer significant. This indicates that the impact of challenge appraisal on eustress was fully mediated by adaptive coping.

Hypothesis six stated that task engagement would mediate the relationship between adaptive coping and eustress. The dependent variable (eustress) was regressed on the independent variable (adaptive coping) and found significant ($B=.37, p<0.01$). The mediator, motivation (representing task engagement) was regressed on the independent variable and found significant ($B=.43, p<0.01$). Regressing the dependent variable (eustress) on both the independent variable (adaptive coping) and the mediator (motivation), the impact of the hypothesised mediator was not significant whereas adaptive coping remains significant ($B=.33, p<0.01$). As such, support is not provided for hypothesis six.

The role of motivation was further assessed as a mediator in the relationship between challenge appraisal and adaptive coping. The dependent variable (adaptive coping) was regressed on the independent variable (challenge appraisal) and found significant ($B=.36, p<0.01$). The mediator (motivation) was regressed on the independent variable and found significant ($B=.44, p<0.01$). Regressing the dependent variable (adaptive coping) on both the independent variable (challenge appraisal) and the mediator (motivation), the impact of both challenge appraisal and motivation remain significant, however the impact of challenge appraisal is reduced ($B=.22, p<0.05$). This suggests that motivation is a partial mediator for the impact of challenge appraisal on adaptive coping.

In conclusion, regression analysis supported the following model:

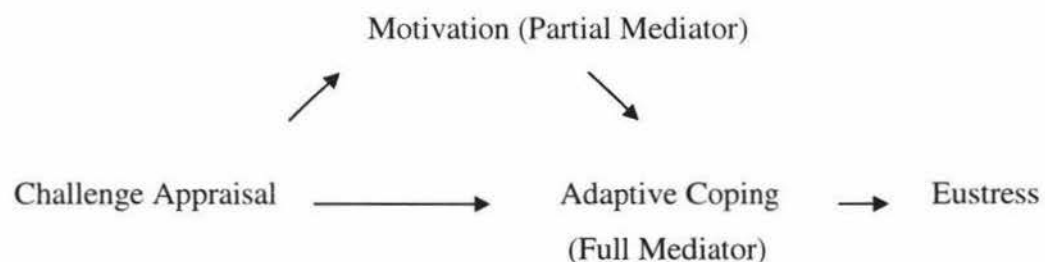


Figure 3. The Predicted Model of Eustress

8.5.2 Outcomes

Hypothesis seven stated that subjective evaluations of performance would be positively associated with eustress, challenge appraisal, adaptive coping and task engagement. This hypothesis was supported as subjective performance showed significant positive correlations with challenge appraisal ($r=0.24$, 129 df, $p<0.01$), adaptive coping ($r=0.32$, 124 df, $p<0.01$), eustress ($r=0.25$, 127 df, $p<0.01$) and motivation ($r=0.41$, 131 df, $p<0.01$). Subjective evaluations of coping, although hypothesised, were not analysed.

8.5.3 Structural Equation Modelling

Structural Equation Modelling (SEM) was used to further test the above model and to provide statistical parameters for goodness of model fit to the data. AMOS statistical software, version 4.01 was used. SEM is an extension to the general linear model, the main advantage of which is that it allows the simultaneous test of multiple regression equations within a single model (Byrne, 2001). SEM takes a confirmatory rather than exploratory approach, which allows a hypothesised model to be tested in a simultaneous analysis of all variable relationships, to determine the model's fit to the data (Byrne, 2001). SEM also provides estimates for error variance (both measurement error in observed variables and residual error in latent variables) and allows for testing of unobserved (latent) variables as well as observed (measured) variables.

SEM requires a sample size of approximately 15 cases per measured variable. The present model uses eight variables (threat, challenge, maladaptive and adaptive coping, involvement, motivation, eustress and distress) and the sample of 132 valid cases exceeds the 120 cases required. Missing data from within these 132 data points was dealt with by an imputation algorithm. All variables were continuous and normally distributed with kurtosis values that did not exceed 4.

The model predicted was tested using AMOS statistical software (Figure 4). All regression paths (as indicated in the model with corresponding standard error values in parentheses) were above 0.3 ($p < 0.05$). The relationships as stipulated by the model were statistically significant and an accurate depiction of associations in this data set. Statistics of fit indicated that the model fits the data well.

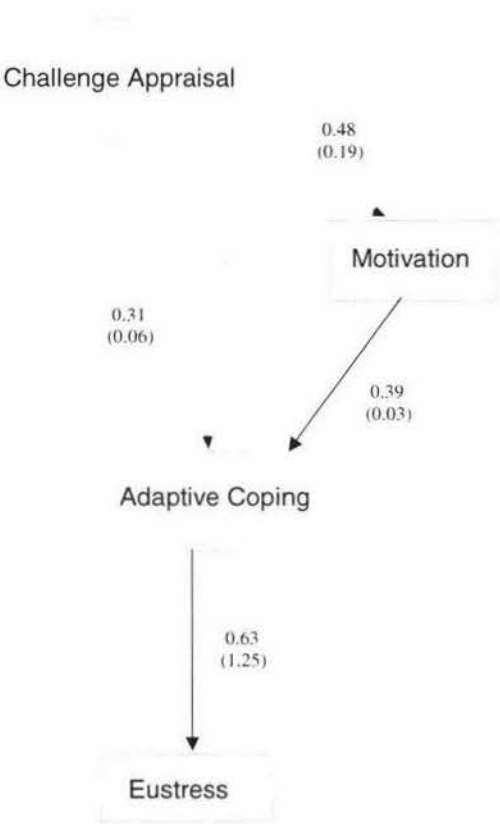


Figure 4. AMOS Graphic for the Model of Eustress

The Comparative Fit Index (CFI) and the Tucker Lewis Index (TLI) compare the absolute fit of the specified model to the independence model, which assumes all relationships between the observed variables are zero (Byrne, 2001). The CFI also accounts for small samples and thus provides a measure of complete covariation. The CFI was 0.998 and the TLI was 0.995. Both indexes were above the 0.95

level and thus indicative of good fit of the model to the data (Byrne, 2001). The Root Mean Square Error of Approximation (RMSEA) is a measure of overall model fit that takes into account the error of approximation in the population (Byrne, 2001). The measure is sensitive to the number of estimated parameters in the model and as such, is appropriate to use with more complex models. The model had a RMSEA value of 0.047, which is below the 0.05 level suggested to indicate good fit to the data (lower values indicate better fit) (Byrne, 2001). The R square was 0.394, indicating that nearly forty percent of eustress can be explained by the present model.

In order to “provisionally accept” a model, comparisons against alternative theory driven models are used to eliminate alternative explanations. The model that represents the data most accurately and parsimoniously is accepted (Byrne, 2001). The existing model was compared to several alternative models. Alternatives included models in which:

- Challenge and motivation had a direct impact on eustress.
- Challenge, motivation and adaptive coping had independent impacts on eustress only.
- Motivation was excluded.
- Motivation was used as an outcome of eustress.

The comparison models did not improve the fit to the data with poorer indices of fit and non-significant regression coefficients.

8.6 Distress

Hypothesis eight stated that threat appraisals would be associated with maladaptive coping. This was supported with a significant correlation ($r=.26$, 114 df, $p<0.01$).

Hypothesis nine which stated that threat appraisals would be positively associated with distress was not supported.

Hypothesis ten stated that maladaptive coping would be positively associated with distress. This hypothesis was supported with a significant correlation ($r=.53$, 113 df, $p<0.01$).

Although not hypothesised, relationships between involvement and variables from the distress model were analysed. Involvement (as representative of strain) was significantly correlated with threat ($r=0.27$, 129 df, $p<0.01$), maladaptive coping ($r=0.22$, 115 df, $p<0.05$) and distress ($r=0.27$, 128 df, $p<0.01$).

8.6.1 Mediated Regression

Hypothesis eleven stated that maladaptive coping would mediate the relationship between threat appraisal and distress. This was not supported. Although the independent variable (threat appraisal) was associated with the mediator (maladaptive coping), the independent variable was not associated with the dependent variable (distress).

Mediated regression was used to assess the impact of involvement on distress. To assess whether involvement mediated the relationship between maladaptive coping and distress, the dependent variable (distress) was regressed on the independent variable (maladaptive coping). This was found significant ($B=.53$, $p<0.01$). The mediator (involvement) was regressed on the independent variable and found to be significant ($B=0.22$, $p<0.05$). Regressing the dependent variable (distress) on both the independent variable (maladaptive coping) and the mediator (involvement), the impact of involvement was not significant whereas maladaptive coping remained significant ($B=.50$, $p<0.01$). Involvement was thus not found to mediate the relationship between maladaptive coping and distress.

To assess whether involvement mediated the relationship between threat appraisal and maladaptive coping, the dependent variable (maladaptive coping) was regressed on the independent variable (threat appraisal). This was found

significant ($B=.26, p<0.01$). The mediator (involvement) was regressed on the independent variable and found to be significant ($B=0.27, p<0.01$). Regressing the dependent variable (maladaptive coping) on both the independent variable (threat appraisal) and the mediator (involvement), the impact of involvement on maladaptive coping was not significant. Involvement was thus not found to mediate the relationship between threat appraisal and maladaptive coping.

Although there appears to be a relationship between threat and involvement, there does not appear to be a direct relationship between involvement and maladaptive coping or distress.

In conclusion, regression analysis supported the following model:



Figure 5. The Predicted Model of Distress.

8.6.2 Outcomes

Hypothesis twelve stated that subjective evaluations of performance would be negatively associated with distress, threat appraisal and maladaptive coping. Partial support was provided for this hypothesis. Maladaptive coping and distress were negatively correlated with subjective performance ($r= -0.25, 115, p<0.01$ and $r= -0.34, 128, p<0.01$ respectively). Threat appraisal was not however significantly associated with performance. In addition, no relationship was found between involvement and performance.

8.6.3 Structural Equation Modelling

The model predicted was tested using Structural Equation Modelling (Figure 6). Distress was the response to threat appraisals and maladaptive coping.

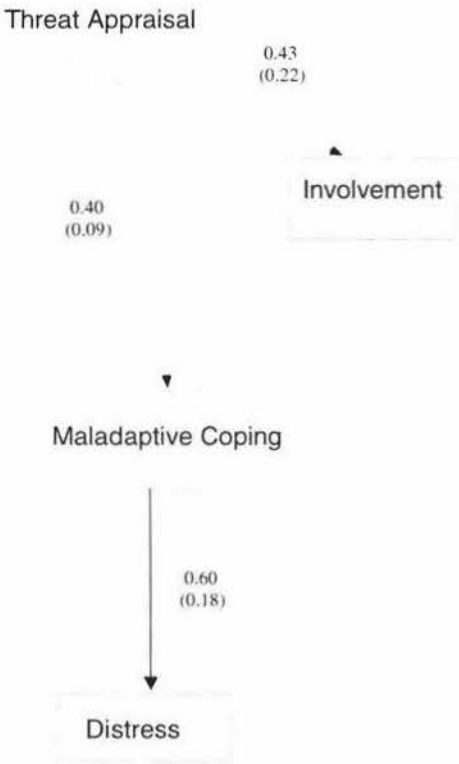


Figure 6. AMOS Graphic for the Model of Distress

The model did not provide a good fit to the data. All regression paths stipulated by the model (as indicated in the model with corresponding standard error values in parentheses) were above the 0.3 level and statistically significant ($p < 0.05$), suggesting accuracy. The fit statistics however were not satisfactory with RMSEA = 0.115. CFI and TLI were acceptable at 0.976 and 0.961 respectively, however the low RMSEA suggests that the overall fit to the data is not good enough to be

conclusive. The R squared for distress was 0.358. Comparisons against alternative models were used to test this model of distress. The following adaptations were considered:

- Inclusion of a direct path from involvement to maladaptive coping.
- Inclusion of a direct path from involvement to distress.
- The exclusion of involvement from the model.
- The exclusion of both threat and involvement from the model.

The alternative models did not improve fit.

CHAPTER NINE: DISCUSSION

This research aimed to validate how the positive response of eustress, as distinct from distress, eventuates as part of stress process negotiation in an occupational setting. This involved the measurement of eustress and the identification of precursors within an appraisal model of stress.

9.1.1 Measuring Eustress

Eustress was defined as a concept distinct from distress, representing the positive response to positive aspects that occur throughout the stress process. Eustress is more than a reduction in experienced distress and denotes positive psychological and physiological changes just as distress denotes negative changes. The eustress response to occupational stress is represented by an elevation in positive work-related affective states.

Factor analysis differentiated between negative affective states and positive affective states and also differentiated between types of positive affect. Eustress was operationalised as a multifaceted construct represented by the job-related affective state of high pleasure/high arousal and an elevated state of hope in relation to workplace demands and goals. Items from both the hope scale and the high pleasure/high arousal subscale of JAWS were combined to represent eustress.

The job-related affective state represented by high pleasure/low arousal was operationalised as a state of enjoyment. Enjoyment is differentiated from eustress and the stress process, as there was no acknowledgment of potential threat (this is illustrated by the low level of arousal), which is suggested to be a defining feature of the stress process.

Previous research has operationalised eustress as the positive response to positively appraised events. The present research operationalises eustress as the positive response to the stress process. Stress involves events appraised as demanding and thus acknowledges the potential negative consequence. Relationships between negative and positive affective changes, representative of distress and eustress, and the negotiation of a stressful event were analysed. Eustress was found to be a valid response to the stress process rather than simply a reaction to positive events.

The present research confirms that eustress is the affective response of high pleasure/high arousal and state hope. The present conceptualisation and measurement of eustress was found to be reliable (as indicated by a high internal reliability) and is suggested to validly represent eustress: it is a positive response (as represented by an elevation in positive affective states); it occurs in response to stressor negotiation (as represented by the assessment of relationships between stressor negotiation and affective response) and it contains an element of threat awareness (as represented by a high state of arousal).

9.1.2 Measuring Distress

Distress was defined as the negative response to stress, represented by elevated negative affective states that occur in response to negative stress process aspects. Analysis suggested that distress encompassed any negative affective state, irrespective of the degree of arousal being experienced. Distress, the negative stress response, was operationalised as the negative affective states of low pleasure/low arousal and low pleasure/high arousal.

This research supported a multifaceted view of the stress process. No relationship was found between eustress and distress. Eustress and distress represent distinct constructs that can occur simultaneously in response to any one stressor event.

9.2 The Eustress Process

9.2.1 Challenge Appraisal

Those who appraised the stressful event as a challenge rather than threat were more likely to experience eustress. This relationship is supported by previous research. Boswell et al. (2004) found the positive outcomes of the stress process to be mediated by experiencing 'felt-challenge'. Felt challenge was conceptualised as the cognitive appraisal of growth and potential gain that resulted from the experience of challenge related stressors as opposed to hindrance related stressors. Although some stressors may be more amenable to positive appraisals, this ignores the complexity of the stress process as it takes more than just the stressful event to determine the responses and outcomes to the stress process.

No relationship was found between challenge and threat appraisal suggesting they are independent constructs that may occur simultaneously.

9.2.2 Adaptive Coping

The Transactional Model of Stress (Lazarus & Folkman, 1984) proposes that primary appraisals are followed by secondary appraisals of coping options. This was supported by the present research. A significant relationship was found between challenge appraisals and adaptive coping.

Coping strategies were conceptualised as adaptive or maladaptive in terms of their ability to resolve the stressor demands. Bjorck et al. (2001) suggested that adaptive coping consisted of: planful problem solving, social support and positive reappraisal. Both planful problem solving and positive reappraisal were significantly related to eustress, but social support was not. Possibly social support may be more complex than originally thought with additional components

such as gender effects and the emotional/instrumental distinction requiring further exploration (Bellman, Forster, Still & Cooper, 2003).

The present research defined adaptive coping as planful problem solving (deliberate attempts to alter the situation) and positive reappraisal (efforts to create positive meaning). These coping responses are adaptive as the demands that pose threat to the individual, producing the stress process, are resolved or altered. A significant relationship was found between adaptive coping and eustress. This finding is supported in research reviewed by Folkman and Moskowitz (2004) in which problem focussed coping, positive reappraisal and also relaxation were linked to increased positive affect.

9.2.3 Task Engagement

Task engagement denotes a complete absorption in overcoming the demands presented by the stressor event (Csikszentmihalyi, 1990), in which motivation is optimal as fears of failure and loss are set aside. The task engagement scale (Maier et al. 2003) did not work well as a measure of positive task engagement. When scale items were viewed as single measures, two items from the scale were found to show distinctive patterns and were retained as measures representing participation in the stress process. Item two, 'motivation', was an integral aspect of the positive stress process and was retained as a single item indicator representing the eustressed state of task engagement.

Item one, 'involvement', was an aspect of the negative stress process, possibly representing the subjective experience of a forced involvement with stressor demands. Item one was retained as a single item indicator representing the distressed state of subjective strain. Strain represents the pressured and overwhelmed state encountered when demands are perceived to be beyond an individual's capability and resources.

Motivation and involvement were found positively associated, possibly suggesting that with any demand negotiated, both a degree of motivation and a degree of involvement will be experienced.

Task engagement was suggested to be an important aspect of the positive stress process. A positive relationship was found between motivation, as representative of task engagement, and challenge appraisal, adaptive coping and eustress. Previous research by Rose (1987) also supports the relationship between engagement with stressor demands and positive outcomes. Rose found that workers who became engaged with increased work demands experienced positive attitudes about self and work and also experienced less frequent illness episodes.

9.3 *Modelling Eustress*

The relationship between challenge appraisals and eustress was mediated by adaptive coping. This suggests that the impact of challenge appraisals on eustress occurs indirectly by promoting the use of more adaptive forms of coping response. This finding is supported by previous research. Bjorck et al. (2001) also found that the primary influence of cognitive appraisal was on coping, which in turn influenced the level of experienced distress, although eustress was not directly assessed.

Motivation partially mediated the relationship between challenge appraisals and adaptive coping. Motivation appears to be an integral part of the positive stress process that assists in promoting the use of more adaptive coping and thus indirectly produces eustress.

Structural Equation Modelling supported the proposed cognitive appraisal model and confirmed the precursors of eustress to be the positive stress process aspects of challenge appraisals, adaptive coping and motivation.

Challenge appraisals involve identifying the potential for personal mastery and growth in a demanding situation. As a result, the individual may experience increased motivation as one becomes absorbed in the desire to overcome the demands. As a result of challenge appraisals and motivation, the individual may be more likely to use adaptive forms of coping such as actively attempting to resolve the demands faced and focusing on the resulting personal growth. As a result of adaptive coping, eustress (as represented by positive work-related affective states) may result as the demands that produced the stress process are likely to be overcome, and personal achievement and success is gained and acknowledged.

9.3.1 Outcomes of Eustress

Subjective performance was positively related to eustress, challenge appraisals, adaptive coping and motivation. Increased performance may be an outcome of challenge appraisals, motivation and adaptive coping that occur in the positive stress process. By appraising demands as challenges, the individual makes the decision to give the demand their full energy and focuses on the possible success. Increased motivation enables this decision to be a focal goal. The use of adaptive coping means the individual actively involves themselves in overcoming the demands. These positive aspects lead the individual to effectively deal with demands and achieve success. Furthermore, it is likely that subjective perceptions of good performance will increase eustress. The implications of this will be discussed in 9.8.

9.4 *The Distress Process*

9.4.1 Threat Appraisal

The model of distress does not appear to explain the negative stress process as well as the eustress model explains the positive. Similar complexities were

identified in research presented by Simons (2000) in attempting to model the distress process.

No relationship was found between threat appraisal and distress. This suggests that distress arises from a more complex set of appraisals than represented in the present research. A significant relationship was found between threat appraisal and maladaptive coping. This supports the proposed relationship between cognitive appraisals and coping responses. The relationship between threat appraisal and maladaptive coping is also supported in previous research. Bjorck et al. (2001) also found a significant relationship between threat appraisal and the maladaptive coping response of escape avoidance.

9.4.2 Maladaptive Coping

Bjorck et al. (2001) suggested that escape avoidance, distancing, confrontive coping, self-control and accepting responsibility were maladaptive forms of coping. Analyses provided partial support for this. Escape avoidance, confrontive coping, accepting responsibility and self-control were all related to distress. Distancing was however not related to either distress or eustress. This suggests that the use of distancing as a coping response does not impact on distress or eustress and as such the subscale was not used in the final measure of maladaptive coping.

Maladaptive coping was conceptualised as confrontive coping (aggressive efforts to change the event), self-controlling (regulation of feeling), accepting responsibility (acknowledging one's role in the problem) and escape avoidance (wishful thinking and behaviours to avoid dealing with the problem). These coping responses are maladaptive as they do not resolve the demands that produced the stress process and as such the demands will continue to represent a source of pressure for that individual.

A significant relationship was found between maladaptive coping and distress. Although threat appraisal was not related directly to distress, it may assist in promoting distress indirectly through maladaptive coping, as threat appraisal was related to maladaptive coping and maladaptive coping was in turn related to distress.

Maladaptive coping was found related to adaptive coping. This suggests that multiple coping responses are used in response to a single demand and that with more coping used, people tend to use more of both rather than just maladaptive or adaptive forms of coping.

9.4.3 Strain

Subjective strain was suggested to be an important aspect of the negative stress process just as task engagement is to the positive stress process. A positive relationship was found between involvement, as representative of forced involvement (strain), and threat appraisal, maladaptive coping and distress.

9.5 *Modelling Distress*

Modelling of the negative stress process suggested that although forced involvement was related to threat appraisals, maladaptive coping and distress, it did not seem to play as central a role as motivation did in the eustress model. Involvement did not mediate the relationship between maladaptive coping and distress, nor did it mediate the relationship between threat appraisal and maladaptive coping. Analyses suggested that although the appraisal of threat is related to the experience of involvement, this state of subjective distress has no further impact on the distress process.

The proposed model suggested that the negative stress process begins with the appraisal of threat to stressor demands. This involves the appraisal of damage

done or loss expected. The appraisal of threat will likely produce a state of perceived forced involvement with the demands. As a result of appraised threat, the use of maladaptive coping such as ignoring demands or inappropriate responding is more likely. Those individuals who utilise maladaptive forms of coping will likely experience distress (represented by negative affective states) as the demands are not resolved and continue to represent a source of pressure and threat for that individual.

This model of distress was less robust than the eustress model. Structural Equation Modelling provided some, but not conclusive support for the model. Alternative theory driven models were compared against the proposed model, but were not found to produce better data fit. Validation for a model of the negative stress process and the distress response requires further work.

9.5.1 Outcomes of Distress

Subjective performance was found related to distress and maladaptive coping but not to threat appraisals or involvement. This suggests that performance is an outcome of coping. Although challenge appraisal and motivation encouraged improved performance, the appraisal of threat did not directly lead to poor performance. This may exemplify the dynamic and changing nature of the stress process: although threat may have been appraised initially, the individual may use adaptive coping and create positive outcomes. With maladaptive coping however, the situation is not actively managed, demands are not resolved and a high level of performance is not likely. Subjective perceptions of inadequate performance may increase distress.

9.6 Limitations

The proposed model of distress did not explain the negative stress process well. Possible explanations include inadequate measurement of model variables

(construct validity) and the exclusion of additional variables pertinent to the negative stress process.

The validity of the motivation and involvement variables used in the final models is questionable. The original task engagement scale did not work with the current data and as a result a single item relating to motivation was used as a measure of the task engagement concept. A single item relating to involvement, also from the task engagement scale, was used as a measure of the strain concept. These concepts may represent pivotal aspects to the stress process that require more thorough measurement.

With the distress construct, no differentiation was found over level of affective arousal. Distress was conceptualised as any unpleasant work-related affective state. As the stress process denotes an awareness of potential threat, distress may be more accurately represented by an aroused negative state just as eustress is represented by an aroused positive state. The measurement of distress may also need to include more facets in order to encompass the affective state of distress clearly and concisely.

The coping constructs used may need modification to better suit a New Zealand population. None of the subscales performed well as unitary coping measures and two of the subscales were not used in the final analyses. Consequentially it is unclear whether accurate measurements of adaptive and maladaptive coping responses were obtained.

In regards to structural equation modelling, a larger sample size may have produced more informative results.

9.7 Future Research

This research has provided valuable insight into the neglected positive stress process and response, and aids a more comprehensive understanding of human

stress. Understanding of the negative stress process and response however, is still far from complete. As over fifty years of research has failed to define and model distress, this is not unexpected. In addition to clarifying the distress response, future research should address further aspects of the positive stress model including:

- What other affective indicators represent the eustress and distress responses (e.g. meaningfulness and manageability, alienation, anxiety and anger/hostility, as suggested by Nelson & Simmons, 2003)
- What physiological changes are associated with the affective states of eustress and distress?
- Is there a causal direction between physiological and affective change that occurs with eustress and distress?
- What types of stressor events are more likely to produce eustress? Are there certain demands that are more amenable to positive appraisals and coping?
- Is there a relationship between the degree of pressure experienced as a result of the stressor and the resulting appraisals and outcomes?
- What individual difference factors (resilience, hardiness, personality etc) are associated with positive appraisals and coping? Can these be encouraged?
- What factors in the environment (managerial style and support, work control, organizational culture, employment stability etc) promote positive appraisals and coping and the eustress response?
- Can the positive eustress process be taught? If people are cognizant of the positive aspects of challenge appraisal, engagement and adaptive coping, will this influence how they negotiate future stressors?
- What are the additional physiological, social and psychological outcomes of eustress, both immediate and long-term?

9.8 *Implications for Practice*

Acknowledging the positive response to the stress process has significant impact on how stress in the work place is viewed and managed. Although distress has become a major concern in most industrialised countries, intervention need not aim to remove all potential stressors from the work environment. With an alternative focus on increasing eustress, not only would the individual experience positive work-related affective states, but other work-related factors may also be influenced. For example, performance may increase as a result of adaptive stressor negotiation and job satisfaction may also increase over the long term. Stress could be viewed as a resource, which if tapped appropriately may promote the best employment experience for the employee as well as increased individual performance and organizational contribution.

Research determining the types of demands and environmental contexts that produce the most eustress would provide a platform for encouraging the eustress experience at an organizational level. The challenge at an individual level lies in promoting the use of positive challenge appraisals and adaptive coping responses. As individual differences play a pivotal role in stressor negotiation, it may prove beneficial to develop a means of assessing individually the types and levels of demand experience and the contexts that produce the most eustress for that person. In addition, management could present work demands such that the challenge of the task is focussed on and promoted, as opposed to the threat of failure.

9.9 *Conclusions*

This research validates Selye's (1974) original notion of stress as able to produce not only negative outcomes, but also positive ones. The concept of a positive immediate stress response is taken from Selye and termed "eustress". Eustress is represented by an increase in the positive work-related affective states of high pleasure/high arousal and hope. Eustress is the positive response to the stress

process negotiation aspects of challenge appraisal, adaptive coping and increased motivation.

Lazarus (1984) suggested that the long-term outcomes of the stress process could include positive as well as negative changes in health, morale and social functioning. This eustress/distress distinction is suggested as a mechanism by which positive and negative aspects of the stress process can induce positive and negative long-term outcomes. Edwards and Cooper (1988) report that positive affective responses can induce improvements to both physiological and psychological health.

Previous research (Simmons, 2000; Ravicz, 1996) suggested that eustress was the positive stress response to positively appraised events. The stress process however denotes the awareness of potential threat as a result of the demands faced and as such stress process appraisals are never purely positive. Relationships between the negotiation of a recent stressful event and the eustress response were assessed. Present research confirms that eustress is the response to the effective management of the stress process rather than simply a response to positively appraised events. Within the stress process, some form of coping is required to manage or remove the demands faced and reduce the potential threat. Eustress involves more than a passive savouring process (Nelson & Simmons, 2003) and instead involves the use of adaptive coping. The combination of challenge appraisal and adaptive coping can in turn lead to positive affective and performance outcomes.

Although previous research has focussed on the negative aspects of stress, with intervention as a result focusing on the removal of stressors, this research confirms that stress when managed appropriately, can benefit the individual. Stress can facilitate growth and positive change as new challenges are faced and successfully overcome. The challenge lies with providing the awareness and tools required for employees to experience the benefits that the stress process is able to provide.

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Appendix A: Research Questionnaire

"Occupational Stress and Challenge at Work"

Participant Information Sheet

About the researcher:

My name is Jennifer McGowan. I am a Masters student in Industrial Organizational Psychology with Massey University in Albany. IO psychology is about the psychology of people at work - how to amend the work environment to meet the needs and goals of the employee. For my thesis research I want to look at occupational stress and challenge at work.

PURPOSE:

The purpose of the research is to find out how people respond to the stress they experience at work. I am inviting fulltime employees to take part in this research. Organization XXX has agreed to let me ask for your involvement.

Requirements:

If you choose to take part, please complete the attached questionnaire; seal when completed in the envelope provided and post it via internal mail or directly to me before the end of the week (XXX).

Time:

The questionnaire will take approximately 20 minutes to complete.

Confidentiality:

Your agreement to assist with this research is voluntary and all individual responses will be kept confidential. The questionnaire is completely anonymous. You can refuse to take part or withdraw from the project at any time. If there are any questions in this questionnaire that you do not wish to answer, please leave those answers blank.

Ethical Standards:

This project has been reviewed, judged to be low risk, and approved by the researcher and supervisor under delegated authority from the Massey University Human Ethics Committee. If you have any concerns about the conduct of this research, please contact Professor Sylvia Rumball, Assistant to the Vice-Chancellor (Ethics and Equity), telephone XXX, email XXX.

Questions:

If you have any questions or would like to know more about the research, please don't hesitate to contact me via the below details. My supervisor Dr Dianne Gardner is also happy to answer any questions about this research.

Results:

If you would like to view the results of the research, a summary report of research findings can be requested from XXX.

Thank you very much for your help and support,

Yours Sincerely,

Jennifer McGowan.

Email: XXX, Phone: XXX

Dr Dianne Gardner,

Email: XXX, Phone: XXX



*Thank you for your taking part in this research. If at all possible, please try and 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 to any of these questions; please just respond with what is true for you.*

Please answer each question by circling the number of your answer against the corresponding scale shown.

SECTION A

PRESSURE IN YOUR JOB:

Please indicate to what degree the items below represent a source of pressure for you within your current job.

Items from the Occupational Stress Indicator (OSI) were included but are not repeated here for copyright reasons (OSI data is not included in the present report).

YOUR FEELINGS:

Below are a number of statements that describe different emotions that a job can make a person feel. Please indicate the amount to which *any part of your job (e.g., the work, coworkers, supervisor, clients pay) has made you feel* that emotion in the past 30 days.

Please indicate how often you've experienced each emotion at work over the past 30 days.

Never 1

Very often 5

1. My job made me feel at ease	1	2	3	4	5
2. My job made me feel angry	1	2	3	4	5
3. My job made me feel annoyed	1	2	3	4	5
4. My job made me feel anxious	1	2	3	4	5
5. My job made me feel bored	1	2	3	4	5
6. My job made me feel cheerful	1	2	3	4	5
7. My job made me feel calm	1	2	3	4	5
8. My job made me feel confused	1	2	3	4	5
9. My job made me feel content	1	2	3	4	5
10. My job made me feel depressed	1	2	3	4	5
11. My job made me feel disgusted	1	2	3	4	5
12. My job made me feel discouraged	1	2	3	4	5
13. My job made me feel elated	1	2	3	4	5
14. My job made me feel energetic	1	2	3	4	5
15. My job made me feel excited	1	2	3	4	5
16. My job made me feel ecstatic	1	2	3	4	5
17. My job made me feel enthusiastic	1	2	3	4	5
18. My job made me feel frightened	1	2	3	4	5
19. My job made me feel frustrated	1	2	3	4	5
20. My job made me feel furious	1	2	3	4	5
21. My job made me feel gloomy	1	2	3	4	5
22. My job made me feel fatigued	1	2	3	4	5
23. My job made me feel happy	1	2	3	4	5
24. My job made me feel intimidated	1	2	3	4	5
25. My job made me feel inspired	1	2	3	4	5
26. My job made me feel miserable	1	2	3	4	5
27. My job made me feel pleased	1	2	3	4	5
28. My job made me feel proud	1	2	3	4	5
29. My job made me feel satisfied	1	2	3	4	5
30. My job made me feel relaxed	1	2	3	4	5

FEELINGS OF HOPE:

For the following scale, please indicate the degree of hope you experienced as a result of your job over the past 30 days.

Strongly disagree 1 Strongly agree 5

1. If I should find myself in a jam, 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 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 I have set for myself	1	2	3	4	5

SECTION B

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 experienced during the past weeks.

Please indicate briefly the stressful situation

.....

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

YOUR THOUGHTS:

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

Strongly disagree 1 Strongly agree 6

1. I was concerned that others would be disappointed in my performance	1	2	3	4	5	6
2. I was focussed on the positive benefits I would obtain from the situation	1	2	3	4	5	6
3. I was concerned about my ability to perform under pressure	1	2	3	4	5	6
4. I was thinking about the consequences of performing well	1	2	3	4	5	6
5. I was looking forward to testing my knowledge, skills and abilities	1	2	3	4	5	6
6. I worried that I may not be able to achieve the outcome I was aiming for	1	2	3	4	5	6
7. I was looking forward to the rewards of success	1	2	3	4	5	6
8. I was thinking about the consequences of performing badly	1	2	3	4	5	6

HOW YOU COPED:

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.

Items from the Ways of Coping Questionnaire were included but are not repeated here for copyright reasons.

TASK ENGAGEMENT:

Again please keep the stressful situation in mind. Please indicate how true each of the following statements was for you with this situation.

Strongly disagree 1

Strongly agree

1. I became very involved in the situation	1	2	3	4	5	6
2. I felt motivated by the situation	1	2	3	4	5	6
3. The situation was of high interest to me	1	2	3	4	5	6
4. I feel I coped with the situation effectively	1	2	3	4	5	6
5. I feel positive about the outcomes of the situation	1	2	3	4	5	6

BIOGRAPHICAL INFORMATION

Your answers to these questions will provide useful background information – facts about yourself rather than your opinions. *All individual responses are kept completely confidential*

Gender: Male / Female

Age: Under 21 / 21-36 / 37 –55 / over 55

Time spent with the Organization:.....

Appendix B: Correlation Matrix for Questionnaire Variables

Measure	Variable	Mean	SD	Correlations									
				Threat Appraisal	Challenge Appraisal	Planful Prob. Solve.	Social Support	Positive Reappraisal	Escape Avoidance	Distancing	Confrontive	Self Control	Accepting Response.
CAS	Threat	3.60	1.19	-									
	Challenge	3.12	1.32	-.017	-								
WOC	Planful Prob. Solve.	1.76	0.61	.203*	.274**	-							
	Social Support	1.44	0.66	.181*	.163	.284**	-						
	Positive Reappraisal	0.97	0.65	.108	.337**	.402**	.439**	-					
	Escape Avoidance	0.77	0.64	.297**	-.001	.138	.448**	.257**	-				
	Distancing	1.06	0.56	.054	.065	.222*	.169	.295**	.306**	-			
	Confrontive	1.01	0.73	-.003	.157	.280**	.509**	.222*	.510**	.219*	-		
	Self Control	1.42	0.66	.181*	.068	.378**	.430**	.481**	.384**	.277**	.313**	-	
	Accepting Response.	0.86	0.71	.392**	-.040	.233**	.358**	.470**	.435**	.241**	.236**	.470**	-
JAWS	LpHa	2.14	0.88	.130	.070	.176*	.271**	.103	.519**	.113	.465**	.302**	.239**
	LpLa	2.53	0.91	.079	-.142	.072	.168	-.007	.461**	.082	.320**	.231*	.176*
	Negative items	2.37	0.83	.097	-.018	.130	.260**	.063	.520**	.134	.424**	.283**	.208*
	HpHa	2.88	0.96	.146	.293**	.267**	-.001	.224*	-.120	-.019	-.093	.013	.036
	HpLa	2.97	0.85	-.014	.106	.072	-.155	.033	-.308**	.032	-.295**	-.126	-.048
	Positive items	3.03	0.81	.067	.215*	.195*	-.099	.145	-.247**	-.024	-.214*	-.079	-.030
HOPE	Hope	20.93	4.24	.003	.157	.219*	.112	.328**	-.166	.055	.068	.195*	.036
Single items	Involvement	4.55	1.39	.269**	.098	.285**	.210*	.099	.151	-.044	.331**	.099	.048
	Motivation	3.42	1.69	.145	.442**	.353**	.075	.346**	-.111	.020	-.032	-.006	-.014
	Interest	4.41	1.50	.244**	.126	-.041	.156	.070	-.032	-.263**	.070	.063	-.021
	Subjective Coping	4.33	1.24	-.004	.142	.330**	-.063	.197*	-.137	.017	-.016	-.081	-.302**
	Subjective Performance	3.93	1.65	.085	.243**	.321**	-.069	.192*	-.295**	-.107	-.144	-.084	-.093
	Tenure	6.60	7.32	-.107	-.242**	-.109	-.077	-.057	-.060	-.233**	-.029	-.067	-.088

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Measure	Variable	LpHa	LpLa	Negative items	HpHa	HpLa	Positive items	Hope	Involve.	Motivation	Interest	Subjective Coping	Subjective Perform.
CAS	Threat												
	Challenge												
WOC	Planful Prob. Solve.												
	Social Support												
	Positive Reappraisal.												
	Escape Avoidance												
	Distancing												
	Confrontive												
	Self Control.												
	Accepting Response.												
JAWS	LpHa	-											
	LpLa	.762**	-										
	Negative items	.943**	.902**	-									
	HpHa	-.011	-.159	-.106	-								
	HpLa	-.470**	-.534**	-.555**	.588**	-							
	Positive items	-.260**	-.364**	-.352**	.896**	.860**	-						
HOPE	Hope	-.085	-.194*	-.150	.484**	.256**	.440**	-					
Single item	Involvement	.264**	.257**	.266**	.073	-.063	.031	.119	-				
	Motivation	.001	-.097	-.035	.251**	.191*	.259**	.194*	.289**	-			
	Interest	.074	.068	.089	.100	.065	.133	-.085	.382**	.307**	-		
	Subjective Coping	-.109	-.027	-.085	.030	.008	.018	.159	.165	.350**	.100	-	
	Subjective Performance	-.324**	-.279**	-.343**	.247**	.226**	.266**	.223*	.083	.410**	.200	.603**	-
	Tenure	-.068	.059	-.044	-.180*	-.107	-.131	-.224**	.002	-.043	.122	.024	.063

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Appendix C: Factor Analysis

Rotated Component Matrix

	Component					
	1	2	3	4	5	6
jaws1	.390	-.334	.000	-.408	-.196	.190
jaws2	-.131	.718	.051	.218	.134	.308
jaws3	-.184	.641	-.042	.363	.017	.379
jaws4	.033	.529	-.044	.378	.336	.033
jaws5	-.040	.197	-.102	-.221	-.111	.724
jaws6	.676	-.207	.293	-.209	.069	.180
jaws7	.462	-.292	-.081	-.574	-.256	.150
jaws8	.123	.382	-.120	.189	.528	.077
jaws9	.564	-.432	-.005	-.080	.021	.172
jaws10	-.078	.634	-.106	.360	.162	.085
jaws11	-.102	.771	.034	-.124	.128	-.261
jaws12	-.147	.779	-.083	.078	.127	.034
jaws13	.552	-.152	.090	-.165	.067	.077
jaws14	.754	-.003	.204	-.144	.310	-.001
jaws15	.776	-.069	.142	.032	.150	-.073
jaws16	.514	-.006	.329	-.334	.436	-.123
jaws17	.847	-.065	.214	-.027	.046	-.144
jaws18	.130	.480	-.081	.112	.664	-.164
jaws19	-.084	.633	-.062	.413	-.008	.231
jaws20	-.068	.802	.064	.033	.124	.111
jaws21	-.081	.829	-.095	-.024	-.017	.050
jaws22	.080	.252	-.060	.743	-.026	-.052
jaws23	.781	-.220	.154	-.131	.055	.150
jaws24	-.042	.549	.035	.091	.599	-.136
jaws25	.808	.078	.144	.029	.050	-.174
jaws26	-.218	.729	.004	.195	.103	-.167
jaws27	.829	-.065	.080	.084	-.256	.011
jaws28	.848	-.035	.081	-.030	-.103	-.068
jaws29	.827	-.107	.033	-.012	-.117	-.114
jaws30	.466	-.163	-.049	-.607	-.140	.157
hope1	.100	-.026	.680	.028	.356	.326
hope2	.458	-.013	.677	-.074	.064	-.204
hope3	.096	.086	.770	-.100	.073	-.029
hope4	.213	-.155	.655	.102	-.332	-.142
hope5	.217	-.074	.796	.080	-.116	.024
hope6	.232	-.048	.543	-.176	-.360	-.356

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 11 iterations.

Appendix D: Correlation Matrix for Defined Variables

Variable	Mean (SD)	Correlations									
		Threat Appraisal	Challenge Appraisal	Maladaptive Coping	Adaptive Coping	Distress	Eustress	Enjoyment	Involvement	Motivation	Subjective Performance
Threat Appraisal	3.60 (1.19)	-									
Challenge Appraisal	3.12 (1.32)	-.017	-								
Maladaptive Coping	25.70 (12.49)	.262**	.064	-							
Adaptive Coping	16.60 (6.84)	.168	.361**	.474**	-						
Distress	33.37 (11.76)	.097	-.018	.526**	.086	-					
Eustress	33.45 (7.66)	.083	.252**	-.029	.372**	-.126	-				
Enjoyment	2.97 (0.85)	-.014	.106	-.294**	.055	-.555**	.492**	-			
Involvement	4.55 (1.39)	.269**	.098	.224*	.218*	.266**	.110	-.063	-		
Motivation	3.42 (1.69)	.145	.442**	-.070	.430**	-.035	.251**	.191*	.289**	-	
Subjective Performance	3.93 (1.65)	.085	.243**	-.248**	.317**	-.343**	.254**	.226*	.083	.410**	-
Tenure	6.60 (7.32)	-.107	-.242**	-.077	-.139	-.044	-.244**	-.107	.002	-.043	.063

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.