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**Psychosocial Factors Relating to  
Adaptive Capacity in a New Zealand  
District Health Board**

A thesis presented in fulfilment of the requirements for the degree of

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## **ABSTRACT**

The purpose of the current research was to examine how factors identified in the Organisational Health Framework (Hart & Cooper, 2001) may relate to stress and well-being in a sample of the New Zealand health workforce. It was anticipated that the findings would provide information as to what adaptive strategies may be utilised in the health sector in both routine and emergency management contexts.

The research focusses on the individual and situational factors identified as having the potential to contribute to positive outcomes. Salutogenesis (Antonovsky, 1979) is used as an overarching paradigm for the context of the research to understand mechanisms which promote adaptive capacity between individuals, teams and their organisation in relation to predictors of stress and growth in a large New Zealand District Health Board (DHB). Two New Zealand national emergency response exercises took place shortly before data collection for the studies. The exercises provided examples of realistic contexts within which to assess the individual and situational factors associated with positive outcomes and adaptive capacity given that the health sector will have a large part to play in the response and recovery to such emergency events.

The methodology applied self-report surveys. The first study comprised 155 participants across clinical, medical and nursing professions and management and administration roles. Study 2 comprised 199 participants from the same role categories as Study 1. In both studies, stress and growth were related to both individual and situational factors but individual factors such as personality and coping strategies appeared to play a more significant role than situational factors. The emotion-focused

coping strategies adopted by these groups were positive rather than maladaptive. Results show that emotion–focussed coping strategies may contribute to adaptive capacity by successfully neutralising stressors in the sample. Implications of these findings are discussed.

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To these special people I dedicate this research.

In memory of my grandparents, Herbert and Alice Jackson.

I travel the world in all its many facets and you share the journey with me.

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# **1 PSYCHOSOCIAL FACTORS RELATING TO ADAPTIVE CAPACITY IN A NEW ZEALAND DISTRICT HEALTH BOARD**

The purpose of the current research was to examine how factors identified in the Organisational Health Framework (Hart & Cooper, 2001) may relate to stress and growth in a sample of the New Zealand health sector workforce. This chapter provides the rationale for the research programme and describes the key concepts.

The public has very high expectations of care and the ability to meet those expectations, particularly in rural areas, is routinely demanding of resources. It is the norm for health sector organisations to work in a framework which demands funding constraints, pressures to cut waiting times, and improve performance outcomes simultaneously. Working in any capacity within the health sector is therefore routinely demanding and stressful.

It cannot be assumed these inherent routine stressors are necessarily bad as there is evidence of growth outcomes (Rick, Perryman, Young, Guppy, & Hillage, 1998) It is now accepted that an individual can be stressed by events which do not directly threaten them but, for example, involve a loved one or work colleague or impact their work organisation (Gist & Woodhall, 1995; N. Harris, 2001). This must be an important consideration for the organisations that comprise the health and Civil Defence Emergency Management (CDEM) sectors within New Zealand.

## **1.1 Research Rationale**

There is an increasing awareness that duty-related stress reactions in emergency service workers (including health sector workers), may result from exposure to large-scale

emergency events (Alexander & Klein, 2001; Ellis, 2005; Hytten & Hasle, 1989; LeBlanc et al., 2011). Paton, Smith and Stephens (1998) acknowledge how a lack of organisational preparedness increases staff vulnerability and lengthens recovery rates from large-scale emergency events or more routine critical incidents. Response to critical incidents can pose substantial demands on health staff for prolonged periods. It is important to develop staff capabilities to facilitate their capacity to adapt to critical and routine demands in ways that will safeguard their well-being and promote effective performance. The current research will look at identifying the individual and situational factors having the potential to build long-term adaptive capacity. Through identifying the factors that may promote positive outcomes arising from critical incidents there is the potential to improve the ability of health sector workers to plan, prepare for, facilitate, and implement positive adaptation options in their routine work contexts (business as usual).

The outcomes of the current research will guide the development of proactive interventions for occupational well-being and adaptive capacity. The remainder of the chapter will review the challenges faced by the health sector in dealing with both critical incidents/emergencies and the challenges of routine work in a resource constrained environment.

## **1.2 Health Services in the Hazardscape of New Zealand**

Approximately four and a half million people live in New Zealand (Statistics New Zealand, 2010). The two main islands in the southern Pacific Ocean which comprise New Zealand are located at the boundary of the Pacific and Australian tectonic plates (Department of the Prime Minister and Cabinet, 2007). The geophysical layout of New Zealand sees cities and infrastructure situated in places that are vulnerable to natural

hazards such as tsunamis, earthquakes and volcanic activity. Given its location, it is fortunate that New Zealand has not endured multiple major disasters in its 150 year history since European settlement (Lee, 2010).

New Zealand's dynamic physical environment and level of technological development means the country is subject to a wide variety of hazards. The CDEM Act takes a broad interpretation of the term hazard to mean "...something that may cause, or contribute substantially to the cause of, an emergency" (Civil Defence and Emergency Management Act, 2002, p. 9), use of the term *hazard* in the current research will refer to this definition.

Situated on a dormant volcanic field, the largest city, Auckland is the commercial hub and home to 32.4% of New Zealand's population (1.3 million) (Statistics New Zealand, 2011a). Wellington, the capital city with a population of 180,000 people or 4.5% of New Zealand's population (Statistics New Zealand, 2011b) is situated on the Wairarapa fault line. This fault-line produced one of New Zealand's largest recorded earthquakes with a magnitude of approximately 8.2 in 1855 (Downes, 2005). Other communities are also situated on active faults; Christchurch, the second largest city, was struck by a magnitude 7.1 earthquake on 4 September 2010. Fortunately no deaths and only a few serious injuries were reported. However, on 22 February 2011 an aftershock of magnitude 6.3 caused widespread devastation with 185 people confirmed dead and the declaration of a national state of emergency (GeoNet, 2011; New Zealand Government, 2011, 2012b). The impact on the infrastructure, economy and psychosocial effects will be felt for many years, making it the most costly disaster in New Zealand history. The February 2011 earthquake has tested emergency management arrangements nationally

and within agencies which comprise the all-of-government response to such an event; particularly the health sector (Ardagh et al., 2012).

New Zealanders are, and will continue to be, at risk from a broad range of (natural) hazards. This fact is acknowledged by the New Zealand Ministry of Civil Defence and Emergency Management (MCDEM) whose vision is to build a resilient and safer New Zealand. The goals and objectives for achieving this vision are documented in the National Civil Defence Emergency Management Strategy (Department of Internal Affairs, 2008, p. 1) which provides long-term direction for CDEM in New Zealand.

The natural hazard that most often leads to a community-wide emergency is flooding. The most under-estimated is volcanic eruption, whilst potentially the most dangerous and significant are major earthquakes (Department of the Prime Minister and Cabinet, 2007). The claim settlements for residential homes alone following the 2010/11 Christchurch earthquakes has cost NZ\$1.1 billion as at September 2012 and it is estimated that the total cost will be \$15 billion (Insurance Council of New Zealand, 2012). Other significant natural hazards include snow, wind, landslide and severe storms; with coastal erosion, storm surge and tsunami posing significant risks to many coastal areas of the country (Britton & Clark, 2000). New Zealand's increasing exposure to risks from natural hazards is consistent with international trends. During the last four decades, global economic losses from natural disasters have increased almost 10 times (Munich Re, 2012), leading the United Nations to adopt the International Strategy for Disaster Reduction (United Nations, 2000), which emerged from the International Decade for Natural Disaster Reduction 1990 - 1999.

In addition to natural hazards, technological development has created new hazards and risks. Reliance on lifeline utilities including electricity, gas, water, sewerage,

communication and transport systems leads to greater vulnerability in the event of their failure. The increasing complexity and interdependency of these services raises the possibility of multiple failures, progressive failures or extended outages beyond the control of individual utilities (Department of the Prime Minister and Cabinet, 2007). For example, the 1998 and 2006 Auckland Central Business District power failures and the 2011 Maui gas pipeline leak.

The regions of New Zealand differ in terms of population size, ethnicity, socioeconomic levels, household composition, the ownership and use of motor vehicles, access to telephones and the internet. Subsequently, some communities may be more susceptible than others to the adverse effects of hazards (Beetham et al., 2004; Northland Civil Defence Emergency Management Group, 2010). The regions of New Zealand also differ in terms of health services currently available (New Zealand Government, 2012a). These are factors that become exaggerated in an emergency event and impact greatly on the increased demand for, and access to health services.

The risks arising from hazardous substances and introduced organisms may also adversely affect New Zealand's environment, health and economy. For example, a health pandemic is recognised as a major risk. The response to H1N1 Swine Flu pandemic in 2009 (A(H1N1)pdm09) provided the health sector with considerable post-event learning; while the economic and related health impacts of the *didymosphenia geminata* (didymo) outbreak on the South Island were also considerable (Branson, 2006). The terror attacks of 11 September 2001 in New York and Washington and the Bali bombing on 12 October 2002 increased the threat that terrorism poses to public safety and national security in New Zealand. This includes the stress risk factors for

individuals within responding organisations such as those in the health sector (Curtis, 2006; Paton & Violanti, 2007).

Research into the New Zealand hazardscape continues to identify new hazards and often points to a more compelling risk from known hazards than was previously understood (Natural Hazards Research Platform, 2010). New Zealand's vulnerability to hazards is influenced by the structure of its economy and society. For example, the large populations living in urban areas will increase the demand upon health services and utilities during an emergency event (Statistics New Zealand, 2010).

New Zealand's environment requires a comprehensive approach to emergency management which, as the CDEM Act (Civil Defence and Emergency Management Act, 2002) stipulates, is inclusive of the health sector. It is therefore a requirement that health related organisations participate in the development of CDEM strategy and planning.

Emergency preparedness is progressive and continuously moving the public and government agencies toward greater resilience (Britton, 2006). This ongoing process involves careful planning, designing of response actions, testing and evaluating processes and updating of plans. For the health sector, careful planning is critical to protecting the public and healthcare providers and safeguarding the public's investment in the healthcare system. This sentiment is not confined to New Zealand; strategic objectives outlined by the World Health Organization include an all-hazards approach to improving disaster preparedness in health sectors to reduce risk (Pan American Health Organization, 2007).

### **1.3 Role of the Health Sector**

The New Zealand health sector's role in a disaster was affirmed with the assent of the CDEM Act (Civil Defence and Emergency Management Act, 2002) and the National CDEM Plan (New Zealand Government, 2005). This public policy extends a general public expectation concerning the availability of health care to include disaster scenarios. It also implies that the health sector has an inherent obligation to the community to be prepared for disasters (Barbera, Macintyre, & DeAtley, 2001) but in recognising an implicit responsibility towards community preparedness, the CDEM Plan (New Zealand Government, 2005) does not specify the financing and resourcing of these activities.

The definition of emergency services in the CDEM Act (Civil Defence and Emergency Management Act, 2002) includes hospitals and health services, requiring them to participate in the development of CDEM strategy and planning. DHBs must provide an active member for each regional CDEM Group Coordinating Executive Group and have in place major incident and emergency plans which provide for an integrated regional and national response (Ministry of Civil Defence & Emergency Management, 2006).

These health sector plans should be community based and link to CDEM Group planning as well as the regional health groups (Ministry of Civil Defence & Emergency Management, 2009). The CDEM Act requires health providers to have resources in place to ensure response to emergencies in an integrated and effective manner as well as be ready "...to function to the fullest possible extent..." during and after an emergency (Civil Defence and Emergency Management Act, 2002 Pt3 s63). This response capability, although not a new concept, is problematic. It was challenged in the report on the 2004 Lower North Island floods. This report concluded that the responses to the

events seemed beyond the immediate resources of the region (Reid, Brunsdon, Fitzharris, & Oughton, 2004). These resources included health sector workers, without whom the health sector's ability to recover from a disaster would not be possible. If a region struggles in its response, this raises questions about the capacity of each sector within it to cope effectively.

Under the National CDEM Plan Order (New Zealand Government, 2005) all District Health Boards (DHB)s are tasked with developing their own emergency response plans. These statutory requirements for the health sector include planning to provide for the care and welfare of its own staff affected by an emergency (New Zealand Government, 2005). Effective recovery management should integrate these welfare activities within organisational systems (Paton, Smith, et al., 1998). Related to the CDEM statutes, the Department of Labour regulations also emphasise minimising 'harm caused by work-related stress' (Department of Labour, 2003, p. 8). Taking a universal view of this statutory requirement to provide for the well-being of health sector workers, it is important to acknowledge that large-scale emergency events may generate significant stress for those involved in recovery and support roles. The risks that exposure to such occupational stressors may place upon emergency service professionals are widely acknowledged (Alexander & Klein, 2001; Moran, 1998; Ørner, Avery, & Boddy, 1997; Paton, 2003a; Violanti, 2001).

Unlike other emergency service workers such as police officers, whose involvement with the victims of critical incidents is generally for short periods of time, health sector workers are frequently involved in providing support for long periods. Consequently health sector workers may be more at risk of developing stress reactions (Crabbe, Bowley, Boffard, Alexander, & Klein, 2004; Cranwell-Ward & Abbey, 2005; Figley,

1995). Research into duty-related stress continues to gain momentum; however, research into stress related outcomes in the health sector is not strongly developed.

While communities assume that healthcare systems are adequately preparing for disasters that would generate catastrophic casualty loads, the reality is that hospital surge capacities and specialised medical capabilities across New Zealand have never been more restricted. The health sector is struggling to maintain its everyday capacity. These resource implications will continue to impact upon the sector's ability to provide adequately for emergency management preparedness and response planning (New Zealand Government, 2012a). They also have implications for the well-being of staff in everyday contexts.

## **2 STRESS AND GROWTH**

There is considerable variation in the reactions of individuals to their encounters with daily life stressors. These reactions are exacerbated during a stressful event with the expectation that the coping resources of individuals will be overwhelmed. However, when faced with adverse situations positive outcomes have been observed in the form of growth (Bonanno, 2004; Hytten & Hasle, 1989; Linley & Joseph, 2004; Linley, Joseph, & Loumidis, 2005).

The emphasis on the outcomes of stressful events in relation to emergency service workers' experiences has transferred from investigation of the factors and life experiences that may precipitate poor outcomes to the current attention on individuals who do not succumb to psychological disorders and to an interest in the concept of positive growth (Calhoun & Tedeschi, 2006; Rutter, 1985).

### **2.1 Pathogenesis and Salutogenesis**

The pathogenesis of stress and its relationship to the effect of stressors on individuals have been the focus of an extensive area of research since the mid 1980's (Hinkle, 1987). Much of the research on stress and trauma was embedded within the pathogenic paradigm. Vingerhoets and Marcelissen (1988) reviewed nine approaches to stress research across the medical and behavioural sciences. They proposed that several disciplines are brought together when engaged in stress research, that a common language must be understood to enable transferrable results and that researchers must carefully consider their research approach and strategy to facilitate this outcome. Leventhal and Tomarken (1987) highlighted the shortcomings in stress research at that time. For example, they drew attention to the absence of a comprehensive stress theory

which included moderators, and highlighted the non-interdependence in the assessment of the stressors, stress responses and disease. Antonovsky and Bernstein (1986) suggested that the pathogenic paradigm was losing its monopoly. They identified two different modes of thinking – a pathogenic and a salutogenic orientation. Researching the variables associated with each approach, Antonovsky and Bernstein (1986) concluded that salutogenesis should be critically examined as an alternative to the pathogenic research approach to stress and coping in which stressors are considered as inherently bad resulting in negative outcomes (Antonovsky, 1979; Harrop, Addis, Elliott, & Williams, 2007). In the intervening years salutogenesis has become the catalyst for numerous researchers to examine this concept (Lindström & Erickson, 2005).

The current research used the salutogenic concept to advocate proactive approaches to psychological health promotion (Antonovsky, 1979). A growth oriented or salutogenic approach is one which implies a focus on health maintenance processes rather than disease processes. The term salutogenesis is derived from the Latin *salus*, meaning health, and *genesis*, meaning *giving birth* translating as ‘that which gives birth to health’ (Antonovsky, 1979, 1987a). Antonovsky saw health and disease as two ends of a continuum on an axis between total ill health (dis-ease) and total health (ease).

Salutogenic research therefore looks at the processes that move people towards, or keep them moving towards health, providing a framework for understanding the relationship between the individual in relation to the world (Antonovsky, 1991; Harrop et al., 2007; Lindström & Eriksson, 2005).

Antonovsky (1979, p. viii) states that salutogenesis is aimed at all those who are “...committed to understanding and enhancing the adaptive capabilities of human

beings.” Accordingly, salutogenesis is used as an overarching concept for the current research into adaptive capacity and links to the health targets set out for the New Zealand health sector which look to a process of continual improvement towards positive outcomes (Ministry of Health, 2013).

Keeping the health sector functioning whilst dealing with the challenges produced by large-scale emergencies is a form of adaptive capacity. The research provides an example of how adaptive capacity in a DHB is illustrated on a daily basis in routine contexts. Adaptive capacity is not just about dealing with the peaks of service delivery requirements during critical incidents; it is about being able to keep the health sector functioning during such times. The research will examine routine contexts (business-as-usual) which in theory will predict how the case study organisation will work during an emergency event using the emergency management framework promoted across all of government in New Zealand.

In the context of the current research the notion of *adaptive capacity* is defined as the ability to plan, prepare for, facilitate, and implement adaptation options (Klein, Nicholls, & Thomalla, 2003).

## **2.2 Stress in Health Professionals**

Stress is a term that can be linked to many theories across the research spectrum (Dohrenwend & Dohrenwend, 1974; Hinkle, 1974). A comparatively new term, its use in daily language is profuse (Cotton & Hart, 2003; Jillings, 2002; Kagan, Kagan, & Watson, 1995). In contemporary society many people talk about *stress* or *being stressed* to mean a perception of an inability to cope. Common usage rarely attempts to rationalise or define the concept, although the circumstances which are capable of producing a stress reaction in an individual consist of many variables and processes

(Hinkle, 1974; Lazarus & Folkman, 1984). In his explanation of the history and status of the stress concept, Selye (1991) produced a definition suggesting that stress is “...the non-specific result of any demand upon the body, be the effect mental or somatic” (Selye, 1991, p. 22). Similarly, Neary’s (1995) definition of stress implies stress is the apparent imbalance between an individual, others and the environment which leads the individual to feel inadequate and unable to respond as required by others. Arguably, this definition might be simplistic but it has provided an overarching framework within which a wide range of variables can be analysed.

Selye (1956, p. 299) claimed that “Stress is part of life. It is a natural by-product of all our activities.” In this sense stress is unavoidable, occurring in every context with results which can be physiological or psychological. Hinkle (1974) provides an overview of biological, social and behavioural science elements in the stress paradigm, suggesting that stress occurs when individuals feel psychologically disadvantaged as they endeavour to uphold the norms of behaviour and relationship status of the society within which they are operating. Within an occupational setting in a disaster response context this includes a degree of emotional tension or frustration which is observed in the reduced functional effectiveness of the those involved (Paton, Johnston, & Houghton, 1998).

Caplan (1994) and Quine (1998) suggested that stress is an inevitable part of working life for emergency service professionals (including health service workers). Palmer and Dryden (1995) agree, claiming workers at every level in the emergency services risk exposure to stressors. Whilst Jex (1998) highlights that stressors are important in times of emergency and disaster, Cartwright and Cooper (1997) cite shift work, long hours and work overload as significant everyday stressors. In addition, these professional

groups may suffer anticipatory stress prior to a potentially critical incident (Ursano, McCaughey, & Fullerton, 2001). Long (1998) claims that these professions require a certain amount of stress for effective reaction to emergencies and heavy workloads, but stress becomes distress when work pressures are unrelenting (Bonn & Bonn, 2000; Firth-Cozens, Midgley, & Burgess, 1999; Weinburg, 2000). Quine (1998) and Harris (2001) propose that occupational stress contributes to illness, absenteeism, high staff turnover, unsafe behaviour and increased accident rates; such evidence provides an excellent rationale for the current research relating to health service workers.

The desire to protect those who are threatened by imminent danger or injured as a result is perhaps one of the most overwhelming human impulses. McFarlane (2000) explains that this urge is intensified when working with others as a team in an effort to alleviate suffering; for example, in a hospital emergency department when there is a mass casualty influx. Group survival or team cohesion is paramount to the motivation of emergency service workers in these instances. It has been known for many years that such emergency events can leave a legacy of psychological morbidity; their recognition being denoted by the nature of the incident and its effects on individuals and teams and the responses of these individuals and groups to the incident (Dyregrov, 1989; Hytten & Hasle, 1989; Mitchell, 1983)

Figley (1985) describes events which can produce high levels of stressors as being those which are dangerous, overwhelming and sudden. In the health sector this may include mass casualty arrivals to an emergency department in the aftermath of a disaster, and the extreme or rapid onset of these arrivals immediately after the event. Even with the use of contemporary technology and notification procedures there may only be a short period (if any) of preparation time before the first casualties arrive. For example, in the

Christchurch earthquake of February 2011 the first walk-in patients arrived within minutes (Ardagh et al., 2012). These events can typically cause fear, anxiety, withdrawal and avoidance in their aftermath (Ursano, Fullerton, & McCaughey, 2001). The range of those affected by these event outcomes is wide and includes health sector workers who act as interventionists (Trent Regional Health Authority & Mersey Regional Health Authority, 1990). Herlofsen (2001) and McFarlane (2000) highlight the importance of being a member of an already established group before such an event strikes. When the group ethos is well established and implemented in organisations like DHBs, the probability of stress may be reduced.

A series of UK based disasters in the late 1980's, including such events as the Bradford City football stadium fire (1985); the sinking of the Herald of Free Enterprise cross-channel ferry (1987); the London Underground fire at King's Cross station (1987); the Piper Alpha oil-rig fire (1988); Clapham rail crash (1988); Lockerbie air crash (1988); Kegworth air crash (1989), sinking of The Marchioness cruise-boat (1989), and the Hillsborough football stadium crowd crushing incident (1989) emphasised the effects that such events have on emergency service workers. These and many other disasters prompted an increasing international awareness that such events may bring stressful effects for those involved in recovery and support roles. The risks that exposure to such occupational demands has upon responders are now widely acknowledged within the emergency services (Alexander & Klein, 2001; Alexander & Wells, 1991; Dean, Gow, & Shakespeare-Finch, 2003; Moran, 1998; Ørner et al., 1997; Paton, 2003b; Violanti, 2001). Affected individuals may suffer from social and mental health problems but support and treatment for emergency responders has, according to Ørner et al (1997) frequently been inconsistent, ineffectual, offered late and for too short a time.

The recognition and acknowledgement of duty-related stress as an occupational risk factor for emergency service workers has resulted in much research in this sector (Alexander, 1993; Carlier, Lamberts, Van Uchelen, & Gersons, 1998; Dean et al., 2003; M. B. Harris, Baloglu, & Stacks, 2002; N. Harris, 2001; Hytten & Hasle, 1989). Inevitably the stressors faced by health professionals in the pursuit of their duties are a combination of the individual's responses to the event and to the environment (Kirby, Shakespeare-Finch, & Palk, 2011).

## **2.3 Growth**

There has been a lot of focus on the negative outcomes of stressors but evidence is growing that even severe stressors can give rise to positive growth and foster individual well-being. Pathology in the aftermath of a critical incident has been the subject of much research, which has encompassed traumatic stress symptoms (e.g. Clohessy & Ehlers, 1999), burnout (e.g. Alexander & Klein, 2001) and compassion fatigue (e.g. Figley, 1995). This approach is not representative of all possible positive and negative outcomes of critical incidents for emergency service workers. In an organisational setting Ashkanasy, Ashton-James and Jordan (2004) suggest work related stress can have a positive or negative impact on individuals, resulting in increased motivation and performance (positive) (Driskell & Salas, 1991) or decreased job satisfaction and work commitment (negative) (Yousef, 2002). Empirical literature supports these outcomes (Cartwright & Cooper, 1997; Cooper, 1998; Hockey, 2002; Salas & Klein, 2001). Positive changes following adversity have long been recognised in philosophy, literature, and religion (Linley & Joseph, 2004; Tedeschi & Calhoun, 1995; Tedeschi, Park, & Calhoun, 1998). In adapting to, and benefitting from their stressful experiences, individuals can develop the capacity to promote positive

outcomes, enhance their resilience and therefore reinforce their ability to cope (Paton, 2006b). Introducing the concept of salutogenesis as an alternative to the pathogenic paradigm of the study of health and well-being to describe how ‘people manage stress and stay well’, Antonovsky (1987b) considered the cognitive strategies which enable individuals to confront stressful events, move forward and experience positive changes by using the sense of coherence facets (comprehensibility, meaningfulness and manageability) as coping resources. These facets mitigate the impact of the stress(ors) by improving the appraisal of events (cognitively and emotionally) to render them comprehensible (making sense); manageable (under the control of the individual, or credible other entities e.g. team or organisation) and meaningful so as to be motivated to perceive the event as an engaging challenge (Strümpfer, Gouws, & Viviers, 1998).

Positive outcomes from experiencing emergency events have been reported in ambulance personnel (Shakespeare-Finch, Gow, & Smith, 2005; Shakespeare-Finch, Smith, Gow, Embelton, & Baird, 2003), fire-fighters (Moran & Colless, 1995), police officers (Huddleston, 2002; Huddleston, Stephens, & Paton, 2007) and health workers (Ogińska-Bulik, 2005; Simmons & Nelson, 2001). The evidence that individuals in professions such as the emergency services can derive beneficial outcomes from their involvement in an emergency and the aftermath of such events can be linked with the concept of post-traumatic growth. Tedeschi and Calhoun (2003, p. 12) define post-traumatic growth as “significant beneficial changes in cognitive and emotional life beyond previous levels of adaptation, psychological functioning or life awareness...in the aftermath of psychological traumas that challenge previously held assumptions about self, others and future.”

## **2.4 Theories of work related stress and well-being**

There are numerous theories of work-related stress. Some of the better known ones include the stressors and strain approach, which views stress as occurring when presumed causal work characteristics contribute to poor psychological or physical health (Beehr, 1995; Quick, Murphy, & Hurrell, 1992); the cognitive-relational approach (DeLongis, Folkman, & Lazarus, 1988), a transactional theory that can be applied to all domains of a person's life and which can be used to explain the positive and negative responses that people have to their environment; and the dynamic equilibrium theory (Hart, Wearing, & Headey, 1993; Hart, Wearing, & Headey, 1994) which suggests that stress results from a broad system of variables and that stress can only be understood by assessing how these variables relate to one another.

Others which have been widely used in research include the Effort-Reward-Imbalance (J. Siegrist, 2002) and the Demand-Control-Support Models (Karasek, 2004; Karasek & Theorell, 1990). These however, do not readily include positive pathways for individual factors relating to growth. The present study is informed by the Organisational Health Framework (Hart & Cooper, 2001) and the work on stress and coping by Lazarus and Folkman (1984).

The cognitive appraisal approach developed by Lazarus (1966) considers that people can have varying responses to the stressful events they encounter daily and can evaluate such events as either positive or negative. Building on this concept Lazarus and Folkman (1984) developed a cognitive theory of psychological stress and coping which views the individual and the environment as part of a “...dynamic, mutually reciprocal, bi-directional relationship” (Folkman, Lazarus, Gruen, & DeLongis, 1986, p. 572).

This approach is represented in appraisal models of stress that treat stress as a

psychological state, which is an individual's response to a challenging interaction between themselves and their environment, and are but a small part of the dynamic state of multiple individual environment encounters (Cox, 1978; Lazarus & Folkman, 1984). Coping and some individual difference variables are included in the Organisational Health Framework (Hart & Cooper, 2001) which also includes a focus on organisational context.

### **2.4.1 The Organisational Health Framework**

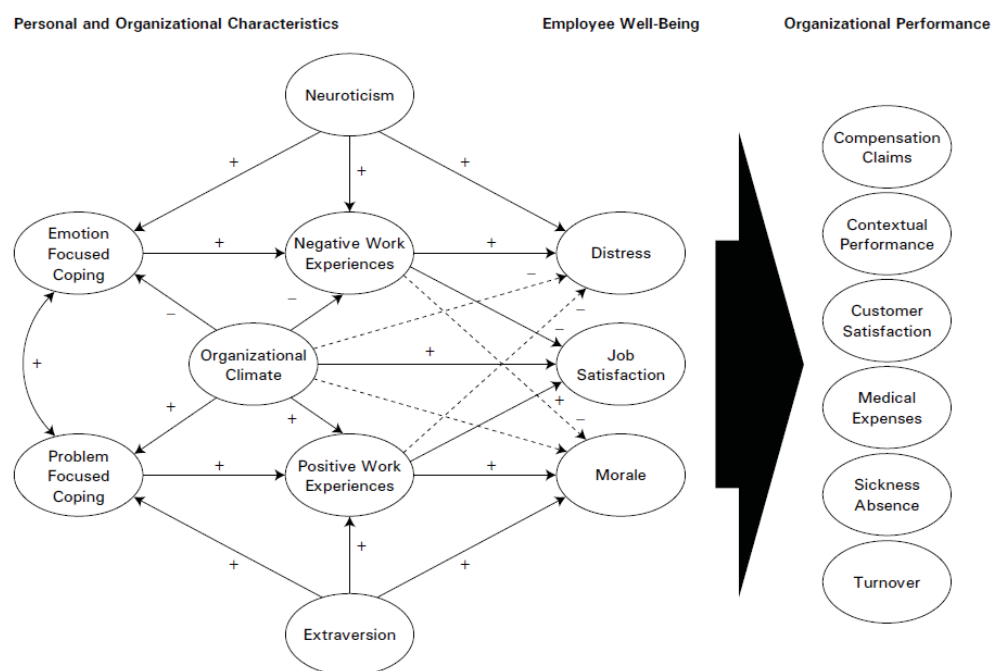
In 2001, Hart and Cooper (2001) reviewed the traditional approaches to occupational stress research, with the intention of widening the understanding of occupational stress to demonstrate that employee well-being is central to the ongoing viability and success of work organisations. Hart and Cooper suggested that approaches to occupational stress research, had become static, being heavily reliant on approaches which provided no information about the sorts of variables or relationships that should be considered important. Hart and Cooper (2001) suggested that the lack of an integrated research framework had contributed to a degree of stasis in theory and research.

The Organisational Health Framework focusses on employee well-being and organisational performance, and recognises that employee well-being and organisational performance are influenced by a combination of individual (personality and coping processes) and organisational characteristics (organisation's environment (e.g., resources and structure), as well as employees' subjective experience of that environment (e.g., organisational climate and work experiences) (Hart & Cooper, 2001).

Drawing on elements of the cognitive-relational (Lazarus & Folkman, 1984), dynamic equilibrium theories of stress (Hart, 1999) and stressors and strain approach, Hart and

Cooper (2001) developed the Organisational Health Framework which comprised 16 variables. The inclusion of all relevant variables was an attempt to offset spurious rather than causal relationships being reported when self-report measures are employed (Brief et al., 1988; Podsakoff & Organ, 1986). The Organisational Health Framework is a two pathway model, with one pathway leading to positive outcomes and one pathway leading to negative outcomes (Figure 2-1). It incorporates individual and organisational characteristics that are likely to be important in determining stress and well-being (Cotton & Hart, 2003). Since its inception, the evidence-based model has been applied in a wide variety of occupational settings and has been demonstrated to be robust in predicting employee well-being and performance related outcomes (Cotton & Hart, 2003).

**Figure 2-1 The Organisational Health Framework**



The Organisational Health Framework (Hart & Cooper, 2001). ('+' indicates a positive relationship; '-' indicates a negative relationship. Dotted lines indicate possible relationships that are expected to be comparatively weak)

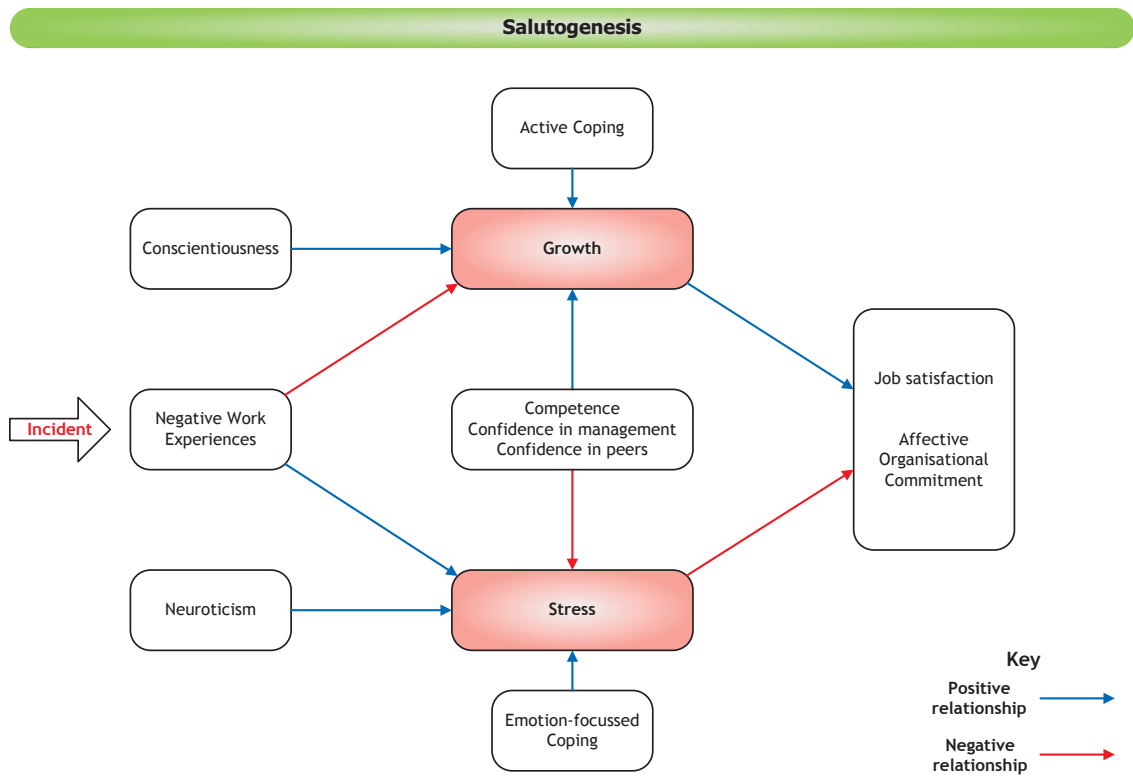
The Organisational Health Framework will be used to provide an empirical, evidence based model for the current research. The research will include both positive and negative pathways and include key variables in each pathway. Key variables including personality, coping and workplace situational factors such as team climate will be discussed in Chapter 3.

### **3 SITUATIONAL AND INDIVIDUAL FACTORS RELATING TO STRESS AND GROWTH**

This research comprises two studies testing the Occupational Health Framework (Hart & Cooper, 2001) as applied to stress and growth in the health sector. Both studies include the core variables of the Occupational Health Framework: personality (neuroticism and conscientiousness), stress and growth, active and emotion-focussed coping and job satisfaction and affective organisational commitment. Study 1 also includes a measure of negative work experiences. Both studies also examine aspects of organisational climate: empowerment, competence, confidence in management, confidence in peers in Study 1 and with the addition of team climate in Study 2.

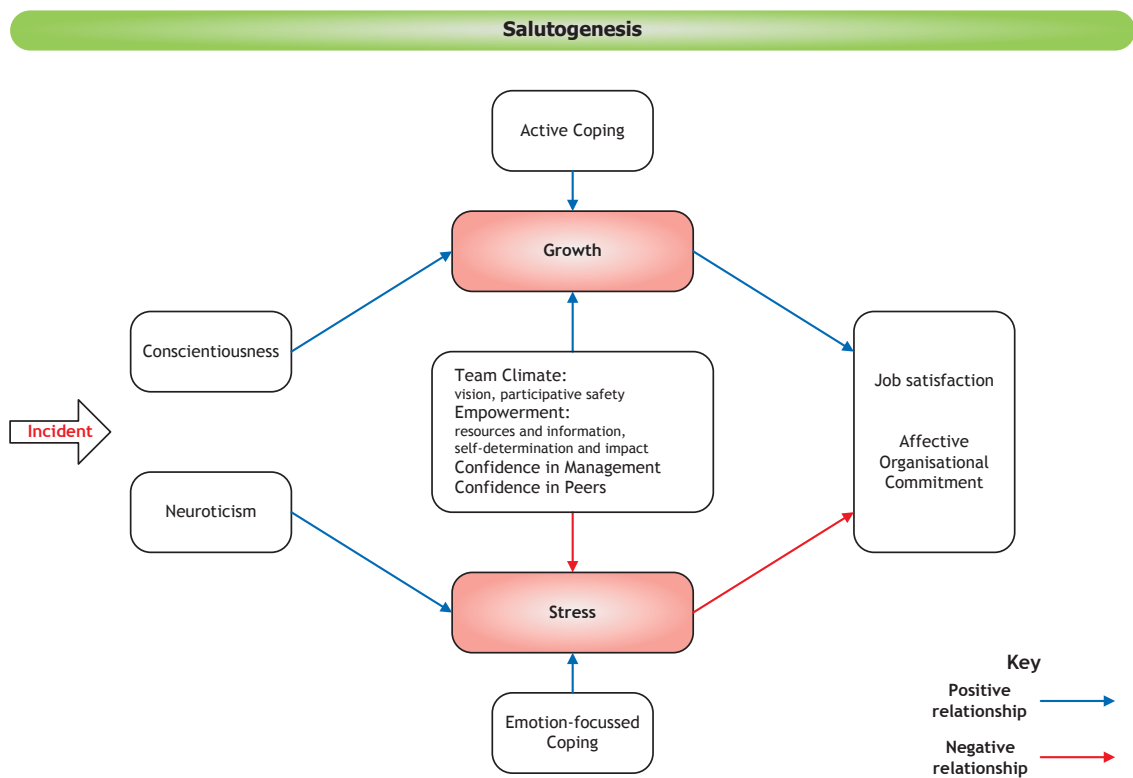
This chapter will discuss each in turn. The important criterion variables, stress and growth were discussed in Chapter 2. Important correlates of stress and growth in terms of consequences for organisations are job satisfaction and affective organisational commitment, both of which are known to be related to job performance and to turnover intention (A. Cohen, 1993; Coomber & Barriball, 2007; Judge, Heller, & Mount, 2002; J. P. Meyer & Allen, 1991). These will be discussed first followed by a discussion of the importance of negative work experiences (Study 1), then personality and coping (Studies 1 and 2) and organisational climate (Studies 1 and 2).

The hypothesised relationships for the Study 1 variables are shown in Figure 3.1.



**Figure 3-1** Hypothesised relationships for Study 1 variables

The hypothesised relationships for Study 2 variables are shown in Figure 3.2.



**Figure 3-2** Hypothesised relationships for Study 2 variables

The majority of the research into stress and well-being in emergency service workers over the last twenty years has focussed on police and fire officers (Burke & Shakespeare-Finch, 2011; Hytten & Hasle, 1989). The purpose of the current research is to address this gap by attempting to identify the individual and situational factors that can promote positive outcomes arising from work demands to improve the adaptive capacity of health sector workers. As well as fostering individual well-being stress and growth can have important implications for organisations as they can affect employees' job satisfaction and commitment to the organisation.

### **3.1 Job Satisfaction and Affective Organisational Commitment**

Wanous and Lawler (1972) suggest that there are several factors which influence an individual's satisfaction about their job, for example, organisational environment, job stability and prospects (Lu, Barriball, Zhang, & While, 2012). In routine contexts staff shortage and high turnover impact upon the efficiency and effectiveness of any healthcare delivery system and this is compounded when critical incidents occur.

Judge, Parker and Colbert (2001) consider job satisfaction to be a function of situational influences and individual differences. Studies conducted in health sector workers have found that job satisfaction is closely related to working conditions and to organisational environment, job stress, role conflict and ambiguity, role perception and role content, organisational and professional commitment (Lu et al., 2012; Lu, While, & Barriball, 2005). Job satisfaction is a key factor for individuals working in the health sector as it is related to work performance and intentions to stay or leave the organisation (Coomber & Barriball, 2007; Judge et al., 2001).

The notion of what is a committed employee has been discussed by Meyer and Allen (1997, p. 3) who suggest that it is an employee who stays with the organisation through ups and downs, attends work regularly, puts in full days (and more), protects company assets and shares company goals.

Meyer and Allen (1991) suggested that commitment itself is a psychological state that characterises the employee's relationship with the organisation and has implications for their decision to continue membership with the organisation and that there are three components to commitment: affective, continuance and normative. Affective commitment refers to the employee's emotional attachment to, identification with, and involvement in the organisation. Employees with a strong affective commitment continue employment with the organisation because they *want* to do so. Continuance commitment refers to an awareness of the costs associated with leaving the organisation. Employees whose primary link to the organisation is based on continuance commitment remain because they *need* to do so. Whilst normative commitment reflects a feeling of obligation to continue employment, employees with a high level of normative commitment feel that they *ought* to remain with the organisation (J. P. Meyer & Allen, 1991)

The nature of work in the health sector demands that employees may exhibit a level of affective organisational commitment which denotes an emotional detachment to, identification with, and involvement in the organisation (J. P. Meyer & Allen, 1991). Affective organisational commitment is the focus of this research because it is highly relevant the health sector where recruitment and retention is a continuing struggle for large organisations; particularly when the health environment may experience unexpected significant changes as a result of a large-scale emergency event.

### **3.2 Negative Work Experiences**

The contribution of negative work experiences to the well-being of health service workers is an important facet of the stress process in the context of the current research, in which routine services are delivered in an environment fraught with resource constraints. During a critical incident exposure to negative work experiences will be increased and are therefore relevant to the Organisational Health Framework (Hart & Cooper, 2001).

Although negative work experiences may be considered as a potentially harmful part of the daily work environment, Tedeschi and Calhoun (1995) argue that such experiences can provide a context for personal growth. Carver (1998) links such personal growth to successful engagement with and addressing of stressors or demands. This agrees with Halohan and Moos (1990) who suggest that demanding situations which are effectively addressed can result in positive outcomes. Negative work experiences are an indicator of routine everyday work stressors that cumulatively can be related to stress and growth. In the context of the current research it is expected that the contribution of negative work experiences to stress and growth will be mediated by individual coping processes and situational factors such as the effect of team climate.

Occupational stressors vary and depend on the nature and extent (type and duration) of the stressor and the contextual variables (Coyle, Edwards, Hannigan, Fothergill, & Burnard, 2005). These stressors can be magnified by the impact of minor everyday events which combined have a cumulative effect on the individual when undertaking their work role. This focus on the on-going stresses and work strains and the relationship with the health service workers' well-being has been termed *hassles* (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982) but will be referred to in the

present research as negative work experiences. The nature and extent of negative work experiences and their relationship to stress have been studied in a context which takes into account the personal and environmental influences and individual coping processes by Hart, Wearing and Headey (1993, p. 556) who define *hassles* as "...those experiences that are appraised as harmful or threatening." In the context of an occupational environment this equates to a negative work experience.

Negative work experiences may or may not have negative effects on well-being. The impact of experiences are to a large extent mediated by processes of appraisal or the ways in which events are interpreted, and by the coping processes used to manage them.

### **3.3 Coping**

Coping strategies refer to the cognitive or behavioural efforts that people use in an attempt to alter their environment (e.g., problem-focused coping) or to manage their emotions (e.g., emotion-focused coping) (Hart & Cooper, 2001). Coping is defined by Lazarus and Folkman (1984, p. 141) as an individual's "...constantly changing cognitive and behavioural efforts to manage the specific external and/or internal demands that are appraised as taxing or exceeding the individual's resources." Coping is a way of dealing with stressors. The wealth of research on coping signifies an increasing belief that coping is a factor in the connection between stressful events and adaptation outcomes, both positive and negative (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). Learning to cope with stressful events is a form of adaptive capacity which enables an individual to become more resilient to future stressors.

Stressful experiences which would be considered possibly harmful to an individual seemingly can also promote positive processes which can build upon self-concepts and enhance coping mechanisms (Linley & Joseph, 2004; Linley, Joseph, Cooper, Harris, &

Meyer, 2003; Richardson & Ratner, 2005). The capacity of the individual to cope has focussed the attention of many researchers, and the development of theoretical models has centred on the interaction between the individual and their environment (Hinkle, 1987; Lazarus, 2000; Lazarus & Folkman, 1984).

### **3.3.1 Problem-Focussed and Emotion-Focussed Coping**

Coping has two major functions: dealing with the problem that is causing the distress (problem-focussed coping) and regulating emotion (emotion-focussed coping).

Previous investigations (e.g. Folkman & Lazarus, 1980, 1985) have shown that people use both forms of coping in virtually every type of stressful encounter. Several forms of problem-focussed coping and emotion-focussed coping have been identified (Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Folkman & Moskowitz, 2004).

Problem-focussed forms of coping may include aggressive interpersonal efforts to alter the situation, as well as cool, rational, deliberate efforts to problem-solve (in the current research this is called active coping). Emotion-focussed forms of coping may include distancing, self-controlling, escape-avoidance actions, accepting responsibility, and positive reappraisal (Folkman, Lazarus, Gruen, et al., 1986). Many individuals have expressed finding positive meaning from essentially negative events by focussing on the positive aspects, and as a result cope better with the stress of the experience. Studies over several years support the notion that finding positive meaning in an undesirable event is especially important in coping reactions for emergency service workers (Hyttén & Hasle, 1989; Moran & Colless, 1995; Paton, 2005; Shakespeare-Finch et al., 2005).

In general, where problems can be addressed and are controllable, task-focussed coping has been found to be adaptive (Ashkanasy et al., 2004; Lazarus, 2000) while emotion-

focussed coping, which does not address the causes of stress, is less adaptive (Holahan, Moos, Holahan, Brennan, & Schutte, 2005; Roth & Cohen, 1986). This was highlighted by Littleton, Horsley, John and Nelson (2007) who conducted a meta-analysis in the field of coping and adjustment; they concluded that there is a consistent association between reliance on emotion-focussed strategies like avoidance to cope with the effects of trauma and psychological distress. Task-focussed coping has been found to be associated with growth and well-being (Aldwin, Levenson, & Spiro, 1994; Armeli, Gunthert, & Cohen, 2001; Linley & Joseph, 2006; Simmons & Nelson, 2001). However, when problems are uncontrollable, emotion-focussed coping may be more beneficial by managing emotional reactions, rather than efforts expended in attempts at task-focussed coping (Fredrickson, Tugade, Waugh, & Larkin, 2003; Roth & Cohen, 1986).

### **3.4 Personality**

To understand health, well-being and behaviour, the characteristics of the individual as well as that of the environment must be considered. Personality traits may be defined as stable, fundamental dimensions of personality which influence a variety of behaviours in a variety of situations (Matthews, Saklofske, Costa, Deary, & Zeidner, 1998). How an individual interprets experiences can nurture or constrain their ability to provide meaning and coherence to a critical incident and how an individual chooses to react to a stressful event will determine whether the outcome will be growth or stress. Each of these responses are influenced by the same external stimuli but the resulting positive or negative responses display the level of ability (or capacity) to adapt to change (Selye, 1975, 1976).

The personality of an individual comprises a unique personal set of mental programmes. Traits are partly inherited and partly learned through collective culture (environment) and personal experiences (Hofstede, Hofstede, & Minkov, 2010). Five factors of personality traits or facets are generally considered to have been identified by Costa and McCrae (1989; 1992; 2003; 2005). The Five Factor Model, as it is known, contains five personality factors: extraversion, neuroticism, conscientiousness, agreeableness and openness to experience which are commonly known as the 'Big Five' personality dimensions, and evidence suggests that they have considerable validity (Digman, 1990; Hart, Wearing, & Headey, 1995; Judge et al., 2002; Kobasa, 1979; Park, 1998; Soldz & Vaillant, 1999). The two facets of the Big Five which are key elements of the Occupational Health Framework are neuroticism and conscientiousness.

### **3.4.1 Neuroticism**

One of the predictors of coping and personality is neuroticism. Neuroticism represents the proneness of an individual to experience negative and disturbing emotions and to have corresponding disturbances in thoughts and actions (behavioural and cognitive traits) (Costa & McCrae, 1989; Vestre, 1984). Costa and McCrae (2003) consider that neuroticism is something that people only vary on by degree and is composed of (amongst other factors) vulnerability. Regarded as one of the most influential and stable personality traits (Hart & Cooper, 2001; Matthews, Deary, & Whiteman, 2003), neuroticism is strongly associated with ineffective forms of coping such as worry, anxiety and depressive tendencies (Costa & McCrae, 1995; Moran & Shakespeare-Finch, 2003). Hence, those displaying high levels of neuroticism are considered to be more susceptible to negative outcomes in the wake of stressful events. Neuroticism is linked to increased stress and an individual's tendency to focus on the negative aspects

of themselves and their environment and is more likely to influence employee well-being (Costa & McCrae, 1989). Strong relationships have been found between neuroticism and other variables, such as coping, negative work experiences (i.e., stressors) (Moyle, 1995). Questioning whether neuroticism had substantive effects on coping and negative work experience variables and acknowledging the need to control for neuroticism in their study to establish these relationship Hart and Cooper (2001) included neuroticism in their Occupational Health Framework negative pathway; it is therefore included on the negative pathways for Studies 1 and 2 in the current research.

### **3.4.2 Conscientiousness**

Conscientiousness refers to a predisposition to be dutiful, dedicated, through and persistent. Costa and McCrae (2003) suggest that individuals scoring highly on conscientiousness show that they are rational, informed, generally think of themselves as being highly competent and experience a stronger sense of meaning. Hart and Cooper (2001) suggest it is possible that employees who display these characteristics are more likely to be enthusiastically engaged in their work. This may be especially relevant in times of uncertainty and disruption such as might be experienced in surge capacity events in hospitals (Paton, Violanti, Burke, & Gehrke, 2009). Conscientious individuals' sense of competence in the tasks they perform is likely to contribute to increased feelings of empowerment (Johnston, 2000; Spreitzer, 1995b), which Johnston and Paton (2003) found was a good predictor of resilience and job satisfaction. Similarly, Tedeschi and Calhoun (1996) propose that conscientiousness has been demonstrated to significantly relate to positive changes in the aftermath of stressful events. Conscientiousness is related to increased growth and there is some evidence to suggest that conscientiousness is likely to be related to performance (Barrick & Mount,

1991; Miller, Griffin, & Hart, 1999). Costa, & McCrae (1989) proposed that conscientiousness refers to a predisposition to be dutiful, dedicated, thorough, and persistent with the possibility that employees who display these characteristics are more likely to be enthusiastically engaged in their work. As conscientiousness was likely to be related to organisational performance Hart and Cooper (2001) included it in their Occupational Health Framework positive pathway; it is therefore included on the positive pathways for Studies 1 and 2 in the current research.

### **3.5 Organisational climate**

The heart of the Organisational Health Framework (Hart & Cooper, 2001) (Figure 2.1, p. 20) is centred on organisational climate. In this framework climate is a key predictor of work experiences both positive and negative.

Organisational climate is a complex multi-level phenomenon (Koys & DeCotiis, 1991). It is thought of as the product of some underlying assumptions or the shared meanings and emergent understandings that are created by group members as they interact with each other (Schein, 2010; Weick, 1995; Weick & Sutcliffe, 2007).

Organisational climate is akin to morale, leading Furnham (2005) to suggest that in some organisations it may be one of the primary causes of job satisfaction, implying that organisational climate is composed of a complex set of forces which affect individuals and is rooted in the organisation's value system. Climate is based upon individual perceptions of how one makes sense of the environment; it affects behaviour and is the psychological process that mediates the relationship between work and environment (Alexander, 1993; Cameron & Quine, 2011; James, James, & Ashe, 1990; Kopelman, Brief, & Guzzo, 1990; Reichers & Schneider, 1990).

Reichers and Schneider (1990, p. 22) define climate as the shared perception of “the way things are around here.” This definition has been refined to infer that climate is the shared perceptions of organisational policies, practices and procedures both formal and informal. Climate is always a collective experience, it is shared between people and it cannot be produced by individuals acting alone (Trice & Beyer, 1993). Always learned, it provides rules for belonging evolving from the social environment (Hofstede et al., 2010). Organisational climate can be construed as an individual variable with the expectation that it reflects the individual’s perceptions of the work environment (Kopelman et al., 1990); such perceptions of climate can be understood as an intervening variable between the context of an organisation and the behaviour of its members (E. B. King, de Chermont, West, Dawson, & Hebl, 2007).

Organisational climate is the whole way of life found in an organisation (Haralambos & Holborn, 2000). Members of an organisation such as a DHB will learn to construct a cognitive representation of their work environment (Anderson & West, 1998). Silove (2000) posits that organisational climate will affect the perception and meaning of trauma and provide the belief system that governs an individual’s response to disasters. Furthering the capabilities within employees to better cope with critical incidents in the workplace is a key factor in enhancing adaptive capacity within an organisation. Cotton and Hart (2003) suggest that it is the organisation itself that provides the context within which the employees interpret their experiences. This is reinforced by Burke and Paton (2006b), who highlight the value of organisational climate with regard to management procedures; policies and organisational structure have a strong bearing on the way that employees experience events (Burke & Paton, 2006b; Gist & Woodhall, 1998).

Organisational climate can be a powerful force that provides the belief system governing an individual's response; it may contribute to controlling event related stress (Alexander & Klein, 2001; Burke & Paton, 2006a; Tuckey, 2004). This concept is supported by Taylor (1983) who suggests that a salutogenic developmental perspective might be an effective approach to examining stressful events by focussing on how individuals maintain positive growth, even after experiencing stressful events (Antonovsky, 1979). Some aspects of organisational climate include team climate, confidence in one's management and confidence in one's peers and perceptions of competence and empowerment.

### **3.5.1 Team climate**

Teams are essential for tracking and completing projects successfully. This is never more apparent than in the response to an event such as a large-scale emergency incident; an example of this is the teamwork displayed by the trauma teams in the initial aftermath of the February 2011 Christchurch earthquake. Teams need to be effective if they are to complete their tasks successfully and team climate is an important contributory factor to team effectiveness (Loo, 2003). People in proximal work groups (teams) are exposed to common events such as natural disasters or pre-planned exercises and processes (Mathisen, Torsheim, & Ståle, 2006). They interact and share their interpretations of these events which merge to build mutually agreed views of team climate or coherent group phenomena (Kozlowski & Klein, 2000). Values and norms may differ throughout an organisation as sub-cultures develop when groups of individuals work together as a team. Teams then develop values and norms which co-exist with those of the larger organisation (Champoux, 2011). The values and norms in these proximal work groups is defined as "individuals who identify with their proximal

work group...thereby allowing the opportunity for a shared climate to evolve”

(Anderson & West, 1998, p. 237).

Discussing proximal work group climate (team climate) Anderson and West (1998, p. 236) comment on the paucity of research which addresses the team level of analysis as distinct from the wider organisation or the individual. Team climate is of particular importance to the current research. Teams form the basic level of response to an event within the case study organisation for example, teams of emergency department specialists, and specifically convened teams to provide tactical and strategic management (Incident Management Teams). Supportive and unsupportive team climates within the organisation are likely significant predictors of stress and well-being. Supportive team climates are likely to support growth in the context of negative work experiences and the additional stressors of emergency situations, whereas unsupportive team climates are likely to foster stress or distress in the context of the additional demands inherent within an emergency situation.

### **3.5.2 Perceptions of empowerment**

Perceptions of empowerment are an inherently valuable construct to organisations and their employees. Conger and Kanungo (1988) state that everyone has an intrinsic need to exercise control over events and relationships and to cope with situational demands. Curtin (1998) suggests that empowerment means that employees are allowed to make decisions about their work with the knowledge that they will be supported by their managers. Conger and Kanungo (1989; 1988) question whether the process of sharing of formal authority and resources is sufficient for creating an empowered individual. However, the conditions for and the consequences of participation and resource sharing may not be the same for the organisation and the individual. For example employees

may know where the organization *wants* to go, but have no idea where they fit into the plan, or their personal goals may not match those of the organisation (Conger & Kanungo, 1988; Curtin, 1998). Building on the work of Conger and Kanungo (1988), Thomas and Velthouse (1990) formulated a complex model of the empowerment process reflecting an individual's orientation to his or her work role. The model included the facets of perceived competence, self-determination – a sense of choice in initiating and regulating actions reflecting autonomy over the initiation and continuation of work behaviour and processes, and impact which is the degree to which a person can influence strategic, administrative, or operating outcomes at work (Spreitzer, 1996) . These facets reflect an active, rather than a passive, orientation to a work role leading Thomas and Velthouse (1990) to suggest that the organisational environment can have a powerful influence on an individual's perception of empowerment.

Empowerment is central the work of health service workers as it a determinant of effort and persistence when faced with obstacles and aversive experiences, for example in the context of organisational financial constraints, which is a common scenario globally in public sector healthcare provision (Conger, Spreitzer, & Lawler, 1999).

### **3.5.3 A sense of competence**

Competence refers to the degree to which an individual believes they can perform task activities skilfully when attempted (Thomas & Velthouse, 1990). According to Cheetham & Chivers (1996), competence consists of four core components: knowledge/cognitive competence, functional competence, personal or behavioural competence and values/ethical competence. All of these involve the notion of a task being performed to an agreed (often individually implied) standard and the context in which the task is performed (contingencies). This will require particular task

management skills. The “role/job environment” component consists of those skills which are needed to cope with a particular working environment (e.g. working with others – fellow team members, patients etc.) or those needed to cope with highly critical situations (Cheetham & Chivers, 1996). Experiencing a sense of competence in work related tasks is highlighted in times of change and disruption as might be experienced by health workers during and after significant emergency events. A sense of competence has been shown to be correlated perceptions of empowerment in relation to self-determination, a sense of meaningfulness and a belief that belief that an individual’s work has an impact on the effectiveness of the larger system (organisation) (Kirkman & Rosen, 1999; Spreitzer, 1995b, 1996).

### **3.5.4 Confidence in management and confidence in peers**

Confidence is defined by Siegrist, Gutscher and Earle (2005) as the belief or conviction that everything is under control, and that uncertainty is low. Confidence is the belief that certain future events will occur as expected on experience or evidence. The concept of confidence is closely linked to those of trust and familiarity (Cook & Wall, 1980; Kee & Knox, 1970; Sjöberg, 2000).

Having confidence in the actions and abilities of management is a key factor to those working within the health sector. The actions of management and supervisors are commonly described as being central to the perceptions that individuals have of organisational support (Shanock & Eisenberger, 2006). Confidence in management is closely linked with job satisfaction and perceived individual competence in that perceptions of a supportive management team, like perceptions of involved peers, through positive appraisal of the environment are likely to directly influence job satisfaction (Kirmeyer & Dougherty, 1988; Kopelman et al., 1990; Langfred, 2000).

Thus, supervisors that are perceived as generally supportive of the workforce help increase job satisfaction and reduce stress among employees. Similarly, confidence in one's peers has a substantial impact on the outcome to an event particularly when working closely with others in situations which require the best possible outcome, for example trauma teams in hospital emergency departments (M. Siegrist et al., 2005; Sjöberg, 2000). Confidence in peers is related to a constructive team climate in contexts in which coordinated work is crucial to success (Paton & Violanti, 2010; Paton, Violanti, & Lunt, 2010).

### **3.6 Summary and hypotheses**

In summary, situational and individual factors are important to effective functioning of individuals and teams (Flin, 1996; Loo & Loewen, 2002). Individual characteristics include personality traits such as neuroticism and conscientiousness and personal coping styles. Also affecting growth are situational factors such as pressures on staff (negative work experiences), the team environment and relations with managers and peers.

#### **3.6.1 Hypotheses**

The Study variables are based upon the Organisational Health Framework (Hart & Cooper, 2001). These are aspects of the work (organisation) environment which, based upon theory are hypothesised to be related to positive and negative outcomes.

Study 1 investigated how negative work experiences, coping and personality are related to stress and growth, in relation to negative work experiences. Study 2 extended the focus to include team climate. Based on the arguments presented in these chapters, the following hypotheses are proposed:

Hypothesis 1a: Negative work experiences, conscientiousness and active coping will explain variance in growth. (Study 1).

Hypothesis 1b: Confidence in management, confidence in peers and competence will explain additional variance in growth over and above that explained by the variables in Hypothesis 1a. (Study 1).

Hypothesis 2a: Negative work experiences, neuroticism and emotion-focussed coping will explain variance in stress. (Study 1).

Hypothesis 2b: Confidence in management, confidence in peers and competence will explain additional variance in stress over and above that explained by the variables in Hypothesis 2a. (Study 1).

Hypothesis 3: Growth will be positively related to job satisfaction and affective organisational commitment. (Studies 1 and 2).

Hypothesis 4: Stress will be negatively related to job satisfaction and affective organisational commitment. (Studies 1 and 2).

Hypothesis 5: Team climate, conscientiousness, active coping, emotion-focussed coping, empowerment, confidence in management, and confidence in peers will explain variance in growth. (Study 2) This hypothesis provides a parallel with Hypothesis 1a and 1b using Team climate in place of negative work experiences.

Hypothesis 6: Neuroticism, emotion-focussed coping, team climate, empowerment, confidence in management, and confidence in peers will explain variance in stress. (Study 2) This hypothesis provides a parallel with Hypothesis 2a and 2b using Team climate in place of negative work experiences.

## **4 STUDY 1: METHOD**

The current research comprises two studies. Study 1 focusses on negative work experiences and personality characteristics as key correlates of stress and growth outcomes. Study 2 focusses on the importance of team climate in the framework of stress and growth outcomes. The current research was carried out in the context of large-scale emergency management exercises (pandemic and volcanic). This helped reinforce the all-hazards approach of the research, with the assumption that knowledge of such exercises provided information about psychosocial responses (as well as organisational responses) to a real emergency situation.

Prior to commencing the study, ethical clearance was sought and gained from the Northern Health & Disability Ethics Committee (NTX/07/29/EXP) and the case study organisation research office (A+3712).

### **4.1 Study 1: Overview**

Data collection for Study 1 involved a self-report pen and paper based survey distributed to staff of a large NZ District Health Board (DHB). Data collection took place in the context of Exercise Cruickshank, 2007; an all-of-government exercise designed to test the New Zealand Influenza Pandemic Action Plan (Ministry of Health, 2006). Exercise Cruickshank took place over five days and involved government agencies at national and local levels. It remains the largest exercise of its type undertaken in New Zealand.

The purpose of conducting data collection just after the exercise had taken place was to provide an appropriate context to frame the research. It was assumed that some of the staff within the DHB would have heard about the exercise and would have been

involved in the response to such an event, although data on participants' actual involvement could not be collected.

A pen and paper survey was considered best method of capturing the responses from prospective participants and maintaining participant confidentiality, as many computer terminals in the case study organisation were shared. It is acknowledged that this method increases the potential for problems associated with common method variance. While there is disagreement as to the prevalence of problems associated with common methods variance, (Spector, 1987; Williams, Cote, & Buckley, 1989) an important issue is the potential for divergence between observed and true relationships among constructs. A meta-analysis found that while this common method bias was a cause for concern, it did not invalidate many research findings (Doty & Glick, 1998).

The survey was compiled of measures relevant to adaptive capacity in the health sector. All measures were reviewed for relevance and applicability in this context by a number of experts in the field who are active researchers and practitioners, for example the DHB research committee, the Northern Health and Disability Ethics Committee and the project's supervisory team. The completed questionnaire was then pilot-tested during the consultation with the organisation for relevance and clarity in this context.

## **4.2 Procedure**

An invitation to participate in the research was sent via email to all active email addresses in the case study organisation on 19 June 2007. This email arrived marked as high priority; contents of the email gave a relevant overview of the aims and scope of the research and how to participate (Appendix A). The email included a Research Information Sheet, which explained the purpose of the research, what was required from participants including their rights, details of the researcher, main supervisor and contact

details within the organisation (Appendix B). The information allowed for self-selection into the research. The level of detail contained in the Research Information Sheet provided an opportunity for individuals to self-select out if they perceived that they did not fall within the scope of the research aims.

Sending out the invitation to participate in the research via email to all active email addresses at the case study organisation was considered at the time the most pragmatic method to access a geographically dispersed workforce which operates 365 days a year on rotating shift systems. However, it is not known how many staff the email reached so a response rate could not be calculated.

An email reminder was sent out via the organisation's weekly e-newsletter six weeks later (Appendix C). This two-stage process to inform prospective participants of the research and invited those who fell within the scope of the research aims to respond.

Prior to distribution the survey was reviewed by a number of researchers and practitioners with expertise in the health sector.

### **4.3 Materials**

A survey pack was produced and contained the following:

- A covering letter (Appendix D)
- A research information sheet (Appendix B)
- A questionnaire survey (Appendix E)
- Pre-addressed internal envelopes.

### **4.4 Participants**

Four hundred and three staff self-selected into the study by replying to the initial email and requesting a survey pack. Surveys were sent out over a five week period (20 June –

27 July 2007). One hundred and fifty five were returned giving a response rate of the self-selected participants of 39%. As the number of emails originally sent within the company is unknown the overall response rate could not be calculated.

One hundred and fifteen respondents (74%) were female, 25 (16%) were male and 15 (10%) did not report their gender (Table 4.1). Over half of the respondents were in the 30-49 age group.

**Table 4-1**

*Demographics*

	<i>n (%)</i>
<i>Gender</i>	
Female	115 (74)
Male	25 (16)
Missing	15 (10)
<i>Age</i>	
18-29	11 (7)
30-49	96 (62)
50+	47 (30)
Missing	1 (1)
<i>Organisational role</i>	
Clinical-Medical	13 (8)
Clinical-Nursing	46 (30)
Professions Allied to Medicine (PAM)	23 (15)
Management	39 (25)
Administration	34 (22)

In terms of organisational roles, approximately half of the respondents (53%) were in frontline healthcare roles (Clinical and Professions Allied to Medicine (PAM) roles) while the remainder were in management or administration roles. No information was

available as to whether or not participants took part the Incident Management Team (IMT), which is drawn primarily from senior management and administration roles rather than frontline medical roles. It is also not known how many participants had been involved in the pandemic planning exercise (Exercise Cruickshank).

Women were more likely than men to be in the nursing or administration roles while men were more highly represented in management roles  $\chi^2(4df) = 13.17, p < .05$ .

Organisational roles were recoded into clinical (Medical, Nursing and PAM roles;  $n = 82$ ) and non-clinical (management and administration roles;  $n = 73$ ).

## 4.5 Measures

To clarify factor structures, principal component analysis (PCA) with Varimax rotation was carried out on those measures requiring their factor structures to be examined.

Details of the PCA are reported in the Results at Chapter 5 (Nunnally, 1978; Tabachnick & Fidell, 2013).

*Conscientiousness* was measured with the 12-item scale from the NEO Five Factor Inventory (NEO-FFI) (Costa & McCrea, 1991). Responses were indicated on a scale where 1 = *strongly agree* and 5 = *strongly disagree*. Negatively worded items were recoded so that a higher score indicated higher levels of conscientiousness. Principal component analysis (PCA) with Varimax rotation (Field, 2009; Nunnally, 1978) identified a single factor structure, ( $\alpha = .83$ )(Field, 2009). An example item is “I am a productive person who always gets the job done.” Scale scores were the mean of the 12 items.

*Neuroticism* was measured with the 12-item scale from the NEO Five Factor Inventory (NEO-FFI) (Costa & McCrae, 1991); for example, “I am not a worrier” (reverse coded)

( $\alpha = .87$ ). PCA identified a single factor structure. Responses were indicated on a scale where 1 = *strongly agree* and 5 = *strongly disagree*. Negatively worded items were recoded so that a higher score indicated higher levels of neuroticism. Scale scores were the mean of the 12 items.

*Negative work experiences* were measured with 86 items from the hassles measure of the Police Daily Hassles and Uplifts Scale (Hart et al., 1993). This instrument provides a measure of negative (hassles) work experiences during the past six months. Each item started with the stem “Please indicate the degree to which each experience has hassled or bothered you as a result of your work during the past month”, where 0 = *does not apply* and 4 = *strongly applies*. A sample hassle is: “working with people who lack professionalism” ( $\alpha = .97$ ). Hassles were recoded so that 0 = no hassle or 1 = any other answer, indicating there was a hassle. Scale scores were computed as the sum of the items coded yes.

*Growth* was measured with the 21 items of the Post-Traumatic Growth Inventory (PTGI) (Tedeschi & Calhoun, 1996). This report measure is designed to measure the extent of positive changes an individual has experienced following a challenging event; for example, “I changed my priorities about what is important in life”, where 0 = *I did not experience this change* and 5 = *I experienced this change to a very great degree*. Scales were computed as the mean of the items where a higher score indicated more growth ( $\alpha = .96$ ). To complete this scale there was no need for participants to have experienced a traumatic event as the inventory has been shown to be valid in the context of everyday stresses as well as traumatic ones (L. H. Cohen, Cimboric, Armeli, & Hettler, 1998; LoSavio et al., 2011; Tedeschi & Calhoun, 2004).

*Stress* was measured with the Impact of Events Scale Revised (IES-R) (Weiss & Marmar, 1997). This is a 22-item measure designed for capturing the level of symptomatic response to specific incident or traumatic stressors. It measures responses in three domains: intrusion, avoidance and hyper-arousal. Respondents were required to read a “list of difficulties people sometimes have after stressful life events and indicate how distressing each difficulty had been for you during the past seven days.”

Responses were made on a five point scale, where 1 = *Not at all* and 5 = *Extremely*.

This instrument was used to provide a measure of the psychological disequilibrium that accompanies the experience of demanding events. Scales were computed as the mean of the items so that a higher score indicated more distress ( $\alpha = .94$ ). Like the PTGI, this measure is also valid in the context of the research as well as traumatic events (de Anda et al., 2000; Liberman et al., 2002).

*Confidence in management* was measured using the 6-item scale of the Interpersonal Trust at Work Scale (Cook & Wall, 1980); for example, “Management is sincere in its attempts to meet the workers” ( $\alpha = .84$ ). Responses were indicated on a scale where 1 = *disagree strongly* and 7 = *agree strongly*. Negatively worded items were recoded so that a higher score indicated more agreement. The scale was computed as the mean of the 6 items.

*Confidence in peers* was measured using the 6-item scale from the Interpersonal Trust at Work Scale (Cook & Wall, 1980); for example, “I have full confidence in the skills of my workmates” ( $\alpha = .80$ ). Responses were indicated on a scale where 1 = *disagree strongly* and 7 = *agree strongly*. Negatively worded items were reverse coded so that a higher score indicated more agreement. The scale was computed as the mean of the 6 items.

*Competence* was measured using the 3-item scale from the Model of Interpersonal Empowerment in the Workplace (Spreitzer, 1995a); for example, “I am confident about my ability to do my job” ( $\alpha = .86$ ). Responses were indicated on a scale where 1 = *disagree strongly* and 7 = *agree strongly*. Negatively worded items were reverse coded so that a higher score indicated more agreement. The scale was computed as the mean of the 3 items.

*Coping* was measured with the 52-item COPE Inventory (Carver, Scheier, & Weintraub, 1989). Participants were asked to think of a recent stressful event and to answer the following questions in relation to it. Response scales were from 1 – 5, where 1 = *I don't do this at all* and 5 = *I do this all the time*. Principal component analysis (PCA) with Varimax rotation (Field, 2009; Nunnally, 1978) identified a 2 factor structure comprising items related to active coping and emotion-focussed coping. *Active coping* comprised 17 items for example, “I tried to see it in a different light, to make it seem more positive” ( $\alpha = .90$ ). *Emotion-focussed coping* comprised 10 items, for example, “I act as though it hasn't even happened” ( $\alpha = .74$ ). All coping scales were computed as the mean of the items, higher scores meaning more of the coping strategies were reported as being used.

*Job satisfaction* was measured using the 3-item Index of Job Satisfaction scale (Brayfield & Rothe, 1951); for example, “Generally, I am satisfied with my job” ( $\alpha = .87$ ). Responses were indicated on a scale where 1 = *disagree strongly* and 7 = *agree strongly*. Negatively worded items were reverse coded so that a higher score indicated more agreement. The scale was computed as the mean of the 3 items.

*Affective organisational commitment* was measured with the 8-item Affective Commitment Scale (J. P. Meyer & Allen, 1997); for example, “I would be very happy

to spend the rest of my career in this organisation” ( $\alpha = .78$ ). Responses were indicated on a scale where 1 = *disagree strongly* and 7 = *agree strongly*. Negatively worded items were reverse coded so that a higher score indicated more agreement. The scale was computed as the mean of the 8 items.

## 4.6 Data Analysis

All measures were subjected to principal component analysis (PCA) with Varimax rotation to examine factor structures (Field, 2009; Hutcheson & Sofroniou, 1999; Nunnally, 1978) using SPSS version 19. Cronbach’s alpha (Cronbach, 1957) was applied separately to all scales (Cortina, 1993; Grayson, 2004).

Sample sizes were adequate for the regressions. Tabachnick and Fidell (2013, p. 123) propose that a sample size of  $N \geq 50 + 8m$  (where  $m$  is the number of independent variables) is adequate for testing the multiple correlation and  $N \geq 104 + m$  for testing individual predictors. The sample size for Study 1 was 155, allowing for the planned regression analysis (Tabachnick & Fidell, 2013).

Variables were screened for normality through inspection of skew and kurtosis to reduce the number of outliers and improve normality, linearity, and homoscedasticity of residuals (Tabachnick & Fidell, 2013). This identified severely non-normal distributions for six variables – neuroticism, stress, confidence in peers, competence, emotion-focussed coping and job satisfaction. Log transformations were applied to the positively skewed items of neuroticism, stress and emotion-focussed coping (Field, 2009). This produced acceptable variable distribution for neuroticism; however, stress and emotion-focussed coping transformed retained some degree of skewness and findings related to these variables need to be treated with caution. The transformed variables were used in the analysis. The negatively skewed variables confidence in

peers, job satisfaction and competence were reflected then log transformed and re-reflected (Field, 2009). This produced acceptable variable distributions and the transformed variables were used in the analysis (Tabachnick & Fidell, 2013).

Bivariate relationships were tested using Pearson's correlation coefficient (Pallant, 2011), group differences were examined using *t*-tests and Analysis of Variance (ANOVA) and linear regression were used to test hypotheses. Results are reported in Chapter 5.

## **5 STUDY 1 RESULTS AND DISCUSSION**

### **5.1 Factor analysis**

#### **5.1.1 Conscientiousness**

The 12-item conscientiousness scale from the NEO Five Factor Inventory (NEO-FFI) (Costa & McCrae, 1991) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 12 items and 155 cases the sample size was borderline for this analysis. Efforts to increase sample size did not result in a major increase, so results from the factor analysis should be treated with caution.

Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .85 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified 3 factors with eigenvalues exceeding 1 but inspection of the scree plot revealed one clear factor explaining 36.50% of the variance. A single factor solution was therefore used. The factor and its Cronbach alpha reliability (Cronbach, 1957) are described in Chapter 4.

#### **5.1.2 Neuroticism**

The 12-item neuroticism scale from the NEO Five Factor Inventory (NEO-FFI) (Costa & McCrae, 1991) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 12 items and 155 cases the sample size was borderline for this analysis. Efforts to increase

sample size did not result in a major increase, so results from the factor analysis should be treated with caution.

Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .85 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified a two factor solution with 2 factors with eigenvalues exceeding 1, however, inspection of the scree plot revealed one clear factor explaining 40.78% of the variance. This single factor solution was used. The factor is described in Chapter 4.

### **5.1.3 Negative Work Experiences**

The 86 items from the Police Daily Hassles and Uplifts Scale (Hart et al., 1993) were subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 86 items and 155 cases the sample size was minimal for this analysis. Efforts to increase sample size did not result in a major increase, so results from the factor analysis should be treated with caution.

Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .79 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified 24 factors with eigenvalues exceeding 1 but inspection of the scree plot revealed one clear factor explaining 26.30% of the variance. A single factor solution was therefore used. The factor is described in Chapter 4.

### **5.1.4 Growth**

The 21-item Post-Traumatic Growth Inventory (Tedeschi & Calhoun, 1996) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 21 items and 155 cases the sample size was in range for this analysis. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .94 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified 3 factors with eigenvalues exceeding 1 but inspection of the scree plot revealed one clear factor explaining 57.55% of the variance. A single factor solution was therefore used. The factor is described in Chapter 4.

### **5.1.5 Stress**

The 22-item Impact of Events Scale Revised (IES-R) (Weiss & Marmar, 1997) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 22 items and 155 cases the sample size was in range for this analysis. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .91 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified 4 factors with eigenvalues exceeding 1 but inspection of the scree plot revealed one clear factor

explaining 44.52% of the variance. A single factor solution was therefore used. The factor is described in Chapter 4.

### **5.1.6 Confidence in Management**

Confidence in management was measured using the 6-item scale from the Interpersonal Trust at Work Scale (Cook & Wall, 1980). These were subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 6 items and 155 cases the sample size was minimal for this analysis. Efforts to increase sample size did not result in a major increase, so results from the factor analysis should be treated with caution. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .86 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified one factor with an eigenvalue exceeding 1 explaining 56.9% of the variance. A one factor solution was therefore used. The factor is described in Chapter 4.

### **5.1.7 Confidence in Peers**

Confidence in peers was measured using the 6-item scale from the Interpersonal Trust at Work Scale (Cook & Wall, 1980). These were subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 6 items and 155 cases the sample size was minimal for this analysis. Efforts to increase sample size did not result in a major increase, so results from the factor analysis should be treated with caution. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was

.82 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified one factor with an eigenvalue exceeding 1 explaining 52.7% of the variance. A one factor solution was therefore used. The factor is described in Chapter 4.

### **5.1.8 Competence**

The 3-item scale from the Model of Interpersonal Empowerment in the Workplace (Spreitzer, 1995a) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 3 items and 155 cases the sample size was minimal for this analysis. Efforts to increase sample size did not result in a major increase, so results from the factor analysis should be treated with caution. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .64 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified one factor with an eigenvalue exceeding 1 explaining 61.9% of the variance. A one factor solution was therefore used. The factor is described in Chapter 4.

### **5.1.9 Coping**

The 52-item COPE Inventory (Carver et al., 1989) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 52 items and 155 cases the sample size was minimal for this analysis. Efforts to increase sample size did not result in a major increase, so

results from the factor analysis should be treated with caution. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .79 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified 13 factors with eigenvalues exceeding 1 but inspection of the scree plot revealed two clear factors explaining 30.43% of the variance. A two factor solution was therefore used. Factors are described in Chapter 4.

#### **5.1.10 Job Satisfaction**

The 3-item scale from the Index of Job Satisfaction (Brayfield & Rothe, 1951) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 3 items and 155 cases the sample size was minimal for this analysis. Efforts to increase sample size did not result in a major increase, so results from the factor analysis should be treated with caution. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .74 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified one factor with an eigenvalue exceeding 1 explaining 79.9% of the variance. A one factor solution was therefore used. The factor is described in Chapter 4.

### **5.1.11 Affective Organisational Commitment**

The 8-item Affective Commitment Scale (J. P. Meyer & Allen, 1997) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 8 items and 155 cases the sample size was minimal for this analysis. Efforts to increase sample size did not result in a major increase, so results from the factor analysis should be treated with caution. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .78 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified two factors with an eigenvalue exceeding one but inspection of the scree plot revealed one clear factor explaining 39.9% of the variance. A one factor solution was therefore used. The factor is described in Chapter 4.

## **5.2 Demographic differences on study variables**

There were no significant gender differences for conscientiousness, neuroticism, negative work experiences, growth outcomes, stress, confidence in management and confidence in peers, perceived competence, active coping or emotion-focussed coping, job satisfaction or affective organisational commitment. Compared to clinical staff, non-clinical staff reported significantly higher levels of conscientiousness  $t(146) = 2.21$ ,  $p < .05$ ; confidence in management  $t(151) = 4.23$ ,  $p < .01$  and affective organisational commitment  $t(153) = 4.29$ ,  $p < .01$ .

### **5.3 Study 1 Bivariate Correlations**

Bivariate correlations are presented in Table 5-1.

Growth outcomes were positively related to negative work experiences and stress. This may at first seem contradictory but stressful encounters can promote growth outcomes.

The sample group (health sector workers) is one that is used to dealing with the negative experiences in daily work in their chosen profession. Stress-related growth was also related to coping. Active coping and emotion-focussed coping were positively related to growth outcomes. Although emotion-focussed coping is often seen to be maladaptive when action is needed to resolve a problem, it may be appropriate in situations of high continuing demands when personal resources may become depleted. The implications will be discussed in section 5.5.

**Table 5-1**  
**Bivariate Correlation Coefficients**

	1	2	3	4	5	6	7	8	9	10	11	12
1. Conscientiousness	$\alpha = .83$											
2. Neuroticism	-.30**	$\alpha = .87$										
3. Negative work experiences	-.13	.28**	$\alpha = .97$									
4. Growth outcomes	.00	.06	.22*	$\alpha = .96$								
5. Stress	-.04	.35**	.42**	.28**	$\alpha = .94$							
6. Confidence in management	.11	-.18*	-.27**	-.03	-.24**	$\alpha = .84$						
7. Confidence in peers	.15	-.16	-.32**	-.12	-.26**	.27**	$\alpha = .80$					
8. Competence	.32**	-.18*	-.14	-.01	-.03	-.00	.23**	$\alpha = .86$				
9. Active Coping	.32**	-.21**	-.16	.17*	.01	.15	.16*	.26**	$\alpha = .90$			
10. Emotion-focussed coping	-.09	.34**	.26**	.29**	.43**	-.08	-.15	-.13	.07	$\alpha = .74$		
11. Job Satisfaction	.23**	-.25**	-.18*	.04	-.20*	.47**	.37**	.30**	.24**	-.13	$\alpha = .87$	
12. Affective Organisational Commitment	.14	-.11	-.05	.04	-.09	.54**	.15	.18*	.14	.10	.49**	$\alpha = .78$
Mean	48.55	1.43	48.69	1.61	.20	4.65	7.64	7.77	3.27	.18	7.64	4.25
SD	5.63	.12	20.23	1.22	.14	1.26	.16	.18	.62	.11	.22	1.10
n	148	151	140	148	142	153	155	155	154	150	155	155

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

*n* reflects the number of participants completing all items in the variables

Respondents reporting more negative work experiences also had higher neuroticism scores, more emotion-focussed coping and higher growth outcomes. Higher levels of conscientiousness were associated with lower levels of neuroticism, higher perceptions of competence, more active coping and higher job satisfaction.

Respondents reporting high levels of neuroticism showed more negative work experiences, stress and emotion-focussed coping, and less active coping, confidence in management and competence. Those high on the neuroticism scale may have a tendency to be self-conscious, impulsive and vulnerable, and to be less comfortable with their managers and to feel less competent.

Increased levels of stress were negatively related to confidence in management, confidence in peers and job satisfaction. Emotion-focussed coping was positively related to stress as expected. Emotion-focussed coping is one of the most common ways of dealing with stress and is an active defence mechanism, but it can be maladaptive if the stressor is ignored and needs to be addressed.

Positive correlations ( $p < .01$ ) were found between confidence in management and confidence in peers, job satisfaction and affective organisational commitment. The strong relationships among these four variables suggest that perceptions of positive interpersonal relationships at work are related to better work outcomes.

Significant correlations were shown between confidence in peers, perceptions of competence and job satisfaction; which supports the importance of a positive work environment. Individual feelings of competence in the role and having confidence in colleagues were conducive to high levels of job satisfaction.

Respondents who scored highly on perceptions of competence also scored highly on active coping, job satisfaction and affective organisational commitment; with job satisfaction being strongly related ( $p < .01$ ) to affective organisational commitment.

## 5.4 Testing Hypotheses

### 5.4.1 Hypotheses 1a and 1b

Hypothesis 1a proposed that negative work experiences, conscientiousness and active coping would explain variance in growth. This hypothesis was examined using linear regression. Although clinical and non-clinical staff differed significantly on conscientiousness, the clinical or non-clinical role was not significant when initially included as a control variable in regressions and was omitted from further analysis.

**Table 5-2**

*Predictors of Growth*

	Step 1			Step 2			Step 3		
	B	SEB	$\beta$	B	SEB	$\beta$	B	SEB	$\beta$
Negative work experiences	.02	.01	.00**	.01	.01	.23**	.01	.01	.18*
Conscientiousness	-.01	.02	-.04	-.01	.02	-.03	-.00	.02	-.01
Active Coping	.44	.18	.22**	.46	.18	.23**	.39	.18	.20*
Confidence in management				.03	.09	.03	.03	.09	.03
Confidence in peers				-.68	.71	-.09	-.56	.70	-.07
Competence				-.08	.64	-.01	.07	.64	.01
Emotion-focussed coping							2.47	.98	.22**
$R^2$		.094			.101			.144	
Adj $R^2$		.073			.058			.096	
Change in $R^2$		.094			.007			.043	
$F$		$F(3,130) = 4.48^{**}$		$F(6,127) = 2.37^*$			$F(7,126) = 3.03^{**}$		

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

The  $N$  in the regression statements reflect the number of participants completing all items in the variables selected.

Overall the model was significant  $F(3,130) = 4.48, p < .01$ , and explained 9.4 % ( $R^2$ ) (7.3 % adjusted  $R^2$ ) of the total variance (Tabachnick & Fidell, 2013). However, the only significant predictors of growth in Step 1 of the model were negative work experiences and active coping (Table 5-2). The effect of negative work experiences on growth was positive and not negative; implications will be considered in section 5.5.

Hypothesis 1b: predicted that confidence in management, confidence in peers and competence would explain additional variance in growth over and above that explained by the variables in Hypothesis 1a (Step 1, Table 5-2). This model (Table 5-2, Step 2) was also significant  $F(6,127) = 2.37, p < .05$ , and explained 10.1% ( $R^2$ ) (5.8 % adjusted  $R^2$ ) of the total variance but there were no additional significant predictors and the change in  $R^2$  was minimal. Negative work experiences and active coping continued to explain significant variance but confidence in management, confidence in peers and perceived competence did not so Hypothesis 1b was not supported.

Implications will be discussed in section 5.5.

At the bivariate level (Table 5-1) emotion-focussed coping was positively related to growth  $r = .29, p < .01$ . Therefore, at Step 3 of the regression analysis, emotion-focussed coping was entered to examine whether it would explain additional variance over and above that explained by negative work experiences, personality and group processes. There was a significant relationship with  $F(7,126) = 3.03, p < .01$ , explaining 14.4% ( $R^2$ ) (9.6% adjusted  $R^2$ ) of the total variance. Emotion-focussed coping was strongly and positively related to growth in addition to active coping and negative work experiences.

### 5.4.2 Hypotheses 2a and 2b

Hypothesis 2a proposed that negative work experiences, neuroticism and emotion-focussed coping would explain variance in stress (Table 5-3, Step 1).

**Table 5-3**

*Predictors of Stress*

	Step 1			Step 2		
	<i>B</i>	<i>SEB</i>	$\beta$	<i>B</i>	<i>SEB</i>	$\beta$
Negative work experiences	.00	.00	.30**	.00	.00	.26**
Neuroticism	.20	.10	.17*	.20	.10	.16*
Emotion-focussed coping	.38	.10	.29**	.39	.10	.30**
Confidence in management				-.01	.01	-.09
Confidence in peers				-.09	.07	-.10
Competence				.07	.06	.09
$R^2$		.311			.337	
<i>Adj R</i> <sup>2</sup>		.295			.305	
Change in $R^2$		.311			.026	
<i>F</i>		$F(3,125) = 18.83^{**}$		$F(6,122) = 10.35^{**}$		

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

*The N in the regression statements reflect the number of participants completing all items in the variables selected.*

The model was significant  $F(3,125) = 18.83$   $p < .01$ , and explained 31.1% ( $R^2$ ) (29.5% adjusted  $R^2$ ) of the total variance. All three independent variables proved to be significant predictors, negative work experiences and emotion-focussed coping at the  $p < .01$  level and neuroticism at the  $p < .05$  level.

Hypothesis 2b proposed that confidence in management, confidence in peers and perceived competence would explain additional variance in stress over and above that explained by the variables in Hypothesis 2a (Table 5-3, Step 2).

The Step 2 model for stress was significant  $F(6,122) = 10.35$   $p < .01$ , explaining 33.7% ( $R^2$ ) (30.5% adjusted  $R^2$ ) of the total variance but the change in  $R^2$  was smaller and the additional predictors were not significant. There was no change in the relationship between stress and negative work experiences, neuroticism and emotion-focussed coping. Confidence in management and confidence in peers were unrelated to stress, whilst perceived competence in oneself was marginally positively related but was not significant. Hypothesis 2b was not supported.

### **5.4.3 Hypotheses 3 and 4**

Hypothesis 3 proposed that growth would be positively related to job satisfaction and affective organisational commitment.

Hypothesis 4 proposed that stress would be negatively related to job satisfaction and affective organisational commitment.

Hypothesis 3 was not supported at the bivariate level with no significant positive correlations (Table 5-1). Only job satisfaction was significant to stress so Hypothesis 4 was not fully supported. However, to explore job satisfaction and affective organisational commitment further, all variables were entered as predictors of job satisfaction and affective organisational commitment to see which explained unique variance (Tables 5-4 and 5-5). The sample number of 155 with 10 predictors indicates the sample size was marginal for this analysis (Tabachnick & Fidell, 2013) and findings must be treated with caution.

**Table 5-4**  
*Dependent Variable: Job Satisfaction*

Variable	B	SEB	$\beta$
Conscientiousness	.00	.00	.05
Neuroticism	-.13	.16	-.07
Negative work experiences	.00	.00	.07
Active coping	.02	.03	.06
Emotion-focussed coping	-.08	.17	-.04
Growth	.02	.01	.09
Stress	-.09	.14	-.05
Confidence in management	.07	.01	.40**
Confidence in peers	.26	.11	.20*
Competence	.27	.10	.22**
$R^2$		.378	
Adj $R^2$		.325	
$F$	$F(10,118) = 7.16^{**}$		

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

*The N in the regression statement reflects the number of participants completing all items in the variables selected.*

Table 5-4 shows job satisfaction as the dependent variable with all of the predictors entered in one step. This set of independent variables explained 37.8% ( $R^2$ ) (32.5% adjusted  $R^2$ ) of the total variance in job satisfaction. The only three variables which explained unique variance were confidence in management ( $p < .01$ ), confidence in peers ( $p < .05$ ) and competence ( $p < .01$ ). Although personality and coping explained unique variance in stress and growth while confidence in management, confidence in peers and competence did not this pattern was reversed for job satisfaction.

Situational factors were more important for job satisfaction than personal characteristics such as personality and coping strategies. Conscientiousness, neuroticism, negative work experiences, stress and active coping were significantly related to job satisfaction at the bivariate level but this significance was reduced due to overlap from the other independent variables.

**Table 5-5**

*Dependent Variable: Affective Organisational Commitment*

<i>Variable</i>	<i>B</i>	<i>SEB</i>	<i>β</i>
Conscientiousness	.01	.02	.04
Neuroticism	-.38	.80	-.04
Negative work experiences	.01	.01	.13
Active coping	-.02	.15	-.01
Emotion-focussed coping	1.79	.86	.18*
Growth	.00	.07	.00
Stress	-.46	.70	-.06
Confidence in management	.49	.07	.57**
Confidence in peers	-.09	.56	-.01
Competence	1.28	.50	.21**
<i>R</i> <sup>2</sup>		.365	
Adj <i>R</i> <sup>2</sup>		.311	
<i>F</i>	<i>F</i> (10,118) = 6.78**		

\**p* < .05 \*\**p* < .01

*The N in the regression statement reflects the number of participants completing all items in the variables selected.*

Table 5-5 shows affective organisational commitment as the dependent variable with all of the predictors entered in one step. This explained 36.5% (*R*<sup>2</sup>) (31.1% adjusted *R*<sup>2</sup>) of the total variance. The unique predictors were confidence in management (*p* < .01), self-perceived competence (*p* < .01) and emotion-focussed coping (*p* < .05).

Competence was more important for affective organisational commitment than for job satisfaction. However, confidence in management was important for both dependent variables making the strongest unique contribution (beta coefficient .40 for job satisfaction and .57 for affective organisational commitment).

Job satisfaction and affective organisational commitment were partly a function of personality but mostly a function of perceptions of the team environment, therefore this strong positive relationship will be investigated further in Study 2.

## **5.5 Discussion**

Study 1 aimed to explore how negative work experiences, coping and personality were related to stress and growth. Furthering the capabilities of health sector workers to cope with routine work as well as critical incidents is a key factor for enhancing adaptive capacity (Meadows, Shreffler, & Mullins-Sweatt, 2011). This is particularly relevant in the health sector which has a paucity of research when compared to other emergency services (Kirby et al., 2011).

It was expected that variance in levels of growth would be explained through positive relationships with conscientiousness and active coping and a negative relationship to negative work experiences. Personal characteristics, coping strategies and situational factors such as negative work experiences may determine the extent to which individuals experience growth through responding to stressful events, (Joseph & Linley, 2005; Larner & Blow, 2011; Park, 1998). The only significant predictors of growth were negative work experiences, active coping and emotion-focussed coping. The significant contribution made by negative work experiences was positive and not negative as expected. This aligns with the perspective that growth arises, not from positive events but from successfully dealing with adversity (Alexander & Wells, 1991; Paton, 2005; Shakespeare-Finch et al., 2003; Tedeschi & Calhoun, 2004). Individuals can make the best of the inevitable negative experiences at work through positive adaptation methods including effective coping strategies and supportive social environments.

Group processes of confidence in management, confidence in peers and competence did not explain any additional variance in growth or stress. Health professionals work in teams where everyone has a designated task to perform. As tasks intensify during emergency events (which are somewhat routine for health professionals for example, dealing with trauma cases from a road traffic accident), developing and maintaining positive approaches to such tasks is especially important. In complex environments such as a hospital emergency department or operating theatre, coordinated action is only possible when interdependent professionals work together effectively (Ardagh et al., 2012; McAllister, 1995). In health professions it is possible that competence, confidence in peers and in management is implicit to the nature of such work where high levels of competency are required and are taken for granted and not consciously acknowledged. Cook and Wall (1980) confirm that trust (perceived acceptance of agreed standards) in such circumstances is a crucial ingredient to the long-term stability of the organisation and the well-being of its members. Such conceptions of trust are discussed in the literature (Cook & Wall, 1980; Jain & Sinha, 2005; Kee & Knox, 1970; McAllister, 1995; Poortinga & Pidgeon, 2004; Schoorman, Mayer, & Davis, 2007). The lack of significant relationship found in the current research might be explained by the nature of the sample group. In fast-paced work, roles change rapidly to accommodate the changing situation, which may require individuals to conduct tasks outside of their routine work group and environment. Growth in health care workers may be related less to reliance on an individual's peer group than to the requirement to work independently to deal with rapidly changing situations. This is speculation and a direction for future research.

The highly significant relationship between emotion-focussed coping and growth prompted the third step in the regression (Table 5-2). It was expected that emotion-

focussed coping would be negatively related to growth outcomes. When emotion-focussed coping was added to the model, negative work experiences and active coping remained significant but emotion-focussed coping was positive and significant, suggesting that the more emotion-focussed coping an individual utilised the more growth they experienced. This finding may be indicative of the need to ably manage emotions associated with demanding work and to manage task demands. The findings suggest this aptitude appears to be important if individuals are able to deal with stressors at work and again may be a direction for future research as coping strategies have been shown to impact outcomes such as job performance and satisfaction (Meadows et al., 2011). Almedom (2005, p. 253) suggests that positive and negative outcomes are essentially two sides of the same coin and are linked rather than separate entities. Subscribing to a pathogenic view of stress as might be suggested from a negative-pathway model should not preclude the propensity for positive outcomes to occur (Antonovsky, 1987b; Jackson, 2007; Joseph & Linley, 2005; Karanci et al., 2012; Tedeschi & Calhoun, 2003).

Stress was related to neuroticism at the bivariate level (Table 5-1), but the inclusion of negative work experiences and emotion-focussed coping as predictors of stress reduced this relationship. This suggests that the more negative work experiences an individual encountered in their work the more emotion-focussed coping mechanisms they adopted to counteract the negative work experiences (stressors) and that coping was more important to stress than neuroticism (Costa & McCrae, 1991).

Halohan, Moos, Halohan, Brennen and Schutte (2005) suggest that emotion-focussed coping involves cognitive and behavioural efforts to avoid dealing directly with stressful demands. Previous findings' showing that emotion-focussed coping is generally maladaptive (Folkman & Moskowitz, 2004; Littleton et al., 2007; Roth &

Cohen, 1986) may not be all-inclusive. Kirby et al (2011) advise caution in the use of the term maladaptive and its negative connotations. Although emotion-focussed coping can be related to positive growth it also relates negatively to stress. When emotion-focussed coping strategies are successful they may neutralise the stressor in situations that cannot be changed. For example, hospital staff working with multiple casualties from a road traffic accident need to be able to manage their emotional reactions in order to keep working (Ardagh et al., 2012; Folkman & Lazarus, 1991; D. W. King, Vogt, & King, 2004). This professional detachment may actually be a successful coping approach in such situations (Kirby et al., 2011).

Significant predictors of affective organisational commitment and job satisfaction were confidence in management and self-perceived competence. During intense and highly work there is immense pressure on individuals and teams, little time to be sure of roles/tasks and procedures/processes, and no margin of error or time for management to be indecisive or unsupportive. Managers and team leaders must be competent in their roles and have commitment to the organisation's mission and values, while individuals in the teams must have confidence in their managers and their own ability. Effective leadership can be a crucial aspect of individual resilience (Zellars, Justice, & Beck, 2011). Confidence in the actions of peers was also a significant factor for job satisfaction. Reassurance in the ability of colleagues to perform to an agreed standard during intensive and demanding work is tacit knowledge which guides behaviour linked to specified goal-directed procedural rules (Flin, 1996; Paton & Jackson, 2002; Wagner & Sternberg, 1985). Emotion-focussed coping was a significant contributor to affective organisational commitment, reflecting employees' emotional attachment to, identification with, and involvement in their employment organisation. Organisational commitment is affected by social cues

present in the workplace such as might be evident when dealing with events in hospital emergency and other departments (Mikkelsen, Ogaard, & Lovrich, 2000; Zangaro, 2001). If the conditions for these predictors are met, the outcomes should be increased rates of job satisfaction and organisational commitment and the results of Study 1 (Tables 5-4 and 5-5) indicate these relationships.

Having confidence in the actions of managers is critical for individuals to be able to function as part of a team environment during highly stressful work (Conger, 1989; Zellars et al., 2011). The cruciality of effective response management, issues incumbent in decision-making processes and group dynamics have substantial implications for wider organisational outcomes for the health sector (Sinclair, Doyle, Johnston, & Paton, 2012b). The joint influence of individual and situational variables for job satisfaction and affective organisational commitment have been emphasised by Meyer, Irving and Allen (1998). The results of meta-analysis (e.g. A. Cohen, 1993; Mathieu & Zajac, 1990) have generally found that situational characteristics account for more variance in job satisfaction and organisational commitment than personal characteristics. The strong positive relationship between situational factors and job satisfaction will be investigated further in Study 2.

Study 1 showed strong individual predictors of growth. Unexpectedly, emotion-focussed coping proved highly significant for growth. Only one situational factor (negative work experiences) predicted growth. Study 1 focussed on negative work experiences and personality characteristics as key correlates of stress and growth. The results have shown that stress, growth and personality traits were less important for job satisfaction and affective organisational commitment in a high stress environment for example, a busy hospital setting, than the perceptions of one's competence, and support from management and peers.

Study 2 will also explore the predictors of stress, growth, job satisfaction and affective organisational commitment, focusing on the importance of team climate to follow up on the findings from Study 1.

## **6 STUDY 2 METHOD**

Study 2 focussed on the importance of team climate in the framework of stress and growth, which were issues identified in Study 1. This extends the research theme from Study 1 which focussed on negative work experiences and personality characteristics as key correlates of stress and growth. Study 2 was conducted 12 months after Study 1.

Study 2 was conducted under the same ethical clearance as Study 1.

### **6.1 Study 2 Overview**

In 2005 the New Zealand Cabinet directed the Ministry of Civil Defence and Emergency Management to conduct two national disaster exercises to test New Zealand's preparedness for a major disaster. The first of these was Exercise Capital Quake, which took place in November 2006 and tested the response to a Wellington earthquake. The second was Exercise Ruauumoko which took place just prior to the data collection for Study 2. Commencing in November 2007, the exercise ran through staged sequences to culminate in March 2008 as a national-level exercise. Exercise Ruauumoko tested the all-of-government preparedness for a volcanic eruption in the Auckland region; it involved government agencies at all levels examining roles, arrangements and connections between national and international agencies.

The purpose of conducting data collection just after the exercise had taken place was that the exercise had being widely publicised within the public sector and throughout public media. Interest in the exercise prompted the study focus on factors related a volcanic eruption in the Auckland region and reinforced the all-hazards approach of the research. It was assumed that some of the staff within the DHB would have heard

about the exercise and would have been involved in the response to such an event, although data on participants' actual involvement could not be collected.

Study 2 extended the findings from Study 1, looking further at team climate. As with Study 1, data collection involved a self-report pen and paper based survey distributed to staff of a large DHB. Providing a hard copy for participants to complete at a time and in a place of their choosing was considered the most appropriate method of promoting participation and confidentiality of responses.

## **6.2 Procedure**

The procedure for Study 2 was the same as for Study 1. An invitation to participate in the research was sent via email (Appendix F) to all active email addresses in the case study organisation on 29 July 2008. This email arrived marked as high priority; contents of the email gave a relevant overview of the aims and scope of the research and how to participate. Prior to distribution the survey was reviewed by a number of researchers and practitioners with expertise in the health sector.

The email included a Research Information Sheet, which explained the purpose of the research, what was required from participants including their rights, details of the researcher, main supervisor and contact details within the organisation (Appendix G). The information allowed for self-selection into the research. The level of detail contained in the Research Information Sheet provided an opportunity to self-select out for individuals who perceived that they did not fall within the scope of the research aims.

An email reminder was sent out via the organisation's weekly e-newsletter six weeks after the original email was sent (Appendix H). This two-stage process informed

prospective participants of the research and invited those who fell within the scope of the research aims to respond.

### **6.3 Materials**

A survey pack was produced and contained the following:

- A covering letter (Appendix D)
- A research information sheet (Appendix G)
- A questionnaire survey (Appendix I)
- Pre-addressed internal envelopes.

### **6.4 Participants**

Six hundred and ninety eight staff self –selected into study by replying to the initial email and requesting a survey pack. Surveys were sent out over a six week period (29<sup>th</sup> July – 9<sup>th</sup> September 2008). One hundred and ninety nine were returned, giving a response rate of the self-selected participants of 35%. As the number of emails originally sent within the company is unknown, the overall response rate could not be calculated.

One hundred and sixty-one respondents (81%) were female, 37 (18%) were male and one (1%) did not report their gender (Table 6-1). Almost two thirds (61%) of the respondents were in the 30-49 age group.

## 6.5 Demographics

**Table 6-1**

*Demographics*

	<i>n (%)</i>
<i>Gender</i>	
Female	161 (81)
Male	37 (18)
Missing	1 (1)
<i>Age</i>	
18-29	12 (6)
30-49	122 (61)
50+	64 (32)
Missing	1 (1)
<i>Organisational role</i>	
Clinical-Medical	21 (11)
Clinical-Nursing	54 (27)
Professions Allied to Medicine (PAM)	24 (12)
Management	46 (23)
Administration	43 (21)
Other	10 (5)
Missing	1 (1)

In terms of organisational roles, half of the respondents (50%) were in frontline healthcare roles (Clinical and PAM roles) and almost half were in management or administration roles (44.5%). No information was available as to whether or not participants took part in the Incident Management Team (IMT). IMT members are drawn primarily from senior management and administration roles rather than frontline medical roles. In an incident, Technical Advisory Groups which include medical specialities are convened when required but again there is no information on

participant involvement in these. It is also not known how many participants had been involved in the volcanic planning exercise (Exercise Ruaumoko).

Women were more likely than men to be in the nursing, management or administration roles while men ( $n = 10$ ) and women ( $n = 11$ ) were almost equally represented in the clinical medical role  $\chi^2(5df) = 18.53, p < .01$ . Organisational roles were recoded into clinical (Medical, Nursing and PAM roles;  $n = 99$ ) and non-clinical (management, administration and other roles;  $n = 99$ ).

## 6.6 Measures

To clarify factor structures, principal component analysis (PCA) using Varimax rotation was carried out and is reported in Chapter 7 (Nunnally, 1978; Tabachnick & Fidell, 2013).

Seven variables were as for Study 1. These were:

- Neuroticism: 12 items ( $\alpha = .77$ )
- Conscientiousness: 12 items ( $\alpha = .83$ )
- Growth: 21 items ( $\alpha = .97$ )
- Stress: 22 items ( $\alpha = .94$ )
- Confidence in Management: 6 items ( $\alpha = .88$ )
- Confidence in Peers: 6 items ( $\alpha = .89$ )
- Affective Organisational Commitment: 7 items ( $\alpha = .82$ )

*Coping* was measured with the 28 item Brief Cope (Carver, 1997), which measures 14 conceptually different coping reactions. Response scales were from 0 – 3, where 0 = *I*

*haven't been doing this at all* and 3 = *I've been doing this a lot*. Principal Component Analysis (PCA) with Varimax rotation identified two distinct factors relating to active coping and emotion-focussed coping accounting for 83.7% of the variance. *Active coping* comprised 4 items ( $\alpha = .83$ ) for example, "I concentrate my efforts on doing something about the situation I'm in." *Emotion-focussed coping* comprised 4 items ( $\alpha = .84$ ) for example, "I get emotional support from others." The scales were computed as the mean of the items, with higher scores meaning more of the coping strategies were reported as being used.

*Empowerment* was measured using the Interpersonal Empowerment in the Workplace Scale (Spreitzer, 1995a). Contributing to an overall construct of empowerment this consists of four scales measuring four dimensions: meaning, competence, self-determination and impact. The availability of resources and access to accurate information are key factors to working during periods of intensive and demanding work that are generated in emergency events. The Interpersonal Empowerment in the Workplace Scale does not contain suitable measures of resource or information support. It was decided to include 6-items from the Social Structural Scale (Spreitzer, 1996) which relate to access to resources and information; for example, "When I need additional resources to do my job, I can usually get them." Responses were indicated on a scale where 1 = *disagree strongly* and 7 = *agree strongly*. PCA with Varimax rotation identified two scales relating to access to resources and information; and self-determination and impact accounting for 52.31% of the variance. *Empowerment: access to resources and information* was measured with 6 items ( $\alpha = .87$ ) for example, "I have access to the resources I need to do my job well." *Empowerment: self-determination and impact* was measured with 6 items ( $\alpha = .88$ ) for example, "I can

decide on my own how to go about doing my work.” The empowerment scales were computed as the mean of the items, higher scores meaning more empowerment.

*Team Climate* was measured using the Team Climate Inventory, a five factor measure (vision, support for innovation, task orientation, interaction frequency and participative safety) of climate within workgroups and organisational teams (Anderson & West, 1998). Responses were indicated on a scale where 1 = *Not at all* and 7 = *Completely*. PCA with Varimax rotation identified a two factor structure of *team climate: vision*, and *team climate: participative safety* which explained 52% of the variance. Vision is the idea of a valued outcome that represents a higher order goal and a motivating force for teams (Loo & Loewen, 2002). Loo and Loewen (2002) suggest participative safety, that is, participativeness, trust, and safety, is essential for involvement in team decision making. *Team climate: vision* was measured with 11 items; for example, “How clear are you about what your team’s objectives are?” ( $\alpha = .94$ ). *Team climate: participative safety* was measured with 27 items; for example, “Team members provide practical support for new ideas and their application” ( $\alpha = .96$ ). The scales were computed as the mean of the items.

*Job satisfaction* was measured using the 18-item Index of Job Satisfaction (Brayfield & Rothe, 1951); for example, “Generally, I am satisfied with my job.” Factor analysis identified a single factor comprising the 9 positively worded statements ( $\alpha = .79$ ). Responses were indicated on a scale where 1 = *disagree strongly* and 7 = *agree strongly*. The scale was computed as the mean of the items.

## 6.7 Data Analysis

All measures were subjected to principal component analysis (PCA) with Varimax rotation to examine factor structure using SPSS version 19. Cronbach's alpha (Cronbach, 1957) was applied to all scales (Cortina, 1993; Grayson, 2004).

Sample sizes were adequate for the regressions. Tabachnick and Fidell (2013, p. 123) propose that a sample size of  $N \geq 50 + 8m$  (where  $m$  is the number of independent variables) is adequate for testing the multiple correlation and  $N \geq 104 + m$  for testing individual predictors. The sample size for Study 2 was 199, allowing for the planned regression analysis (Tabachnick & Fidell, 2013).

Variables were screened for normality through inspection of skew and kurtosis to reduce the number of outliers and improve normality, linearity, and homoscedasticity of residuals (Tabachnick & Fidell, 2013). This identified non-normal distributions for twelve variables – neuroticism, conscientiousness, stress, growth, confidence in peers, confidence in management, active coping, team climate: vision, team climate: participative safety, empowerment: access to resources and information, empowerment: self-determination and impact and affective organisational commitment. Log transformations were applied to the positively skewed items of neuroticism, stress and growth (Field, 2009). This produced acceptable variable distribution for neuroticism and growth. For stress, while transformation reduced skewness, the variable continued to show some skewness and needs to be treated with caution. The transformed variables were used in the analysis. Negatively skewed variables were reflected then log transformed and re-reflected. This was applied to conscientiousness, confidence in management, confidence in peers, active coping, team climate: vision, team climate: participative safety, affective organisational commitment, empowerment: access to resources and information and empowerment:

self-determination and impact (Field, 2009). This produced acceptable variable distributions and the transformed variables were used in the analysis (Tabachnick & Fidell, 2013).

The bivariate direction and strength of the variable relationships were tested using Pearson's correlation coefficient. Group differences were examined using *t*-tests and Analysis of Variance (ANOVA); linear regression was used to test hypotheses (Field, 2009). These results are reported in Chapter 7.

## **7 STUDY 2 RESULTS AND DISCUSSION**

### **7.1 Factor analysis**

#### **7.1.1 Coping**

The 28-item Brief COPE Inventory (Carver, 1997) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 28 items and 199 cases the sample size was in range for this analysis. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .70 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified 9 factors with eigenvalues exceeding 1 but inspection of the scree plot revealed two clear factors explaining 29.1% of the variance. A two factor solution was therefore used. Factors and their Cronbach alpha reliabilities (Cronbach, 1957) are described in Chapter 6.

#### **7.1.2 Empowerment**

The 12-item Interpersonal Empowerment in the Workplace Scale (Spreitzer, 1995a) and six items from the Social Structural Scale (Spreitzer, 1996) were subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 18 items and 199 cases the sample size was marginal. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .83 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the

factorability of the correlation matrix. PCA identified four factors with eigenvalues exceeding 1 but inspection of the scree plot revealed two clear factors explaining 52.31% of the variance. A two factor solution was therefore used. Factors and their Cronbach alpha reliabilities (Cronbach, 1957) are described in Chapter 6.

### **7.1.3 Team Climate**

The 38-item Team Climate Inventory (Anderson & West, 1998) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 38 items and 199 cases the sample size was in range for this analysis. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .93 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified six factors with eigenvalues exceeding 1 but inspection of the scree plot revealed two clear factors explaining 52.16% of the variance. A two factor solution was therefore used. Factors and their Cronbach alpha reliabilities (Cronbach, 1957) are described in Chapter 6.

### **7.1.4 Job Satisfaction**

The 18-item Index of Job Satisfaction (Brayfield & Rothe, 1951) was subjected to principal component analysis (PCA). Field (1996) and Tinsley and Tinsley (1987) recommend 5-10 cases per variable, so with 18 items and 199 cases the sample size was marginal. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .87 (Kaiser, 1970, 1974), exceeding the recommended value of .6 (Hutcheson & Sofroniou, 1999) and Bartlett's Test of

Sphericity (Bartlett, 1954) reached statistical significance ( $p < .05$ ), supporting the factorability of the correlation matrix. PCA identified four factors with eigenvalues exceeding 1 but inspection of the scree plot revealed one clear factor explaining 33.77% of the variance. A one factor solution was therefore used. The factor and its Cronbach alpha reliability (Cronbach, 1957) is described in Chapter 6.

## 7.2 Demographic differences on study variables

There were no significant gender differences for neuroticism, conscientiousness, active coping, confidence in management, confidence in peers, empowerment (access to resources, self-determination and impact), team climate (vision and participative safety), growth, stress, affective organisational commitment and job satisfaction. There was however, a significant gender difference for emotion-focussed coping,  $t(191) = 3.14, p < .01$ . Women on average reported higher levels of emotion-focussed coping than men.

Compared to clinical staff, non-clinical staff reported significantly higher levels of confidence in management  $t(188) = 3.79, p < .01$ ; empowerment: access to resources and information  $t(194) = 2.70, p < .05$ ; empowerment self-determination and impact  $t(194) = 2.23, p < .05$ ; growth  $t(192) = 3.70, p < .01$ ; stress  $t(194) = 2.71, p < .01$  and affective organisational commitment  $t(195) = 2.67, p < .01$ . Those in the youngest age group reported the highest rates of neuroticism  $F(2,193) = 5.67, p < .05$ ; emotion-focussed coping  $F(2,190) = 3.46, p < .05$ ; confidence in management  $F(2,187) = 3.06, p < .05$ ; stress  $F(2,193) = 3.50, p < .05$  and affective organisational commitment  $F(2,194) = 3.44, p < .05$ .

### 7.3 Study 2 Bivariate Correlations

Bivariate correlations are presented in Table 7-1. Neuroticism was negatively related to conscientiousness, confidence in management, confidence in peers, empowerment: access to resources and affective organisational commitment; and positively related to stress.

Higher levels of conscientiousness were associated with higher levels of active coping, confidence in peers, empowerment: access to resources and information, team climate: participative safety and job satisfaction.

Emotion-focussed coping was positively correlated ( $p < .05$ ) with active coping.

Although expected to be positively correlated with stress ( $p < .05$ ) emotion-focussed coping was also correlated with growth at the  $p < .01$  level; these results will be discussed in section 7.4.

Positive correlations ( $p < .01$ ) were shown between confidence in management and confidence in peers, empowerment: access to resources and information and empowerment: self-determination and impact, team climate: vision, team climate: participative safety, affective organisational commitment and job satisfaction. These strong relationships suggest that the positive psychological links that were identified in Study 1 were also identified in Study 2.

The two empowerment variables (empowerment: access to resources and empowerment: self-determination and impact) were significantly correlated at the  $p < .01$  level with the two team climate variables (team climate: vision and team climate: participative safety). This suggests that teams had the mandate (empowerment) and resources (team characteristics) to get tasks completed.

**Table 7-1**

***Bivariate Correlation Coefficients***

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Neuroticism														
2 Conscientiousness	$\alpha = .77$													
3 Emotion-focussed coping	-.25**	$\alpha = .83$												
4 Active coping	.03	-.03	$\alpha = .84$											
5 Confidence in Management	-.12	.36**	.19*	$\alpha = .83$										
6 Confidence Peers	-.24**	.02	.06	.07	$\alpha = .88$									
7 Empower resources/information	-.18*	.15*	-.06	.08	.32**	$\alpha = .89$								
8 Empower self-determination/impact	-.19*	.19*	.02	.06	.59**	.37**	$\alpha = .87$							
9 TCI Vision	-.03	.06	-.08	-.02	.43**	.23**	.43**	$\alpha = .88$						
10 TCI Participative Safety	-.13	.15	-.06	.08	.33**	.32**	.32**	.23**	$\alpha = .94$					
11 Growth	-.08	.17*	-.07	.05	.43**	.53**	.43**	.36**	.44**	$\alpha = .96$				
12 Stress	.12	.13	.24**	.15	.10	-.11	.10	.09	-.03	-.09	$\alpha = .97$			
13 Affective Organisational Commitment	.45**	-.21**	.17*	-.07	-.11	-.23**	-.17*	-.04	-.09	-.14	.27**	$\alpha = .94$		
14 Job Satisfaction	-.24**	.14	.09	.04	.51**	.32**	.45**	.41**	.30**	.37**	.21**	-.09	$\alpha = .82$	
Mean	-.05	.21**	.10	.14	.26**	.19*	.23**	.31**	.26**	.27**	.14	.00	.49**	$\alpha = .79$
SD	.29	4.66	1.78	3.82	7.51	7.68	7.61	7.68	7.58	7.38	.40	.24	7.52	3.52
n	.13	.18	.70	.14	.18	.15	.18	.18	.15	.06	.21	.15	.16	.53
	197	197	194	194	191	192	197	197	187	188	195	197	198	198

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

*n* reflects the number of participants completing all items in the variables

Affective organisational commitment and job satisfaction were positively related to confidence in management, confidence in peers and the empowerment variables (empowerment: access to resources and empowerment: self-determination and impact), and the team climate variables (team climate: vision and team climate: participative safety). This cluster of results reinforces the strong linkages between the organisation, teams and individuals which have been identified in both studies.

## **7.4 Testing Hypotheses**

### **7.4.1 Hypothesis 5**

Hypothesis 5 proposed that team climate (vision and participative safety), conscientiousness, active coping, emotion-focussed coping, empowerment (access to resources and information and self-determination and impact), confidence in management, and confidence in peers would explain variance in growth. This hypothesis was examined using linear regression.

Overall the model was significant  $F(9,169) = 3.00, p < .01$ , and explained 13.8% ( $R^2$ ) (9.2% adjusted  $R^2$ ) of the total variance. The only significant predictor of growth was emotion-focussed coping, (Table 7-2). No situational factors were significant.

Emotion-focussed coping was a significant predictor of growth in both studies. This will be discussed further in section 7.6.

**Table 7-2**

*Predictors of Growth*

Variable	B	SEB	$\beta$
Conscientiousness	.11	.09	.09
Active coping	.12	.12	.08
Emotion-focussed coping	.08	.02	.26**
Team climate: Vision	.01	.12	.01
Team climate: Participative safety	-.45	.36	-.12
Empowerment: Access to resources and information	.18	.11	.15
Empowerment: Self-determination and impact	.14	.10	.12
Confidence in management	-.03	.12	-.03
Confidence in peers	-.14	.12	-.10
$R^2$		.138	
Adj $R^2$		.092	
$F$	$F(9,169) = 3.00^{**}$		

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

*The N in the regression statement reflects the number of participants completing all items in the variables selected.*

**7.4.2 Hypothesis 6**

Hypothesis 6 proposed that neuroticism, emotion-focussed coping, team climate (vision and participative safety), empowerment (access to resources and information, self-determination and impact), confidence in management, and confidence in peers would explain variance in stress (Table 7-3).

The model was significant  $F(8,170) = 7.01, p < .01$ , and explained 24.8% ( $R^2$ ) (21.3% adjusted  $R^2$ ) of the total variance. Team climate: participative safety, empowerment: access to resources and information and confidence in peers were negatively related to stress but were not significant. The only significant predictors of stress were neuroticism and emotion-focussed coping. Personality, coping and work characteristics

are explaining 21% (adjusted  $R^2$ ) of the variance. This suggests that the unique variance is derived from personal characteristics and not situational factors.

**Table 7-3**

*Predictors of Stress*

Variable	B	SEB	$\beta$
Neuroticism	.50	.08	.42**
Emotion-focussed coping	.04	.01	.18**
Team climate: Vision	.03	.08	.03
Team climate: Participative Safety	-.16	.23	-.06
Empowerment: Access to resources and information	-.05	.07	-.07
Empowerment: Self-determination and impact	.01	.07	.02
Confidence in management	.05	.08	.05
Confidence in peers	-.10	.08	-.10
$R^2$		.248	
Adj $R^2$		.213	
$F$	$F(8,170) = 7.01^{**}$		

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

*The N in the regression statement reflects the number of participants completing all items in the variables selected.*

### 7.4.3 Testing Hypothesis 3 and 4

Hypothesis 3 predicted that growth would be positively related to job satisfaction and affective organisational commitment.

Hypothesis 4 predicted that stress would be negatively related to job satisfaction and affective organisational commitment.

Hypothesis 3 was partially supported at the bivariate level (Table 5.1) with growth being significantly correlated to affective organisational commitment at the  $p < .01$  level. Hypothesis 4 was not supported at the bivariate level with no significant

correlations between stress and job satisfaction and affective organisational

commitment (Table 7.1). However, to further explore job satisfaction and affective organisational commitment, all variables were entered as predictors of job satisfaction and affective organisational commitment to see which ones explained unique variance (Tables 7.4 and 7.5).

**Table 7-4**

*Dependent Variable: Job Satisfaction*

Variable	B	SEB	$\beta$
Neuroticism	.30	.32	.07
Conscientiousness	.39	.22	.13
Emotion-focussed Coping	.05	.05	.07
Active Coping	.34	.26	.09
Confidence in Management	-.06	.28	-.02
Confidence in Peers	-.08	.28	-.02
Empowerment: Access to Resources and Information	-.24	.26	-.08
Empowerment: Self-determination and Impact	.50	.23	.17*
Team Climate: Vision	.55	.27	.15*
Team Climate: Participative Safety	.28	.81	.03
Growth	-.09	.19	-.04
Stress	-.02	.28	-.00
Affective Organisational Commitment	1.37	.27	.42**
$R^2$		.320	
Adj $R^2$		.266	
$F$	$F(13,165) = 5.97^{**}$		

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

*The N in the regression statement reflects the number of participants completing all items in the variables selected.*

Table 7-4 shows job satisfaction as the dependent variable with all of the predictors entered in one step; this set of variables explained 32.0% ( $R^2$ ) (26.6% adjusted  $R^2$ ) of

the total variance in job satisfaction. Growth was not significant as predicted therefore hypothesis 3 was not supported. However, there were three variables which explained unique variance. These were empowerment: self-determination and impact, team climate: vision and affective organisational commitment.

**Table 7-5**

*Dependent Variable: Affective Organisational Commitment*

Variable	B	SEB	$\beta$
Neuroticism	-.17	.09	-.13
Conscientiousness	-.01	.06	-.01
Emotion-focussed Coping	-.00	.01	-.02
Active Coping	-.06	.07	-.05
Confidence in Management	.23	.07	.25**
Confidence in Peers	.10	.08	.10
Empowerment: Access to Resources and Information	.15	.07	.17*
Empowerment: Self-determination and Impact	.05	.06	.06
Team Climate: Vision	-.01	.07	-.01
Team Climate: Participative Safety	-.05	.22	-.02
Growth	.11	.05	.14*
Stress	.03	.07	.03
Job Satisfaction	.10	.02	.32**
$R^2$		.470	
Adj $R^2$		.428	
$F$	$F(13,165) = 11.27^{**}$		

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

*The N in the regression statement reflects the number of participants completing all items in the variables selected.*

Table 7-5 shows affective organisational commitment as the dependent variable with all of the predictors entered in one step. This set of variables explained 47.0% ( $R^2$ ) (42.8% adjusted  $R^2$ ) of the total variance in affective organisational commitment. There were four variables which explained unique variance. These were: confidence in

management, empowerment: access to resources and information, growth and job satisfaction.

## **7.5 Discussion**

Study 2 focussed on the importance of team climate in the framework of stress and growth. Dealing with critical incidents is an everyday occurrence for health sector workers; they are regularly exposed to events which in other contexts might overwhelm an individual's coping mechanisms, for example continued high volumes of patients accessing emergency department care (Meadows et al., 2011). These coping strategies are seemingly enhanced by being a member of a response team: for example, in an emergency department or an Incident Management Team. Without team support the demands of these events can outstrip the capabilities of the individual. Pollock, Paton, Smith and Violanti (2003) explain that being a member of a team which has been convened specifically to provide a coordinated response to events can promote individual coping effectiveness.

Emotion-focussed coping was positively related to growth in Study 1 therefore it was included in the positive pathway for Study 2, where it was one of the significant predictors of growth (Table 7-2). Emotion-focussed coping is often considered as maladaptive if stressors are avoided or ignored and not resolved (Folkman & Moskowitz, 2004; Littleton et al., 2007; Roth & Cohen, 1986). However, it can be positive in a health service work context as discussed in Chapter 5. Strategies for coping with stressors in situations where health service workers cannot walk away from their role may include psychological avoidance or switching off emotional responses. This allows the individual to focus on the task demands at hand; for example, in an emergency room or operating theatre.

Emotion-focussed coping was also positively related to stress. Effective coping includes the management of feelings be they positive or negative (Lazarus & Folkman, 1984); it is the *fit* between the stressor and the coping strategies utilised that is important.

Emotion-focussed coping is also likely to be used to manage negative emotions, such as anxiety arising in high pressure situations (Johnston & Paton, 2003; Moran & Colless, 1995; Raphael, 1986). The expectation that growth arises from successfully managing challenging situations does not negate the adverse impacts but appears to be another aspect of the experience of coping with stressful events (Park & Fenster, 2004). The nature of health service workers' roles increases the likelihood that they will be exposed to adverse or stressful situations throughout their career. There is evidence that learning from these encounters can be positive rather than negative (Gist & Woodhall, 2000; Moran & Colless, 1995; Paton, Violanti, & Smith, 2003; Tedeschi & Calhoun, 2003). These opportunities for learning and growth achieved outside of routine contexts can be identified in the current research studies (Paton, 2006c). Emotion-focussed coping can be positive if used to promote positive adaptation in uncontrollable situations such as those in which health service workers may find themselves (Folkman & Moskowitz, 2004; Littleton et al., 2007). This strong relationship of emotion-focussed coping as a significant predictor of growth in Study 1 and Study 2 was an unexpected finding and needs to be explored further in the context of health service workers.

While stress and growth in this study were mainly related to individual level characteristics of personality with coping, job satisfaction and affective organisational commitment were associated with team character variables. Job satisfaction was significantly related to empowerment: self-determination and impact. Self-determination in this context is an individual's sense of having choice in initiating and regulating actions (Deci, Connell, & Ryan, 1989). Self-determination reflects

autonomy in the initiation and continuation of work behaviours and processes, for example, by being able to make decisions about work methods, pace, and effort (Spector, 1989). Impact is the degree to which an individual can influence outcomes in their work environment (Spreitzer, 1995b). Both of these are key components in health sector work where protecting and serving the public requires the ability to make relevant job decisions independently. Health service workers need to be able to perceive that they can have an impact upon the health outcomes of their clients. Study 2 results suggest that the participants felt they were able to have a positive influence.

Job satisfaction was also related to team climate: vision. “Vision is an idea of a valued outcome which represents a higher order goal and a motivating force at work” (West, 1990, p. 310 ). Working as part of a team with clearly defined objectives allows individuals within the team to focus their efforts and direction towards a shared outcome. Anderson and West (1998) suggest vision depicts the extent to which the group objective has a valued outcome and engenders commitment to group goals. In this study vision was related to job satisfaction suggesting it is relevant to the participants in the health sector.

Individual level variables rather than situational factors explained stress and growth. The only significant predictor of stress was neuroticism. Individuals appear to be relying on their abilities and personal characteristics rather than their perceptions of the team and organisational environments in managing stress (Hart & Cooper, 2001; Pollock et al., 2003). This finding was not expected and provides rationale for further research to explore this result.

Growth was related to affective organisational commitment but not job satisfaction, while stress was not related to either job satisfaction or affective organisational

commitment. In contrast confidence in management was strongly related to affective organisational commitment. Meyer, Allen and Smith (1993) propose that organisational commitment is a psychological state that characterises the employee's relationship with the organisation and has implications for the decision to continue or discontinue the relationship. In addition, Cook and Wall (1980) suggested that affective organisational commitment focusses on the feelings of attachment to the goals and values of the organisation and the individual's perception of their role. Confidence in management is important to organisational commitment and so needs to be considered as both an outcome of work experience and contributing to the formation of organisational commitment.

Meyer and Allen (1991) suggest the conditions contributing an individual's actions may be subtle and beyond conscious recognition but are influenced by working in the right conditions to promote positive outcomes (J. P. Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). This is highly relevant to the health sector where recruitment and retention of health service workers is a continuing struggle for large organisations particularly for the medical and surgical specialised professions (Zellars et al., 2011).

Stress and growth were significantly correlated. Stress and growth are not two ends of a continuum but separate dimensions which are positively related to each other (Kirby et al., 2011; Leon, Sandal, Fink, & Ciofani, 2010). Growth is experienced through learnings from stressful situations.

Study 2 focussed on the importance of team climate in the framework of stress and growth.

The Study 2 findings agree with the findings from Study 1 which showed that individual factors were important for positive growth. The unique variance for stress

came from individual factors (neuroticism and emotion-focussed coping). Thus, individual variables were predicting stress and growth in both studies. Situational variables were predicting the organisational outcomes of job satisfaction and affective organisational commitment.

The findings of Study 2 showed that individual strategies are explaining unique variance over and above the group level variables for growth. These findings will be addressed further in Chapter 8 along within the general discussion of the two studies in the overall context of the research.

## 8 DISCUSSION

The purpose of the current research was to examine how factors identified in the Organisational Health Framework (Hart & Cooper, 2001) may relate to stress and growth in a sample of the New Zealand health workforce, to enable the development of a model of organisational health which accommodates individual and situational factors. The research focussed on a large DHB, parts of which took part in two national exercises in preparation for hazardous events such as an influenza pandemic and volcanic crisis. The studies were conducted just after these two exercises. It was hoped that knowledge of these exercises (which had been highly publicised across all media) would provide a catalyst of interest in the research. Although study participants were not canvassed as to whether they participated in the exercises, the case study organisation had a high level of participation in both exercises – setting up an Incident Management Team and attending multi-agency meeting and response workshops. Real events during the period of the research reinforced its value and rationale as the case study DHB became actively involved in the response and recovery to the H1N1 Swine Flu pandemic in 2009 (A(H1N1)pdm09) and the Christchurch earthquakes of 2010/11. There is still a need for research into stress and growth in critical incidents but the current studies highlight some factors worth exploring.

The research refers to a salutogenic concept (Antonovsky, 1979) that advocates proactive approaches to psychological health to promote the capacity of staff and systems to manage the demands and workloads they will encounter when fulfilling their health sector role. Stressful situations are omnipresent in the health sector work, as on-the-job stressors such as long hours, rotating shifts, and dealing with trauma place health sector workers at risk of occupational stress (Meadows et al., 2011).

Salutogenesis indicates that stressors are not inherently bad. The focus on stressors and coping mechanisms often looks at how individuals cope with stressors rather than which factors act as strengthening buffers and contribute to growth and well-being through active adaptation (Antonovsky, 1987a). This process of continual improvement towards positive outcomes (salutogenesis) is embodied in the health targets for the New Zealand health sector (Ministry of Health, 2013). The current research augmented this programme through focussing on individual and situational factors identified as having the potential to contribute to positive outcomes and increase adaptive capacity in personnel and systems.

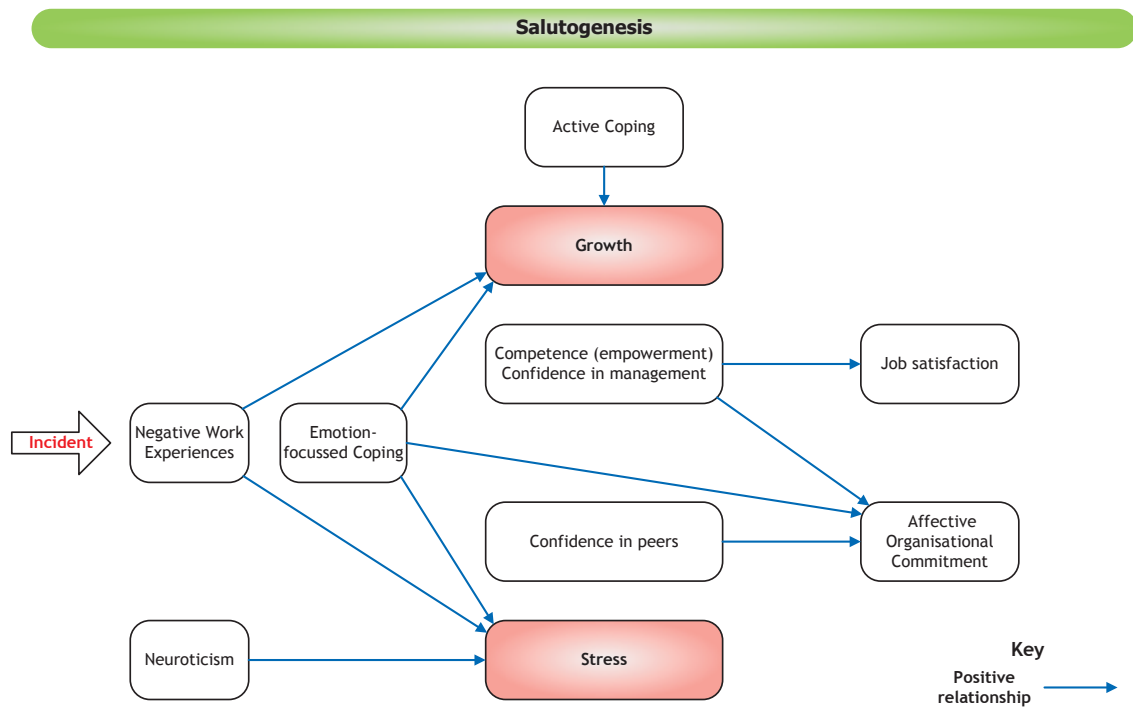
There is extensive existing literature on stress and growth. However, the health sector is largely unrepresented in this literature which has in general focussed on other emergency services (e.g. fire (Gist & Woodhall, 1995; Hytten & Hasle, 1989; E. C. Meyer et al., 2012; Moran & Colless, 1995); police (Alexander, 1993; Burke & Shakespeare-Finch, 2011; Carlier, Voerman, & Gersons, 2000; de Terte, 2012; Shane, 2011). The current research focussed exclusively on the health sector. In addition the current studies looked at individual and situational factors related to stress and growth outcomes immediately post real-time emergency scenario exercises. The collection of research data just after these exercises provides the study process contexts closer to real-life emergency situations; situations which subsequently occurred during the research timeframe and required large-scale responses from the health sector.

The research provided a synthesis of existing research into stress and growth in relation to health sector workers. This was particularly relevant to the New Zealand health sector given the events which have occurred during the research timeframe e.g. the Christchurch earthquakes of 2010 and 2011; the tornadoes striking Albany, Auckland in 2011 and 2012; the 2012 phreatic eruptions of Mt Tongariro and other events related to

New Zealand’s situation on an active geological fault line. The comprehensive Organisational Health Framework proposed by Hart and Cooper (2001) identifies factors leading to negative and positive outcomes. The current research also included negative and positive pathways. It looked at the relative contributions of individual and situational factors to stress and growth s and their contribution to affective organisational commitment and job satisfaction.

### 8.1 Model for Study 1

Figure 8-1 shows the supported pathways for Study 1.



**Figure 8-1 Predictors of Stress and Growth in Study 1**

In Study 1, it was anticipated that personality (neuroticism and conscientiousness), coping strategies and negative work experiences would contribute to stress and growth in stressful situations. The individual level factors which explained unique variance in growth were negative work experiences and active coping. Active coping played a significant role in terms of its relationships to growth but so did emotion-focussed

coping. Active coping and emotion-focussed coping were positively related, suggesting that individuals working in the health sector are managing their feelings (of grief or distress or frustration) to get the job done. In these situations individuals are using a repertoire of coping strategies, some active, some emotional as discussed in Chapters 5 and 7. This encompassed the salutogenic concept of the research by confirming that positive outcomes can arise from involvement with stressors (Antonovsky, 1987b; Jackson, 2007; Joseph & Linley, 2005; Karanci et al., 2012; Kirby et al., 2011; Moran & Colless, 1995; Murphy, Durkin, & Joseph, 2011; Paton et al., 2010; Shakespeare-Finch et al., 2005; Tedeschi & Calhoun, 2003). As long as the choice of coping strategy is effective and the stressors cannot be changed, emotion-focussed coping strategies can be successful in neutralising the stressor. The professional emotional detachment consistently used by health service workers in their roles to maintain functioning after repeated exposure to stressful events demonstrates a form of coping which promotes the capacity to adapt from their experiences (Folkman & Lazarus, 1991; D. W. King et al., 2004; Kirby et al., 2011; Paton & Violanti, 2010). This finding was not expected and shows that emotion-focussed coping may be a strong predictor of growth in the survey sample population.

Although individual characteristics such as personality and coping were important for stress and growth, these did not significantly predict job satisfaction or affective organisational commitment. More important than individual characteristics for these outcomes were a sense of competence, confidence in management and confidence in peers. Entin and Surfaty (1999) have shown that individuals working in highly effective teams such as emergency trauma teams or Incident Management Teams must adapt to stressful situations by using effective coordination strategies to enhance their own competencies, perceptions of other team members (peers) and team leadership

(management). Engaging in appropriate training to improve teamwork skills and task performance will also prove beneficial in stressful situations (Flin, 1996; Sinclair, Doyle, Johnston, & Paton, 2012a; Sinclair et al., 2012b). For example, the learnings from Incident Management Team debriefs can be used as a catalyst for future team and individual development opportunities (Paton, 2005; Shakespeare-Finch et al., 2005; Sinclair et al., 2012b).

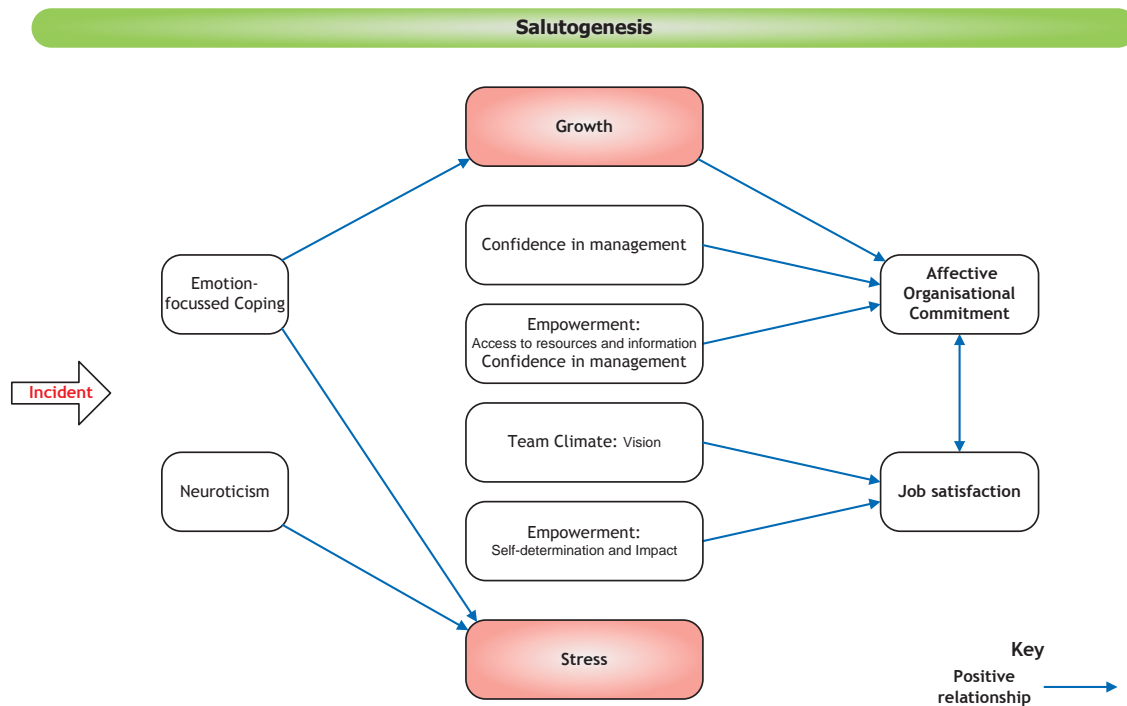
When individuals believe that the people they are working with in a team are competent, can be depended upon to perform to an implicit standard and act with integrity, the trust which is built can produce positive effects on attitudes, perceptions, behaviours and performance outcomes (Cook & Wall, 1980; Dirks & Ferrin, 2001, 2002; Kee & Knox, 1970; Weick & Sutcliffe, 2007). In this way organisations which promote a no-blame culture and value openness can facilitate learning and growth; this in turn can contribute to the overall adaptive capacity of the individuals and teams of which it is comprised (M. Siegrist & Cvetkovich, 2000; M. Siegrist et al., 2005).

Study 1 indicates the importance of individual level factors in promoting stress and growth in health sector workers particularly emotion-focussed coping mechanisms.

Study 2 aimed to extend these findings looking specifically at team climate.

## 8.2 Model for Study 2

Figure 8-2 shows the supported pathways for Study 2.



**Figure 8-2 Predictors of Stress and Growth in Study 2**

While Study 1 showed stronger effects for personality over and above situational factors in relation to stress and growth, Study 2 focussed in more detail on the situational factor of team climate. Despite this, the results of Study 2 also tended to emphasise the role of personality and coping for stress and growth. Not being in overall control of the situational factors may highlight the need for individual coping mechanisms to be enhanced in unfamiliar (stressful) situations (Hinkle, 1987; Selye, 1976). Confirming the finding of Study 1, emotion-focussed coping was again a strong predictor of both stress and growth.

### **8.3 Comparisons between the Studies**

The Study 2 findings closely mirror the Study 1 findings; both studies showed that individual level factors were important to growth while situational factors were important for job satisfaction and affective organisational commitment.

Individuals bring valuable resources to a team in terms of their skills and experiences, and these add to the capacity of the team and facilitate its ability to adapt when it is confronted with a critical incident (Paton, 2006a). In this way the amount of resources available to the team through collective response efforts such as those observed in the case study organisation represents a resource whose capacity exceeds the sum of the parts provided by the individuals within it (Paton, 2007; Paton, Flin, & Violanti, 1999). Collectively, the experience and knowledge that individuals provide to a team combines to produce a larger resource base than might be initially expected. The evidence gained from the current research in relation to the individual, team and organisational factors is particularly important when emergency responders such as the Incident Management Team members (set up within the DHB to any incident requiring a coordinated response) are required to work outside of their normal operating environment which takes individuals out of their routine implicit response scenarios. This concept is highlighted in work on team resilience and emergency preparedness which has identified the need to prepare for working with unfamiliar people, unfamiliar teams, unfamiliar processes and unfamiliar languages (Paton et al., 1999; Pollock et al., 2003). Situational factors were significant predictors of organisational outcomes in both studies.

The current research has looked at identifying the individual and situational factors identified as having the potential to contribute to stress and growth to build long-term adaptive capacity in a large New Zealand DHB. Through identifying the factors that

may promote positive outcomes arising from critical incidents there is the potential to improve the ability of health sector workers to plan, prepare for, facilitate, and implement positive adaptation options in their routine work contexts (business as usual). If staff are using adaptive processes to promote growth in day to day stressful situations these will promote their coping strategies during times of large-scale emergency responses.

The current studies together produce a complex picture of the factors that influence stress and growth in health sector workers. The relationship of individual and situational factors identified from the Hart and Cooper (2001) Organisational Health Framework provided the basis for the current research and empirical literature on theories of coping, stress, growth and adaptive capacity (Lazarus & Folkman, 1984; Linley & Joseph, 2004; Selye, 1991; Tedeschi et al., 1998; Violanti, Paton, & Dunning, 2000) provided additional variables that it was hypothesised would be related to stress and growth in the survey sample of the New Zealand health workforce.

It is anticipated that the findings can inform the development of evidence-based training and support programs to promote staff well-being and performance when managing the consequences of any large-scale emergency event.

## **8.4 Limitations**

The method to select participants by sending out emails to all active email addresses in the case study organisation was considered the best way to reach a large geographically dispersed and revolving DHB population. However, as the number of emails originally sent within the organisation is unknown the overall response rate could not be calculated.

Data were collected by self-report cross-sectional survey questionnaires so no firm

inferences can be drawn about causation. The data were collected using questionnaires so there may be some mono-method bias resulting from participants tending to give artificially consistent responses (Harrison, 2005). Although there is the potential for divergence between observed and true relationships among constructs, a meta-analysis found that while this common method bias was a cause for concern, it did not invalidate many research findings (Doty & Glick, 1998).

The length of the questionnaire may have discouraged some prospective participants and may have contributed to some attrition when individuals received the questionnaire. It is acknowledged that the majority of health service workers have very little time which they can devote to non-essential activities such as participating in research projects, even though these may directly related to their primary work role. The level of detail contained in the Research Information Sheet for both studies provided individuals with ample information to allow them to self-select out if they perceived they did not meet the criteria of the research aims. Those choosing to self-select in through completion of the questionnaire survey provides some indication that they considered themselves qualified to participate.

The majority (Study 1 74%, Study 2 81%) of the participants were female. However, this is a representative sample of the health sector which is predominantly a female domain.

The use of the Impact of Events Scale Revised (IES-R) (Weiss & Marmar, 1997) and Post-Traumatic Growth Inventory (Tedeschi & Calhoun, 1996) asked that the participants think of a stressful event that they had dealt with in the preceding days and weeks. All participants who answered these questions (Study 1 142 subjects – 91.5%, Study 2 195 subjects 98%) were able to think of an event. The nature of these events

varied (some were relatively benign) as did the degree/level of stress, and this is often mentioned as a limitation of this type of research (Armeli et al., 2001); therefore as noted in the methods section for Studies 1 and 2 (Chapters 4 and 6) these variables need to be treated with caution. The fact that by far the majority of respondents were able to readily recall a stressful event is an indicator that stressors are inherent in health service work (Meadows et al., 2011). The wording for the measure used in the surveys was the standard wording required by the authors, and despite the potentially sensitive nature of the scales there was little missing data.

## **8.5 Implications for Research**

The current research set out to examine how factors identified in the Organisational Health Research Framework (Hart & Cooper, 2001) may relate to stress and growth in a sample of the New Zealand health workforce. The research found that individual factors rather than situational factors were predicting stress and growth in the case study organisation. There is no single model that shows how stress and growth may be related to individual and situational factors, instead there are multiple models and multiple situations and further work is needed to clarify the frameworks.

Participant anonymity precluded collection of in-depth data on stressful experiences at work. This could be an interesting avenue for further research, in order to explore how specific stressors relate to individual and organisational factors. This may provide evidence to enhance knowledge of the coping strategies that health service workers use to promote adaptive capacity. In addition questionnaires could be supplemented by the use of interviews or observations.

In both studies stress and growth were positively correlated. Initially they may appear as separate diverging dimensions or the two ends of a continuum but stress and growth

are complementary and positively related. Growth cannot be experienced unless the circumstances surrounding an event are perceived as difficult (Calhoun & Tedeschi, 2006). Things need to be difficult and demanding if learning is to occur. Some experience of stress, strain and excessive demands is probably necessary for growth to happen, hence the positive relationship (Joseph & Linley, 2005; Karanci et al., 2012; Murphy et al., 2011). Health sector workers are trained to deal with crisis situations and continual career-long, evidence-based training is required in their roles. However, it may be the intensity of stressful experiences that relates to stress and growth but the current research did not contain a measure for this. Further studies could assess this factor in relation to positive growth and stress in this population.

Other measures of resiliency could also be considered such as hardiness (Kobasa, Maddi, & Kahn, 1982). The effects of hardiness on mental health are related to personality and to appraisal and coping mechanisms (Florian, Mikulincer, & Taubman, 1995; Maddi, 2002). Hardiness could be included in future research in the health sector.

The strong relationship of emotion-focussed coping to stress and growth needs to be further researched. Emotion-focussed coping is one of the most common ways of dealing with stress and is an active defence mechanism, but it can be maladaptive if a stressor is ignored but needs to be addressed. Yet in the studies it appeared that the more emotion-focussed coping measures an individual utilised the more growth they experienced. This finding may be indicative of the need to ably manage emotions associated with demanding work. Meadows, Shreffler and Mullins-Sweatt (2011) suggest that personality research can offer an insight into coping and promote resilience, and that individual factors might explain why individuals self-select into critical occupations and why such individuals may be more resilient through their use of what might be termed unconventional use of coping strategies. The strong relationship of

emotion-focussed coping strategies to positive outcomes in health service workers has a large potential for future research.

## **8.6 Implications for Practice**

Resource constraints have historically been, and will continue to be, a large part of health funding issues. Government departments responsible for the allocation of funding for provision of essential services such as in the health sector must remain vigilant, particularly to the effects that restructuring and downsizing policies have on organisational performance and employees' morale and welfare (Iverson & Zatzick, 2011). It is appreciated that such policies are often an attempt to improve organisational performance, yet they appear to promote reduced job satisfaction and turnover which harms that which it aims to improve (Datta, Guthrie, Basuil, & Pandey, 2010; Shaw, Gupta, & Delery, 2005; Trevor & Nyberg, 2008). Such turnover will include loss of knowledge (both formal and informal) gained through experience of working in an organisation (Sitlington, 2012). Future research could take consideration of such restructuring climates to assess the effects upon key response processes in a DHB and their capacity to continue to promote positive growth when confronted with continual staff turnover.

It is hoped that the outcomes of this research will provide a framework that can guide the development of proactive interventions for occupational well-being and adaptive capacity. For example, a group such as an Incident Management Team or emergency room trauma team is a set of interdependent individuals trying to achieve a common goal (Champoux, 2011). Whilst all individuals possess varying degrees of ability to achieve growth and to engage in positive coping strategies (Higgins, 1994), the learning that individuals gain from their experiences can promote growth from stressful events

(Tedeschi et al., 1998). This needs to be promoted at every opportunity and at every level within health sector organisations.

Job satisfaction can be related to many facets of a work role, for example workload or job demands, which reflect the margin between task demands and the perceived coping capacity of the individual (MacDonald, 2003). The current research showed that individual factors predict growth while situational factors were significantly related to job satisfaction and affective organisational commitment. These findings are key issues that should be addressed by organisations within the health sector to promote continued positive adaptational outcomes.

## **8.7 Conclusion**

The all-hazards approach to emergency management in New Zealand is influenced by the vulnerability of the natural and economic structure of its economy and society. This approach has been tested during the period of the current research. The hazardous events and disasters which have affected New Zealand during the research period included the Christchurch earthquakes, the Swine Flu pandemic (A(H1N1)pdm09) and severe weather events such as localised tornadoes.

The responses to, and recovery from, these events involved health sector workers and the teams and organisations to which they belonged. The emotion–focussed coping strategies adopted by these groups were positive rather than maladaptive. Results show that emotion–focussed coping strategies can be successful in neutralising stressors.

Hazard events have provided, and will continue to provide, opportunities for engagement in a salutogenic approach at all levels within the health sector (Antonovsky, 1979). Such an approach may promote positive outcomes from the stressful situations posed by adverse events for health service workers as individuals and as members of

their health organisation. Entin and Surfaty (1999) concur that highly effective teams must adapt to stressful situations by using effective coordination strategies and engaging in appropriate training to improve teamwork skills and task performance.

Salutogenesis has been used as an overarching concept for the current research to understand mechanisms which promote adaptive capacity between individuals, teams and their organisation in relation to predictors of stress and growth in a large New Zealand DHB. In this way organisations (such as the case study organisation) which engage in a no-blame culture and value openness can facilitate the learning and growth that contribute to their adaptive capacity.

The individual and organisational factors which promote engagement in positive outcomes are essential psychosocial factors which promote adaptive capacity have been discussed. Merely focussing on the present without consideration for future adaptational outcomes adopts a pathogenic approach and as such, promotes negative outcomes (Callahan, 1973; World Health Organisation, 1948). Future research must reflect an individual's dynamic adaptability to the stressors they encounter and the coping mechanisms they adopt to promote this.

The current research findings indicate that there are multiple models and multiple situations of how stress and growth may be related (Cotton & Hart, 2003). Only by analysing the intricacies of the variables and their inter-relationships to individual and situational factors can the complex nature of stressors and outcomes be fully understood. These findings provide the basis for future research.

Any large-scale emergency will have a profound impact upon individuals who work in the health sector (Ardagh et al., 2012). This is particularly relevant to New Zealand as reliance on the health sector to continue to deliver services in routine business as usual

contexts has never been greater. To date there is very little evidence of the impact of what psychosocial factors foster adaptive capacity in health sector workers or their employer organisations. There is a need for more broad-based research investigating the effect of these factors and their relationships which may promote such adaptive outcomes.

## 9 REFERENCES

- Aldwin, C. M., Levenson, M. R., & Spiro, A. (1994). Vulnerability and resilience to combat exposure: Can stress have lifelong effects? *Psychology and Aging, 9*(1), 34-44. doi: 10.1037/0882-7974.9.1.34
- Alexander, D. A. (1993). Stress among police body handlers: A long-term follow-up. *British Journal of Psychiatry, 163*, 806-808. doi: 10.1192/bjp.163.6.806
- Alexander, D. A., & Klein, S. (2001). Ambulance personnel and critical incidents - Impact of accident and emergency work on mental health and emotional well-being. *British Journal of Psychiatry, 178*, 76-81. doi: doi:10.1192/bjp.178.1.76
- Alexander, D. A., & Wells, A. (1991). Reactions of police officers to body-handling after a major disaster: A before-and-after comparison. *British Journal of Psychiatry, 159*, 547-555. doi: 10.1192/bjp.159.4.547
- Almedom, A. M. (2005). Resilience, hardiness, sense of coherence, and posttraumatic growth: All paths leading to a light at the end of the tunnel? *Journal of Loss and Trauma: International Perspectives on Stress & Coping, 10*(3), 253 - 265. doi: 10.1080/15325020590928216
- Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the Team Climate Inventory. *Journal of Organizational Behavior, 19*(3), 235-258.
- Antonovsky, A. (1979). *Health, stress and coping*. San Francisco, CA: Jossey-Bass
- Antonovsky, A. (1987a). The salutogenic perspective: Toward a new view of health and illness. *Advances, 4*(1), 47-55. Retrieved from <http://psycnet.apa.org.ezproxy.massey.ac.nz/psycinfo/1988-20161-20001>.
- Antonovsky, A. (1987b). *Unraveling the mystery of health: How people manage stress and stay well*. San Francisco, CA: Jossey Bass.
- Antonovsky, A. (1991). The structural sources of salutogenic strengths. In C. L. Cooper & R. Payne (Eds.), *Personality and stress: Individual differences in the stress process* (pp. 67-104). New York, NY: Wiley.
- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promot. Int., 11*(1), 11-18. doi: 10.1093/heapro/11.1.11
- Antonovsky, A., & Bernstein, J. (1986). Pathogenesis and salutogenesis in war and other crises: Who studies the successful copier? In N. A. Milgram (Ed.), *Stress and coping in time of war : generalizations from the Israeli experience* (pp. 52-65). New York, NY: Brunner/Mazel.
- Ardagh, M. W., Richardson, S. K., Robinson, V., Than, M., Gee, P., Henderson, S., . . . Deely, J. M. (2012). The initial health-system response to the earthquake in

Christchurch, New Zealand, in February, 2011. *The Lancet*, 379(9831), 2109-2115. doi: 10.1016/s0140-6736(12)60313-4

- Armeli, S., Gunthert, K. C., & Cohen, L. H. (2001). Stressor appraisals, coping, and post-event outcomes: The dimensionality and antecedents of stress-related growth. *Journal of Social and Clinical Psychology*, 20, 366-395. doi: 10.1521/jscp.20.3.366.22304
- Ashkanasy, N. M., Ashton-James, C. E., & Jordan, P. J. (2004). Performance impacts of appraisal and coping with stress in workplace settings: The role of affect and emotional intelligence. In P. L. Perrewe & D. C. Ganster (Eds.), *Emotional and Physiological Processes and Positive Intervention Strategies* (Vol. 3, pp. 1-44). Oxford, England: Elsevier.
- Barbera, J. A., Macintyre, A. G., & DeAtley, C. A. (2001). Ambulances to nowhere: America's critical shortfall in medical preparedness for catastrophic terrorism. *BCSIA Discussion Paper 2001-15, ESDP Discussion Paper ESDP-2001-07*. Retrieved from [http://www.gwu.edu/~icdrm/publications/Ambulances\\_to\\_Nowhere.pdf](http://www.gwu.edu/~icdrm/publications/Ambulances_to_Nowhere.pdf)
- Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44(1), 1-26. doi: 10.1111/j.1744-6570.1991.tb00688.x
- Bartlett, M. S. (1954). A note on the multiplying factors for various  $\chi^2$  approximations. *Journal of the Royal Statistical Society. Series B (Methodological)*, 16(2), 296-298. doi: 10.2307/2984057
- Beehr, T. A. (1995). *Psychological stress in the workplace*. London, England: Routledge.
- Beetham, R. D., McSaveney, M., Dellow, G., Rosenburg, M., Johnston, D., & Smith, W. (2004). *A review of natural hazards information for Northland region*. Wellington, New Zealand: Institute of Geological & Nuclear Sciences science report 2004/06. Retrieved from <http://www.nrc.govt.nz/upload/1432/Natural%20Hazards.pdf>
- Bonanno, G. A. (2004). Loss, trauma, and human resilience - have we underestimated the human capacity to thrive after extremely adverse events? *American Psychologist*, 59(1), 20-28. doi: 10.1037/0003-066X.59.1.20.
- Bonn, D., & Bonn, J. (2000). Work-related stress: can it be a thing of the past? [News Item]. *The Lancet*, 355(9198), 124 Retrieved from <http://www.sciencedirect.com.ezproxy.massey.ac.nz/science/article/pii/S0140673605720407>.
- Branson, J. (2006). *Didymosphenia geminata economic impact assessment*. Wellington, New Zealand: Biosecurity New Zealand. Retrieved from <http://www.biosecurity.govt.nz/files/pests/didymo/didymo-econ-ia-mar-06.pdf>
- Brayfield, A. H., & Rothe, H. F. (1951). An index of job satisfaction. *Journal of Applied Psychology*, 35(5), 307-311. doi: 10.1037/h0055617

- 
- Brief, A. P., Burke, M. J., George, J. M., Robinson, B. S., Webster, J. G., & Nordstrom, D. K. (1988). Should negative affectivity remain an unmeasured variable in the study of job stress? *Journal of Applied Psychology*, *73*(2), 193-198. doi: 10.1037/0021-9010.73.2.193
- Britton, N. R. (2006). National planning and response: National system. In H. Rodriguez, E. L. Quarantelli & R. R. Dynes (Eds.), *Handbook of Disaster Research* (pp. 347-367). New York, NY: Springer.
- Britton, N. R., & Clark, G. J. (2000). From response to resilience: Emergency management reform in New Zealand. *Nat. Hazards Rev.*, *1*(3), 145-150. doi: [http://dx.doi.org/10.1061/\(ASCE\)1527-6988\(2000\)1:3\(145\)](http://dx.doi.org/10.1061/(ASCE)1527-6988(2000)1:3(145))
- Burke, K. J., & Paton, D. (2006a). Predicting Police Officer job satisfaction: Traditional versus contemporary models of trauma in occupational experience. *Traumatology*, *12* (3), 189-197. doi: 10.1177/1534765606294989
- Burke, K. J., & Paton, D. (2006b). Well-being in protective services personnel: Organisational influences. *The Australasian Journal of Disaster and Trauma Studies*, 2006-2 . Retrieved from <http://trauma.massey.ac.nz.ezproxy.massey.ac.nz/issues/2006-2/burke.htm>.
- Burke, K. J., & Shakespeare-Finch, J. (2011). Markers of resilience in new police officers: Appraisal of potentially traumatizing events. *Traumatology*, *17*(4), 1-9. doi: 10.1177/1534765611430725
- Calhoun, L. G., & Tedeschi, R. G. (2006). The foundations of posttraumatic growth: An expanded framework. In L. G. Calhoun & R. G. Tedeschi (Eds.), *Handbook of posttraumatic growth*. (pp. 1-23). New York, NY: Psychology Press
- Callahan, D. (1973). The WHO definition of 'Health'. *The Hastings Center Studies*, *1*(3), 77-87. retrieved from <http://www.jstor.org.ezproxy.massey.ac.nz/stable/3527467>.
- Cameron, K. S., & Quine, R. E. (2011). *Diagnosing and changing organizational culture: based on the competing values framework* (3rd ed.). San Francisco, CA: Jossey-Bass.
- Caplan, R. P. (1994). Stress, anxiety, and depression in hospital consultants, general practitioners, and senior health service managers. *British Medical Journal*, *309*(6964), 1261-1263. doi: 10.1136/bmj.309.6964.1261
- Carlier, I. V. E., Lamberts, R. D., Van Uchelen, A. J., & Gersons, B. P. R. (1998). Disaster-related post-traumatic stress in police officers: A field study of the impact of debriefing. *Stress Medicine*, *14*(3), 143-148. doi: [http://dx.doi.org.ezproxy.massey.ac.nz/10.1002/\(SICI\)1099-1700\(199807\)14:3<143::AID-SMI770>3.0.CO;2-S](http://dx.doi.org.ezproxy.massey.ac.nz/10.1002/(SICI)1099-1700(199807)14:3<143::AID-SMI770>3.0.CO;2-S)
- Carlier, I. V. E., Voerman, A. E., & Gersons, B. P. R. (2000). The influence of occupational debriefing on post-traumatic stress symptomatology in traumatized police officers. *British Journal of Medical Psychology*, *73*, 87-98. doi: 10.1348/000711200160327

- 
- Cartwright, S., & Cooper, C. L. (1997). *Managing workplace stress*. London, England: Sage.
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4(1), 92-100. doi: doi:10.1207/s15327558ijbm0401\_6
- Carver, C. S. (1998). Resilience and Thriving: Issues, Models, and Linkages. *Journal of Social Issues*, 54(2), 245-266. doi: 10.1111/j.1540-4560.1998.tb01217.x
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56(2), 267-283. doi: 10.1037/0022-3514.56.2.267
- Champoux, J. E. (2011). *Organizational behavior : integrating individuals, groups, and organizations* (4th ed.). New York, NY: Routledge.
- Cheetham, G., & Chivers, G. (1996). Towards a holistic model of professional competence. *Journal of European Industrial Training*, 20(5), 20-30. doi: 10.1108/03090599610119692
- Civil Defence and Emergency Management Act, No. 33. (2002).
- Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance service workers. *British Journal of Clinical Psychology*, 38, 251-264. doi: 10.1348/014466599162836
- Cohen, A. (1993). Organizational commitment and turnover: A meta-analysis. [Article]. *Academy of Management Journal*, 36(5), 1140-1157. doi: 10.2307/256650
- Cohen, L. H., Cimboric, K., Armeli, S. R., & Hettler, T. R. (1998). Quantitative assessment of thriving. *Journal of Social Issues*, 54(2), 323-335. doi: 10.1111/j.1540-4560.1998.tb01221.x
- Conger, J. A. (1989). Leadership: The Art of Empowering Others. *Academy of Management Executive* (08963789), 3(1), 17-24. Retrieved from <http://www.jstor.org.ezproxy.massey.ac.nz/stable/4164863>.
- Conger, J. A., & Kanungo, R. N. (1988). The Empowerment Process: Integrating Theory and Practice. *Academy of Management Review*, 13(3), 471-482.
- Conger, J. A., Spreitzer, G. M., & Lawler, E. E. (1999). *The leader's change handbook: An essential guide to setting direction and taking action*. San Francisco, CA: Jossey-Bass.
- Cook, J., & Wall, T. (1980). New work attitude measures of trust, organizational commitment and personal need non-fulfillment. *Journal of Occupational Psychology*, 53(1), 39-52.
- Coomber, B., & Barriball, K. L. (2007). Impact of job satisfaction components on intent to leave and turnover for hospital-based nurses: A review of the research

literature. *International Journal of Nursing Studies*, 44(2), 297-314. doi: 10.1016/j.ijnurstu.2006.02.004

- Cooper, C. L. (Ed.). (1998). *Theories of organizational stress*. New York, NY: Oxford University Press.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98-104. doi: 10.1037/0021-9010.78.1.98
- Costa, P. T., & McCrae, R. R. (1989). *NEOPI/FFI Manual Supplement* Odessa, FL: PAR Inc.
- Costa, P. T., & McCrae, R. R. (1991). *Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI)*. Odessa, FL: PAR Inc.
- Costa, P. T., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences*, 13(6), 653-665. doi: [http://dx.doi.org/10.1016/0191-8869\(92\)90236-I](http://dx.doi.org/10.1016/0191-8869(92)90236-I)
- Costa, P. T., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the revised NEO personality inventory. *Journal of Personality Assessment*, 64(1), 21. Retrieved from <http://ezproxy.massey.ac.nz/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,url,uid&db=s23h&AN=6381543&site=ehost-live>.
- Cotton, P., & Hart, P. M. (2003). Occupational wellbeing and performance: A review of organisational health research. *Australian Psychologist*, 38(2), 118-127. doi: 10.1080/00050060310001707117
- Cox, T. (1978). *Stress*. Basingstoke, England: Macmillan Press.
- Coyle, D., Edwards, D., Hannigan, B., Fothergill, A., & Burnard, P. (2005). A systematic review of stress among mental health social workers. *International Social Work*, 48(2), 201-211. doi: 10.1177/0020872805050492
- Crabbe, J. M., Bowley, D. M. G., Boffard, K. D., Alexander, D. A., & Klein, S. (2004). Are health professionals getting caught in the crossfire? The personal implications of caring for trauma victims. *Emergency Medicine Journal*, 21, 568-572. doi: 10.1136/emj.2003.008540
- Cranwell-Ward, J., & Abbey, A. (2005). *Organizational stress*. London, England: Palgrave MacMillan.
- Cronbach, L. J. (1957). The two disciplines of scientific psychology. *American Psychologist*, 12(11), 671-684. doi: 10.1037/h0043943
- Curtin, L. L. (1998). The aimlessly empowered, Editorial, *Nursing Management*, pp. 5-6. Retrieved from <http://ezproxy.massey.ac.nz/login?url=http://search.ebscohost.com/login.aspx?di>

rect=true&AuthType=ip,cookie,url,uid&db=heh&AN=1445036&site=ehost-live&scope=site

- Curtis, A. E. (2006). *A psychoanalytic exploration of media exposure to terrorism intrapsychic correlates of adult resilience to the Bali bombing*. (Unpublished doctoral thesis), Swinburn University of Technology, Melbourne, Australia. Retrieved from <http://researchbank.swinburne.edu.au/vital/access/manager/Repository/swin:6245?query=salutogenesis>
- Datta, D. K., Guthrie, J. P., Basuil, D., & Pandey, A. (2010). Causes and effects of employee downsizing: A review and synthesis. *Journal of Management*, 36(1), 281-348. doi: 10.1177/0149206309346735
- de Anda, D., Baroni, S., Boskin, L., Buchwald, L., Morgan, J., Ow, J., . . . Weiss, R. (2000). Stress, stressors and coping among high school students. *Children and Youth Services Review*, 22(6), 441-463. doi: [http://dx.doi.org/10.1016/S0190-7409\(00\)00096-7](http://dx.doi.org/10.1016/S0190-7409(00)00096-7)
- de Terte, I. (2012). *Psychological resilience in the face of occupational trauma : an evaluation of a multidimensional model* Unpublished doctoral thesis, Massey, Manawatu, New Zealand. Retrieved from <http://mro.massey.ac.nz/handle/10179/3486>
- Dean, P. G., Gow, K. M., & Shakespeare-Finch, J. (2003). Counting the cost: Psychological distress in career and auxiliary firefighters. *The Australasian Journal of Disaster and Trauma Studies*, 2003-1. Retrieved from <http://www.massey.ac.nz/~trauma/issues/2003-1.htm> website:
- Deci, E. L., Connell, J. P., & Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology*, 74(4), 580-590. doi: 10.1037/0021-9010.74.4.580
- DeLongis, A., Coyne, J. C., Dakof, G., Folkman, S., & Lazarus, R. S. (1982). Relationship of daily hassles, uplifts, and major life events to health status. *Health Psychology*, 1(2), 119-136. doi: 10.1037/0278-6133.1.2.119
- DeLongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on health and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology*, 54(3), 486-495. doi: 10.1037/0022-3514.54.3.486
- Department of Internal Affairs. (2008). *National Civil Defence Emergency Management Strategy 2007*. Wellington. Retrieved from <http://www.civildefence.govt.nz/memwebsite.NSF/wpg>
- Department of Labour. (2003). *Health and Safety in Employment Act - A guide to (0-477-03631-7)*. Wellington, New Zealand: Department of Labour. Retrieved from <http://www.osh.govt.nz/order/catalogue/808.shtml>
- Department of the Prime Minister and Cabinet. (2007). *National Hazardscape Report*. Wellington: Officials' Committee for Domestic and External Security

Coordination. Retrieved from [http://www.civildefence.govt.nz/memwebsite.nsf/Files/National-hazardscape-report/\\$file/NATHAZ-complete.pdf](http://www.civildefence.govt.nz/memwebsite.nsf/Files/National-hazardscape-report/$file/NATHAZ-complete.pdf).

- Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology*, 41(1), 417. doi: 10.1146/annurev.ps.41.020190.002221
- Dirks, K. T., & Ferrin, D. L. (2001). The role of trust in organizational settings. *Organizational Science*, 12(4), 450-467. doi: <http://orgsci.journal.informs.org.ezproxy.massey.ac.nz/content/12/4/450.full.pdf>
- Dirks, K. T., & Ferrin, D. L. (2002). Trust in leadership: Meta-analytic findings and implications for research and practice. *Journal of Applied Psychology*, 87(4), 611-628. doi: 10.1037/0021-9010.87.4.611
- Dohrenwend, B. S., & Dohrenwend, B. P. (1974). A brief historical introduction to research on stressful life events. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), *Stressful life events: Their nature and effects* (pp. 1-7). New York, NY: John Wiley & Sons.
- Doty, D. H., & Glick, W. H. (1998). Common Methods Bias: Does Common Methods Variance Really Bias Results? *Organizational Research Methods*, 1(4), 374-406. doi: 10.1177/109442819814002
- Downes, G. L. (2005). *The 1855 January 23 M8+ Wairarapa earthquake - What contemporary accounts tell us about it*. Paper presented at the The 1855 Wairarapa Earthquake Symposium, Museum of New Zealand Te Papa Tongarewa.
- Driskell, J. E., & Salas, E. (1991). Group decision making under stress. *Journal of Applied Psychology*, 76(3), 473-478. doi: 10.1037/0021-9010.76.3.473
- Dyregrov, A. (1989). Caring for helpers in disaster situations: Psychological debriefing. *Disaster Management*, 2, 25-30. Retrieved from <http://www.krisepsyk.no/rapporter/pdf/Caring%20for%20helpers.pdf>.
- Ellis, D. E. (2005). *The status of psychological debriefing and its relevance to the emergency services in Lincolnshire*. (Unpublished masters thesis), University of Lincoln, Lincoln, England.
- Entin, E. E., & Serfaty, D. (1999). Adaptive team coordination. *Human Factors*, 41(2), 312(311). doi: 10.1518/001872099779591196
- Field, A. (2009). *Discovering statistics using SPSS : (and sex and drugs and rock 'n' roll)* (3 ed.). Los Angeles; London: Sage.
- Figley, C. R. (1995). Compassion fatigue as secondary traumatic stress disorder. An overview. In C. R. Figley (Ed.), *Compassion Fatigue* (pp. 1-20). New York, NY: Brunner Mazel.

- Figley, C. R. (Ed.). (1985). *Trauma and its wake: Traumatic stress theory, research, and intervention*. New York, NY: Brunner/Mazel.
- Firth-Cozens, J., Midgley, S. J., & Burgess, C. (1999). Questionnaire survey of post-traumatic stress disorder in doctors involved in the Omagh bombing. *British Medical Journal*, *319*(1609). doi: 10.1136/bmj.319.7225.1609
- Flin, R. (1996). *Sitting in the hot seat: Leaders and teams for critical incident management*. Chichester: Wiley.
- Florian, V., Mikulincer, M., & Taubman, O. (1995). Does hardiness contribute to mental health during a stressful real-life situation? The roles of appraisal and coping. *Journal of Personality and Social Psychology*, *68*(4), 687-695. doi: 10.1037/0022-3514.68.4.687
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, *21*(3), 219-239. doi: 10.2307/2136617
- Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology*, *48*(1), 150-170. doi: 10.1037/0022-3514.48.1.150
- Folkman, S., & Lazarus, R. S. (1991). Coping and emotion. In A. Monat & R. S. Lazarus (Eds.), *Stress and Coping: An anthology* (3rd ed., pp. 207-227). New York, NY: Columbia University Press.
- Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. *Journal of Personality & Social Psychology*, *50*(5), 992-1003. doi: 10.1037/0022-3514.50.5.992
- Folkman, S., Lazarus, R. S., Gruen, R. J., & DeLongis, A. (1986). Appraisal, coping, health status, and psychological symptoms. *Journal of Personality & Social Psychology*, *50*(3), 571-579. doi: 10.1037/0022-3514.50.3.571
- Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and Promise. *Annual Review of Psychology*, *55*(1), 745-774. doi: 10.1146/annurev.psych.55.090902.141456
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality & Social Psychology*, *84*(2), 365-376.
- Furnham, A. (2005). *The psychology of behaviour at work: The individual in the organization* (2nd ed.). New York, NY: Psychology Press.
- GeoNet. (2011). Feb 22 2011 - Christchurch badly damaged by magnitude 6.3 earthquake. Retrieved 28 April, 2011, from <http://www.geonet.org.nz/news/feb-2011-christchurch-badly-damaged-by-magnitude-6-3-earthquake.html>

- Gist, R., & Woodhall, S. J. (1995). Occupational stress in contemporary fire service. *Occupational Medicine: State of the Art Reviews*, 10, 763-787. Retrieved from <http://www.ncbi.nlm.nih.gov.ezproxy.massey.ac.nz/pubmed?term=occupational%20stress%20in%20contemporary%20fire%20service>.
- Gist, R., & Woodhall, S. J. (1998). Social science versus social movements: The origins and natural history of debriefing. *The Australasian Journal of Disaster and Trauma Studies*. Retrieved from <http://www.massey.ac.nz/~trauma/issues/1998-1.htm> website:
- Gist, R., & Woodhall, S. J. (2000). There are no simple solutions to complex problems. In J. M. Violanti, D. Paton & C. Dunning (Eds.), *Post-traumatic stress intervention: Challenges, issues and perspectives* (pp. 81-95). Springfield, IL: Charles C. Thomas.
- Grayson, D. (2004). Some myths and legends in quantitative psychology. *Understanding Statistics*, 3(2), 101-134.
- Haralambos, M., & Holborn, M. (2000). *Sociology: Themes and perspectives* (5th ed.). London, England: Harper Collins.
- Harris, M. B., Baloglu, M., & Stacks, J. R. (2002). Mental health of trauma-exposed firefighters and critical incident stress debriefing. *Journal of Loss and Trauma*, 7, 223-238. doi: 10.1080/10811440290057639
- Harris, N. (2001). Management of work-related stress in nursing. *Nursing Standard*, 16(10), 47-55. Retrieved from <http://nursingstandard.rcnpublishing.co.uk.ezproxy.massey.ac.nz/archive/article-management-of-work-related-stress-in-nursing/view>.
- Harrison, M. I. (2005). *Diagnosing organizations: methods, models, and processes* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Harrop, E., Addis, S., Elliott, E., & Williams, G. (2007). *Resilience, coping and salutogenic approaches to maintaining and generating health: A review*. London: National Institute for Health and Clinical Excellence. Retrieved from <https://nice.org.uk/nicemedia/live/11675/34609/34609.pdf>
- Hart, P. M. (1999). Predicting employee life satisfaction: A coherent model of personality, work and nonwork experiences, and domain satisfactions. *Journal of Applied Psychology*, 84(4), 564-584.
- Hart, P. M., & Cooper, C. L. (2001). Occupational stress: Towards a more integrated framework. In N. Anderson, D. S. Ones, H. K. Sinangil & C. Viswesvran (Eds.), *Handbook of industrial, work and organisational psychology* (Vol. 2, pp. 93-114). London, England: Sage.
- Hart, P. M., Wearing, A. J., & Headey, B. (1993). Assessing police work experiences: Development of the police daily hassles and uplifts scale. *Journal of Criminal Justice*, 21(6), 553-572. doi: 10.1016/0047-2352(93)90043-M

- Hart, P. M., Wearing, A. J., & Headey, B. (1994). Perceived quality of life, personality, and work experiences:: Construct validation of the police daily hassles and uplifts scales. *Criminal Justice and Behavior*, 21(3), 283-311. doi: 10.1177/0093854894021003001
- Hart, P. M., Wearing, A. J., & Headey, B. (1995). Police stress and well-being: Integrating personality, coping and daily work experiences. *Journal of Occupational & Organizational Psychology*, 68(2), 133-156. doi: 10.1111/j.2044-8325.1995.tb00578.x
- Herlofsen, P. (2001). Group reactions to trauma: An avalanche accident. In R. J. Ursano, B. G. McCaughey & C. S. Fullerton (Eds.), *Individual and community responses to trauma and disaster: The structure of human chaos*. (pp. 248-266). Cambridge, England: Cambridge University Press.
- Higgins, G. O. (1994). *Resilient adults: Overcoming a cruel past*. San Francisco, CA,: Jossey-Bass.
- Hinkle, L. E. (1974). The concept of "stress" in the biological and social sciences. *International Journal of Psychiatry in Medicine*, 5(4), 335-357. doi: 10.2190/91DK-NKAD-1XP0-Y4RG
- Hinkle, L. E. (1987). Stress and disease: The concept after 50 years. *Social Science & Medicine*, 25(6), 561-566. doi: 10.1016/0277-9536(87)90080-3
- Hockey, R. (2002). Human performance in the working environment. In P. Warr (Ed.), *Psychology at work*. (pp. 26-50). Hammondsworth, England: Penguin.
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: software of the mind: intercultural cooperation and its importance for survival* (3rd ed.). New York, NY: McGraw-Hill.
- Holahan, C. J., & Moos, R. H. (1990). Life stressors, resistance factors, and improved psychological functioning: An extension of the stress resistance paradigm. *Journal of Personality and Social Psychology*, 58(5), 909-917. doi: 10.1037/0022-3514.58.5.909
- Holahan, C. J., Moos, R. H., Holahan, C. K., Brennan, P. L., & Schutte, K. K. (2005). Stress generation, avoidance coping, and depressive symptoms: A 10-year model. *Journal of Consulting and Clinical Psychology*, 73(4), 658-666. doi: 10.1037/0022-006x.73.4.658
- Huddleston, L. M. (2002). *The impact and organizational stressors on New Zealand police recruits: A longitudinal investigation of psychological health and posttraumatic growth*. (Unpublished doctoral thesis), Massey University, Palmerston North, New Zealand. Retrieved from <http://hdl.handle.net/10179/1975>
- Huddleston, L. M., Stephens, C., & Paton, D. (2007). An evaluation of traumatic and organizational experiences on the psychological health of New Zealand police recruits. *Work*, 28, 199-207.

- Hutcheson, G., & Sofroniou, N. (1999). *The multivariate social scientist*. London, England: Sage.
- Hytten, K., & Hasle, A. (1989). Firefighters: A study of stress and coping. *Acta Psychiatrica Scandinavia Supplement*, 355, 50-55. doi: 10.1111/j.1600-0447.1989.tb05253.x
- Insurance Council of New Zealand. (2012). About the Insurance Council of New Zealand. Retrieved 2 April, 2012, from <http://www.icnz.org.nz/news/090712.php>
- Iverson, R. D., & Zatzick, C. D. (2011). The effects of downsizing on labor productivity: The value of showing consideration for employees' morale and welfare in high-performance work systems. *Human Resource Management*, 50(1), 29-44. doi: 10.1002/hrm.20407
- Jackson, C. A. (2007). Posttraumatic Growth: Is there evidence for changing our practice? . *The Australasian Journal of Disaster and Trauma Studies*, 2007-1. Retrieved from <http://www.massey.ac.nz.ezproxy.massey.ac.nz/~trauma/issues/2007-1/jackson.htm>.
- Jain, A. K., & Sinha, A. K. (2005). General health in organizations: Relative relevance of emotional intelligence, trust, and organizational support. *International Journal of Stress Management*, 12(3), 257-273. doi: 10.1037/1072-5245.12.3.257
- James, L. R., James, L. A., & Ashe, D. K. (1990). The meaning of organisations: The role of cognitions and values. In B. Schneider (Ed.), *Organizational climate and culture* (pp. 40-85). San Francisco, CA: Jossey Bass.
- Jex, S. M. (1998). *Stress and job performance. Theory, research and implications for managerial practice*. London, England: Sage.
- Jillings, R. L. (2002). *Spotlight on community workers: Exploring the relationships among stress related variables and evaluating the effects of a well-being intervention*. (Unpublished doctoral thesis), Massey University, Albany, New Zealand. Retrieved from <http://hdl.handle.net/10179/1987>
- Johnston, P. (2000). *Psychological empowerment as a mediating and multidimensional construct : an empirical examination of key antecedents and consequences within a public health service organisation* (Unpublished masters thesis), Massey University, Palmerston North, New Zealand.
- Johnston, P., & Paton, D. (2003). Environmental resilience: Psychological empowerment in high-risk professions. In D. Paton, J. M. Violanti & L. M. Smith (Eds.), *Promoting capabilities to manage posttraumatic stress* (pp. 136-151). Springfield, IL: Charles C. Thomas.
- Joseph, S., & Linley, P. (2005). Positive adjustment to threatening events: An organismic valuing theory of growth through adversity. *Review of General Psychology*, 9(3), 262-280. doi: 10.1037/1089-2680.9.3.262

- Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *Journal of Applied Psychology, 87*(3), 530-541. doi: 10.1037/0021-9010.87.3.530
- Judge, T. A., Parker, S. K., & Colbert, A. E. (2001). Job Satisfaction: A Cross-Cultural Review In N. Anderson, D. S. Ones, H. K. Sinangil & C. Viswesvran (Eds.), *Handbook of Industrial, Work and Organizational Psychology* (Vol. 2). London, England: Sage.
- Kagan, N., I., Kagan, H., & Watson, M. G. (1995). Stress reduction in the workplace: The effectiveness of psychoeducational programs. *Journal of Counseling Psychology, 42*(1), 71-78. doi: 10.1037/0022-0167.42.1.71
- Kaiser, H. F. (1970). A second generation little jiffy. *Psychometrika, 35*(4), 401-415.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika 31*(1), 31-36. doi: 10.1007/BF02291575
- Karanci, A. N., Sedat, I., Ahmet, A. T., Gul, E. I., Erkan, B. B., Ozkol, H., & Guzel, H. Y. (2012). Personality, posttraumatic stress and trauma type: Factors contributing to posttraumatic growth and its domains in a Turkish community sample. *European Journal of Psychotraumatology, 3*. doi: <http://doi.org/10.3402/ejpt.v3i10.17303>
- Karasek, R. A. (2004). An analysis of 19 international case studies of stress prevention through work reorganization using the Demand/Control model. *Bulletin of Science Technology Society, 24*(5), 446-456 doi: 10.1177/0270467604269583
- Karasek, R. A., & Theorell, T. (1990). *Healthy work: stress, productivity, and the reconstruction of working life*. New York, NY: Basic Books.
- Kee, H. W., & Knox, R. E. (1970). Conceptual and methodological considerations in the study of trust and suspicion. *The Journal of Conflict Resolution, 14*(3), 357-366. Retrieved from <http://www.jstor.org/stable/173516>.
- King, D. W., Vogt, D. D., & King, L. A. (2004). Risk & resilience factors in the etiology of chronic PTSD. In B. Litz (Ed.), *Early intervention for trauma & traumatic loss* (pp. 34-65). New York, NY: Guildford.
- King, E. B., de Chermont, K., West, M., Dawson, J. F., & Hebl, M. R. (2007). How innovation can alleviate negative consequences of demanding work contexts: the influence of climate for innovation on organizational outcomes. *Journal of Occupational and Organizational Psychology, 80*(4), 631-645. doi: 10.1348/096317906X171145
- Kirby, R., Shakespeare-Finch, J., & Palk, G. (2011). Adaptive and maladaptive coping strategies predict posttrauma outcomes in ambulance personnel. *Traumatology, 17*(4), 25-34. doi: 10.1177/1534765610395623
- Kirkman, B. L., & Rosen, B. (1999). Beyond self-management: Antecedents and consequences of team empowerment. *The Academy of Management Journal, 42*(1), 58-74. doi: 10.2307/256874

- Kirmeyer, S. L., & Dougherty, T. W. (1988). Work load, tension, and coping: moderating effects of supervisor support. *Personnel Psychology*, *41*(1), 125-139. doi: 10.1111/j.1744-6570.1988.tb00635.x
- Klein, R. J. T., Nicholls, R. J., & Thomalla, F. (2003). Resilience to natural hazards: How useful is this concept? *Global Environmental Change Part B: Environmental Hazards*, *5*(1-2), 35-45. doi: 10.1016/j.hazards.2004.02.001
- Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, *37*(1), 1-11. doi: 10.1037/0022-3514.37.1.1
- Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology*, *42*(1), 168-177. doi: 10.1037/0022-3514.42.1.168
- Kopelman, R. E., Brief, A. P., & Guzzo, R. A. (1990). The role of climate and culture in productivity. In B. Schneider (Ed.), *Organizational climate and culture* (pp. 282-311). San Francisco, CA: Jossey Bass.
- Koys, D. J., & DeCotiis, T. A. (1991). Inductive measures of psychological climate. *Human Relations*, *44*(3), 265-285. doi: 10.1177/001872679104400304
- Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Koslowski (Eds.), *Multilevel theory, research, and methods in organizations* (pp. 3-90). San Francisco, CA: Jossey-Bass.
- Langfred, J. W. (2000). The paradox of self-managment: Individual and group autonomy in work groups. *Journal of Organizational Behavior*, *21*, 563-585.
- Larner, B., & Blow, A. (2011). A model of meaning-making coping and growth in combat veterans. *Review of General Psychology*, *15*(3), 187-197. doi: 10.1037/a0024810
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York, NY: McGraw-Hill.
- Lazarus, R. S. (2000). Toward better research on stress and coping. *American Psychologist*, *55*(6), 665-673. doi: 10.1037/0003-066X.55.6.665
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York, NY: Springer.
- LeBlanc, V. R., Regehr, C., Birze, A., King, K., Scott, A. K., MacDonald, R., & Tavares, W. (2011). The association between posttraumatic stress, coping, and acute stress responses in paramedics. *Traumatology*, *17*(4), 10-16. doi: 10.1177/1534765611429078
- Lee, B.-Y. (2010). Working together, building capacity – A case study of Civil Defence Emergency Management in New Zealand. *Journal of Disaster Research*, *5*(5), 565-576. Retrieved from

---

<http://www.fujipress.jp/finder/xslt.php?mode=present&inputfile=DSSTR000500050009.xml>.

- Leon, G. R., Sandal, G. M., Fink, B. A., & Ciofani, P. (2010). Positive experiences and personal growth in a two-man North Pole expedition team. *Environment and Behavior*. doi: 10.1177/0013916510375039
- Leventhal, H., & Tomarken, A. (1987). Stress and illness: perspectives from health psychology. In S. V. Kasl & C. L. Cooper (Eds.), *Stress and health: Issues in research methodology* (pp. 27-55). Chichester, England: Wiley.
- Liberman, A. K., Best, S. R., Metzler, T. J., Fagan, J. A., Weiss, D. S., & Marmar, C. R. (2002). Routine occupational stress and psychological distress in police. *Policing: An International Journal of Police Strategies & Management*, 25(2), 421-441. doi: 10.1108/13639510210429446
- Lindström, B., & Ericksson, M. (2005). Professor Aaron Antonovsky (1923-1994): the father of the salutogenesis. *Journal of Epidemiology & Community Health*, 59, 511. Retrieved from <http://jech.highwire.org/content/559/516/511.full>.
- Lindström, B., & Eriksson, M. (2005). Salutogenesis. *Journal of Epidemiology & Community Health*, 59, 440-442. doi: 10.1136/jech.2005.034777
- Linley, P., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, 17(1), 11-21. doi: 10.1023/B:JOTS.0000014671.27856.7e
- Linley, P., & Joseph, S. (2006). The positive and negative effects of disaster work: A preliminary investigation. [Article]. *Journal of Loss & Trauma*, 11(3), 229-245. doi: 10.1080/15325020500494186
- Linley, P., Joseph, S., Cooper, R., Harris, S., & Meyer, C. (2003). Positive and negative changes following vicarious exposure to the September 11 terrorist attacks. *Journal of Traumatic Stress*, 16(5), 481-485. doi: 10.1023/A:1025710528209
- Linley, P., Joseph, S., & Loumidis, K. (2005). Trauma work, sense of coherence, and positive and negative changes in therapists. *Psychotherapy and Psychosomatics*, 74(3), 185-188. doi: 10.1159/000084004
- Littleton, H., Horsley, S., Siji, J., & Nelson, D. V. (2007). Trauma coping strategies and psychological distress: A meta-analysis. *Journal of Traumatic Stress*, 20(6), 977-988. doi: 10.1002/jts.20276
- Long, J. (1998). Providing support systems for health care staff. In S. Hardy, J. Carson & B. Thomas (Eds.), *Occupational stress: Personal and professional approaches* (pp. 128-144). Cheltenham, England: Stanley Thornes.
- Loo, R. (2003). Assessing "team climate" in project teams. *International Journal of Project Management*, 21(7), 511-517. doi: 10.1016/S0263-7863(02)00058-3

- Loo, R., & Loewen, P. (2002). A confirmatory factor - analytic and psychometric examination of the team climate inventory. *Small Group Research, 33*(2), 254-265. doi: 10.1177/104649640203300205
- LoSavio, S. T., Cohen, L. H., Laurenceau, J.-P., Dasch, K. B., Parrish, B. P., & Park, C. L. (2011). Reports of stress-related growth from daily negative events. *Journal of Social and Clinical Psychology, 30*(7), 760-785. doi: 10.1521/jscp.2011.30.7.760
- Lu, H., Barriball, K. L., Zhang, X., & While, A. E. (2012). Job satisfaction among hospital nurses revisited: A systematic review. *International Journal of Nursing Studies, 49*(8), 1017-1038. doi: 10.1016/j.ijnurstu.2011.11.009
- Lu, H., While, A. E., & Barriball, K. L. (2005). Job satisfaction among nurses: a literature review. *International Journal of Nursing Studies, 42*(2), 211-227. doi: 10.1016/j.ijnurstu.2004.09.003
- MacDonald, W. (2003). The impact of job demands and workload on stress and fatigue. *Australian Psychologist, 38*(2), 102-117. doi: 10.1080/00050060310001707107
- Maddi, S. R. (2002). The story of hardiness: twenty years of theorizing, research, and practice. *Consulting Psychology Journal: Practice and Research 53*(4), 175-185.
- Mathieu, J. E., & Zajac, D. M. (1990). A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychological Bulletin, 108*(2), 171-194. doi: 10.1037/0033-2909.108.2.171
- Mathisen, G. E., Torsheim, T., & Ståle, E. (2006). The team-level model of climate for innovation: A two-level confirmatory factor analysis. *Journal of Occupational & Organizational Psychology, 79*(1), 23-35.
- Matthews, G., Deary, I. J., & Whiteman, M. C. (2003). *Personality traits* (2nd ed.). Cambridge, England: Cambridge University Press.
- Matthews, G., Saklofske, D. H., Costa, P. T., Deary, I. J., & Zeidner, M. (1998). Dimensional models of personality: A framework for systematic clinical assessment. *European Journal of Psychological Assessment, 14*(1), 36-49. doi: 10.1027/1015-5759.14.1.36
- McAllister, D. J. (1995). Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal, 38*(1), 24-59. doi: <http://www.bschool.nus.edu.sg/Staff/bizdjm/McAllisteramj95.pdf>
- McCrae, R. R., & Costa, P. T. (2003). *Personality in adulthood: A five-factor theory perspective* (2nd ed.). New York, NY: Guilford Press.
- McCrae, R. R., Costa, P. T., & Martin, T. (2005). The NEO-PI-3: A More Readable Revised NEO Personality Inventory. *Journal of Personality Assessment, 84*(3), 261-270. doi: 10.1207/s15327752jpa8403\_05

- McFarlane, A. (2000). Can debriefing work? Critical appraisal of theories of interventions and outcomes, with directions for the future. In B. Raphael & J. P. Wilson (Eds.), *Psychological debriefing: Theory, practice and evidence* (pp. 327-336). Cambridge, England: Cambridge University Press.
- Meadows, M. P., Shreffler, K. M., & Mullins-Sweatt, S. N. (2011). Occupational stressors and resilience in critical occupations: The role of personality In P. L. Perrewé & D. C. Ganster (Eds.), *The role of Individual differences in occupational stress and well being: Research in occupational stress and well-being* (Vol. 9, pp. 39-61): Emerald Group Publishing Limited. doi: 10.1108/S1479-3555(2011)0000009006
- Meyer, E. C., Zimering, R., Daly, E., Knight, J., Kamholz, B. W., & Gulliver, S. B. (2012). Predictors of posttraumatic stress disorder and other psychological symptoms in trauma-exposed firefighters. *Psychological Services, 9*(1), 1-15. doi: 10.1037/a0026414
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review, 1*(1), 61-89. doi: 10.1016/1053-4822(91)90011-Z
- Meyer, J. P., & Allen, N. J. (1997). *Commitment in the workplace: Theory, research and application*. Thousand Oaks, CA: Sage Publications.
- Meyer, J. P., Allen, N. J., & Smith, C. A. (1993). Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology, 78*(4), 538-551.
- Meyer, J. P., Irving, P. G., & Allen, N. J. (1998). Examination of the combined effects of work values and early work experience on organizational commitment *Journal of Organizational Behavior, 19*, 29-52.
- Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior, 61*(1), 20-52. doi: 10.1006/jvbe.2001.1842
- Mikkelsen, A., Ogaard, T., & Lovrich, N. (2000). Modeling the effects of organizational setting and individual coping style on employees subjective health, job satisfaction and commitment. *Public Administration Quarterly, 24*(3), 371-397. doi: 10.2307/40861816
- Miller, R. L., Griffin, M. A., & Hart, P. M. (1999). Personality and organizational health: the role of conscientiousness. *Work & Stress, 13*(1), 7-19.
- Ministry of Civil Defence & Emergency Management. (2006). *The Guide to the National Civil Defence Emergency Management Plan*. Wellington, New Zealand: Ministry of Civil Defence & Emergency Management. Retrieved from [http://www.civildefence.govt.nz/memwebsite.nsf/wpg\\_URL/For-the-CDEM-Sector-Publications-The-Guide?OpenDocument](http://www.civildefence.govt.nz/memwebsite.nsf/wpg_URL/For-the-CDEM-Sector-Publications-The-Guide?OpenDocument).

- Ministry of Civil Defence & Emergency Management. (2009). *CDEM Group Plan Review: Director's guidelines for Civil Defence Emergency Management Groups [DGL 09/09]*. Wellington, New Zealand: Ministry of Civil Defence & Emergency Management. Retrieved from [http://www.civildefence.govt.nz/memwebsite.nsf/Files/Director\\_Guidelines/\\$file/CDEM-2GP-web.pdf](http://www.civildefence.govt.nz/memwebsite.nsf/Files/Director_Guidelines/$file/CDEM-2GP-web.pdf).
- Ministry of Health. (2006). *New Zealand Influenza Pandemic Action Plan*. Wellington, New Zealand: Ministry of Health. Retrieved from <http://www.health.govt.nz/publication/new-zealand-influenza-pandemic-plan-framework-action>.
- Ministry of Health. (2013). Health Targets. Retrieved 24 August 2013, from <http://www.health.govt.nz/new-zealand-health-system/health-targets>
- Mitchell, J. T. (1983). When disaster strikes -The Critical Incident Stress Debriefing process. *Journal of Emergency Medical Services*, 8, 36-39.
- Moran, C. (1998). Individual Differences and Debriefing Effectiveness. *The Australasian Journal of Disaster and Trauma Studies*, 1998-1, Retrieved from <http://trauma.massey.ac.nz.ezproxy.massey.ac.nz/issues/1998-1991/moran1991.htm>.
- Moran, C., & Colless, E. (1995). Positive reactions following emergency and disaster responses. *Disaster Prevention and Management* 4(1), 55-60. doi: 10.1108/09653569510079050
- Moran, C., & Shakespeare-Finch, J. (2003). A trait approach to posttrauma vulnerability and growth. In D. Paton, J. M. Violanti & L. M. Smith (Eds.), *Promoting capabilities to manage posttraumatic stress* (pp. 27-42). Springfield, IL: Charles C. Thomas.
- Moyle, P. (1995). The role of negative affectivity in the stress process: Tests of alternative models. *Journal of Organizational Behavior*, 16(6), 647-668. doi: 10.2307/2488521
- Munich Re. (2012, 4 January 2012). Review of natural catastrophes in 2011: Earthquakes result in record loss. Retrieved from [http://www.munichre.com/en/media\\_relations/press\\_releases/2012/2012\\_01\\_04\\_press\\_release.aspx](http://www.munichre.com/en/media_relations/press_releases/2012/2012_01_04_press_release.aspx)
- Murphy, D. L., Durkin, J., & Joseph, S. (2011). Growth in relationship: a post-medicalized vision for positive transformation. In N. Tehrani (Ed.), *Managing trauma in the workplace: Supporting workers and organisations* (pp. 267-282). London, England: Routledge.
- Natural Hazards Research Platform. (2010). *Natural Hazards Research Platform annual update and publically available 2009/10*. Wellington, New Zealand: Natural Hazards Research Platform. Retrieved from <http://www.naturalhazards.org.nz/NHRP/Publications/Platform-Reporting>

- Neary, J. (1995). Challenges of managing the workplace. In P. Cotton (Ed.), *Psychological health in the workplace: Understanding and managing stress* (pp. 7-12). Carlton, Australia: The Australian Psychological Society.
- National Civil Defence Emergency Management Plan Order, 2005/295 Stat. (2005).
- New Zealand Government. (2011). PM's speech notes on Canterbury earthquake and press conference video. Retrieved from <http://www.beehive.govt.nz/speech/pm%E2%80%99s-speech-notes-canterbury-earthquake>
- New Zealand Government. (2012a). *Health sector: Results of the 2010/11 audits* (B.29[12a]). Wellington, New Zealand: Office of the Auditor-General. Retrieved from <http://www.oag.govt.nz/2012/health-sector/docs/health-sector-2010-11-audits.pdf>
- New Zealand Government. (2012b). *List of deceased*. Retrieved from <http://www.police.govt.nz/list-deceased>
- Northland Civil Defence Emergency Management Group. (2010). *Northland civil defence emergency management plan*. Northland Civil Defence Emergency Management Group. Retrieved from <http://www.nrc.govt.nz/upload/1443/Northland%20Civil%20Defence%20Emergency%20Management%20Plan%202010.pdf>
- Nunnally, J. C. (1978). *Psychometric theory*. New York, NY: McGraw-Hill.
- Ogińska-Bulik, N. (2005). Emotional intelligence in the workplace: Exploring its effects on occupational stress and health outcomes in human service workers. *International Journal of Occupational Medicine and Environmental Health*, 18(2), 167-175. Retrieved from <http://test.imp.lodz.pl/upload/oficyna/artykuly/pdf/full/Ogi168-102-105.pdf>.
- Ørner, R. J., Avery, A., & Boddy, C. (1997). Status and development of critical incident stress management services in the United Kingdom National Health Service and other emergency services combined: 1993-1996. *Occupational Medicine*, 47(4), 203-209. doi: 10.1093/occmed/47.4.203
- Pallant, J. (2011). *SPSS Survival manual: A step by step guide to data analysis using SPSS* (4th ed.). Maidenhead, England: Open University Press.
- Palmer, S., & Dryden, W. (1995). *Counselling for stress problems*. London, England: Sage.
- Pan American Health Organization. (2007). *A secure and disaster-resilient health sector in the Americas: Strategic plan 2008-2012 of the Pan American Health Organization*. Washington, DC. Retrieved from <http://preventionweb.net/go/2279>
- Park, C. L. (1998). Stress-related growth and thriving through coping: The roles of personality and cognitive processes. *Journal of Social Issues*, 54(2), 267-277. doi: 10.1111/j.1540-4560.1998.tb01218.x

- Park, C. L., & Fenster, J. R. (2004). Stress-related growth: Predictors of occurrence and correlates with psychological adjustment. *Journal of Social & Clinical Psychology, 23*(2), 195-215.
- Paton, D. (2003a). Expanding perspectives on duty-related traumatic stress. *The Australasian Journal of Disaster and Trauma Studies Volume 2003-1*(1). doi: <http://www.massey.ac.nz/~trauma/issues/2003-1.htm>
- Paton, D. (2003b). Stress in disaster response: a risk management approach. *Disaster Prevention and Management, 12*(3), 203-209. doi: 10.1108/09653560310480677
- Paton, D. (2005). Posttraumatic growth in protective services professionals: Individual, cognitive and organizational influences. *Traumatology, 11*(4), 335-346. doi: 10.1177/153476560501100411
- Paton, D. (2006a). Disaster resilience: Building capacity to co-exist. In D. Paton & D. M. Johnston (Eds.), *Disaster Resilience: An integrated approach* (pp. 3-10). Springfield, IL: Charles C. Thomas.
- Paton, D. (2006b). Disaster resilience: Integrating individual, community, institutional, and environmental perspectives. In D. Paton & D. M. Johnston (Eds.), *Disaster Resilience: An integrated approach*. (pp. 305-318). Springfield, IL: Charles C. Thomas.
- Paton, D. (2006c). Posttraumatic growth in disaster and emergency work. In L. G. Calhoun & R. G. Tedeschi (Eds.), *Handbook of posttraumatic growth* (pp. 225-247). Mahwah NJ: Lawrence Erlbaum Associates Inc.
- Paton, D. (2007). *Measuring and monitoring resilience in Auckland*. Lower Hutt, New Zealand: GNS Science Report 2007/18. Retrieved from [http://www.aucklandcivildefence.org.nz/SiteAssets/Public/377/Measuring%202B%20Monitoring%20Community%20Resilience%20\(Paton%202007\).pdf](http://www.aucklandcivildefence.org.nz/SiteAssets/Public/377/Measuring%202B%20Monitoring%20Community%20Resilience%20(Paton%202007).pdf)
- Paton, D., Flin, R., & Violanti, J. (1999). Incident response and recovery management. In J. M. Violanti & D. Paton (Eds.), *Police trauma: Psychological aftermath of civilian combat* (pp. 124-138). Springfield, IL: Charles C. Thomas.
- Paton, D., & Jackson, D. (2002). Developing disaster management capability: An assessment centre approach. *Disaster Prevention and Management, 11*(2), 115-122. doi: 10.1108/09653560210426795
- Paton, D., Johnston, D., & Houghton, B. (1998). Organisational responses to a volcanic eruption. *Disaster Prevention and Management, 7*, 5-13. doi: 10.1108/09653569810206226
- Paton, D., Smith, L. M., & Stephens, C. (1998). Work-related psychological trauma: A social psychological and organisational approach to understanding response and recovery. *The Australasian Journal of Disaster and Trauma Studies, 1998-1*, Retrieved from <http://trauma.massey.ac.nz.ezproxy.massey.ac.nz/issues/1998-1991/paton1991.htm>.

- Paton, D., Violanti, J., Burke, K. J., & Gehrke, M. S. (2009). *Traumatic stress in police officers: a career-length assessment from recruitment to retirement*. Springfield, IL: Charles C. Thomas.
- Paton, D., & Violanti, J. M. (2007). Terrorism stress risk assessment and management. In L. B. B. Bongar, L. Brown, L. E. Beutler, J. N. Breckenridge & P. G. Zimbardo (Eds.), *Psychology of terrorism* (pp. 225-246). New York, NY: Oxford University Press.
- Paton, D., & Violanti, J. M. (2010). Modelling resiliency: Integrating individual, team and organizational factors. In P. T. Bartone, B. H. Johnsen, J. Eid, J. M. Violanti & J. C. Laberg (Eds.), *Enhancing human performance in security operations: International and law enforcement perspectives* (pp. 71-82). Springfield: IL: Charles C. Thomas.
- Paton, D., Violanti, J. M., & Lunt, J. (2010). Developing resilience in high risk professions: Integrating person, team and organizational factors. In B. Pattanayak, P. Niranjana, K. S. Ray & S. Mishra (Eds.), *Storming the global business: Rise of the Asian tigers* (pp. 303-316). New Dehli, India: Asian School of Business Management, Bhubaneshwar, Excel Books.
- Paton, D., Violanti, J. M., & Smith, L. M. (2003). *Promoting capabilities to manage posttraumatic stress*. Springfield, IL: Charles C. Thomas Publishers.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531-544. doi: 10.1177/014920638601200408
- Pollock, C., Paton, D., Smith, L. M., & Violanti, J. M. (2003). Team resilience. In D. Paton, J. M. Violanti & L. M. Smith (Eds.), *Promoting capabilities to manage posttraumatic stress - Perspectives on resilience* (pp. 74-88). Springfield, IL: Charles C Thomas.
- Poortinga, W., & Pidgeon, N. F. (2004). Trust, the asymmetry principle, and the role of prior beliefs. *Risk Analysis*, 24(6), 1475-1486. doi: 10.1111/j.0272-4332.2004.00543.x
- Quick, J. C., Murphy, L. R., & Hurrell, J. J., Jr. (1992). Preface. In J. C. Quick, L. R. Murphy & J. J. Hurrell (Eds.), *Stress and well-being at work: Assessments and interventions for occupational mental health* (pp. ix-x). Washington, DC: American Psychological Association.
- Quine, L. (1998). Effects of stress in an NHS trust: a study. *Nursing Standard*, 13(3), 36-41. Retrieved from <http://nursingstandard.rcnpublishing.co.uk.ezproxy.massey.ac.nz/archive/article-effects-of-stress-in-an-nhs-trust-a-study/view>.
- Raphael, B. (1986). *When disaster strikes*. London, England: Hutchinson.
- Reichers, A. E., & Schneider, B. (1990). Climate and culture: An evolution of constructs. In B. Schneider (Ed.), *Organizational climate and culture* (pp. 5-39). San Francisco, CA: Jossey Bass.

- Reid, P., Brunson, D., Fitzharris, P., & Oughton, D. (2004). *Review of the February 2004 flood event*. Wellington, New Zealand: Ministry of Civil Defence and Emergency Management. Retrieved from [http://www.civildefence.govt.nz/memwebsite07.nsf/Files/Reid-report-February-2004-floods/\\$file/Reid-report-February-2004-floods.pdf](http://www.civildefence.govt.nz/memwebsite07.nsf/Files/Reid-report-February-2004-floods/$file/Reid-report-February-2004-floods.pdf)
- Richardson, C. G., & Ratner, P. A. (2005). Sense of coherence as a moderator of the effects of stressful life events on health. *Journal of Epidemiology and Community Health, 59*(11), 979-984. doi: 10.1136/jech.2005.036756
- Rick, J., Perryman, S., Young, K., Guppy, A., & Hillage, J. N. (1998). *Workplace trauma and its management. Review of the literature*. Norwich, England: Health and Safety Executive.
- Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist, 41*(7), 813-819. doi: 10.1037/0003-066x.41.7.813
- Rutter, M. (1985). Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. *The British Journal of Psychiatry, 147*(6), 598-611. doi: 10.1192/bjp.147.6.598
- Salas, E., & Klein, G. (Eds.). (2001). *Linking expertise and naturalistic decision making*. Mahwah, NJ: Lawrence Erlbaum.
- Schein, E. H. (2010). *Organizational culture and leadership* (4th ed.). San Francisco, CA: Jossey-Bass.
- Schoorman, D. F., Mayer, R. C., & Davis, J. H. (2007). An integrative model of organizational trust: Past, present, and future. *Academy of Management Review, 32*(2), 344-354. doi: 10.5465/amr.2007.24348410
- Selye, H. (1956). *The stress of life*. New York, NY: McGraw-Hill.
- Selye, H. (1975). Confusion and controversy in the stress field. *Journal of Human Stress, 1*(2), 37-44. doi: 10.1080/0097840X.1975.9940406
- Selye, H. (1976). *The stress of life - revised edition*. New York, NY: McGraw-Hill.
- Selye, H. (1991). History and present status of the stress concept. In A. Monart & R. S. Lazarus (Eds.), *Stress and Coping: An anthology* (3rd ed., pp. 21-35). New York, NY: Columbia University Press.
- Shakespeare-Finch, J., Gow, K. M., & Smith, S. (2005). Personality, coping and posttraumatic growth in emergency ambulance personnel. *Traumatology, 11*(4), 325-334. doi: 10.1177/153476560501100410
- Shakespeare-Finch, J., Smith, S. G., Gow, K. M., Embelton, G., & Baird, L. (2003). The prevalence of post-traumatic growth in emergency ambulance personnel. *Traumatology, 9*(1), 58-71. doi: 10.1177/153476560300900104
- Shane, J. M. (2011). Daily work experiences and police performance. *Police Practice and Research, 1*-19. doi: <http://dx.doi.org/10.1080/15614263.2011.596717>

- Shanock, L. R., & Eisenberger, R. (2006). When supervisors feel supported: Relationships with subordinates' perceived supervisor support, perceived organizational support, and performance. *Journal of Applied Psychology, 91*(3), 689-695. doi: 10.1037/0021-9010.91.3.689
- Shaw, J. D., Gupta, N., & Delery, J. E. (2005). Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. *Academy of Management Journal, 48*(1), 50-68. doi: 10.5465/AMJ.2005.15993112
- Siegrist, J. (2002). Effort-reward imbalance at work and health. *Historical and current perspectives on stress and health (Research in Occupational Stress and Well-being), 2*. doi: 10.1016/S1479-3555(02)02007-3
- Siegrist, M., & Cvetkovich, G. (2000). Perception of hazards: The role of social trust and knowledge. *Risk Analysis, 20*(5), 713-720. doi: 10.1111/0272-4332.205064
- Siegrist, M., Gutscher, H., & Earle, T. C. (2005). Perception of risk: the influence of general trust, and general confidence. *Journal of Risk Research, 8*(2), 145-156. doi: 10.1080/1366987032000105315
- Silove, D. (2000). A conceptual framework for mass trauma: implications for adaptation, intervention and debriefing. In B. Raphael & J. P. Wilson (Eds.), *Psychological debriefing: Theory, practice and evidence* (pp. 337-350). Cambridge, England: Cambridge University Press.
- Simmons, B. L., & Nelson, D. L. (2001). Eustress at work: The relationship between hope and health in hospital nurses. *Health Care Management Review, 26*(4), 7-18. Retrieved from [http://ovidsp.tx.ovid.com.ezproxy.massey.ac.nz/sp-13.16.10b/ovidweb.cgi?&S=EANDFPCOFGDDMLPFNCPKHDMCOPEMAA00&Link+Set=S.sh.18%17c11%17csl\\_10](http://ovidsp.tx.ovid.com.ezproxy.massey.ac.nz/sp-13.16.10b/ovidweb.cgi?&S=EANDFPCOFGDDMLPFNCPKHDMCOPEMAA00&Link+Set=S.sh.18%17c11%17csl_10).
- Sinclair, H., Doyle, E. E. H., Johnston, D., & Paton, D. (2012a). Assessing emergency management training and exercises. *Disaster Prevention and Management, 21*(4), 507-521. doi: 10.1108/09653561211256198
- Sinclair, H., Doyle, E. E. H., Johnston, D., & Paton, D. (2012b). Decision making training in local government emergency management. *International Journal of Emergency Services, 1*(2), Retrieved from <http://www.emeraldinsight.com/journals.htm?issn=2047-0894&volume=2041&issue=2042&articleid=17047335&show=abstract>.
- Sitlington, H. (2012). Knowledge sharing: implications for downsizing and restructuring outcomes in Australian organisations. *Asia Pacific Journal of Human Resources, 50*(1), 110-127. doi: 10.1111/j.1744-7941.2011.00003.x
- Sjöberg, L. (2000). Factors in Risk Perception. *Risk Analysis, 20*(1), 11.
- Soldz, S., & Vaillant, G. E. (1999). The Big Five personality traits and the life course: A 45-Year longitudinal study. *Journal of Research in Personality, 33*(2), 208-232. doi: 10.1006/jrpe.1999.2243

- Spector, P. E. (1987). Method variance as an artifact in self-reported affect and perceptions at work: Myth or significant problem? *Journal of Applied Psychology*, 72(3), 438-443. doi: 10.1037/0021-9010.72.3.438
- Spector, P. E. (1989). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations*, 39(11), 1006-1016. doi: 10.1177/001872678603901104
- Spreitzer, G. M. (1995a). An empirical test of a comprehensive model of intrapersonal empowerment in the workplace. *American Journal of Community Psychology*, 23(5), 601-629. doi: 10.1007/BF02506984
- Spreitzer, G. M. (1995b). Psychological empowerment in the workplace: Dimensions, measurement and validation. *Academy of Management Journal*, 38(5), 1442-1465. Retrieved from <http://www.jstor.org.ezproxy.massey.ac.nz/stable/256865>
- Spreitzer, G. M. (1996). Social structural characteristics of psychological empowerment. *The Academy of Management Journal*, 39(2), 483-504. Retrieved from <http://www.jstor.org.ezproxy.massey.ac.nz/stable/256789>
- Statistics New Zealand. (2010). Population clock - Statistics New Zealand. Retrieved from [http://www.stats.govt.nz/tools\\_and\\_services/tools/population\\_clock.aspx](http://www.stats.govt.nz/tools_and_services/tools/population_clock.aspx)
- Statistics New Zealand. (2011a). QuickStats About Auckland Region. Retrieved from <http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/AboutAPlace/SnapShot.aspx?id=1000002&type=region&ParentID=1000002>
- Statistics New Zealand. (2011b). QuickStats About Wellington City. Retrieved from <http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/AboutAPlace/SnapShot.aspx?id=2000047&type=ta&ParentID=1000009>
- Strümpfer, D. J. W., Gouws, J. F., & Viviers, M. R. (1998). Antonovsky's sense of coherence scale related to negative and positive affectivity. *European Journal of Personality*, 12(6), 457-480. doi: 10.1002/(sici)1099-0984(199811/12)12:6<457::aid-per314>3.0.co;2-#
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson Education Inc.
- Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38(11), 1161-1173. doi: 10.1037/0003-066x.38.11.1161
- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering*. London, England: Sage Publications.
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9 (3), 455-472. Retrieved from [http://466.199.228.237/boundary/Childhood\\_trauma\\_and\\_PTSD/PosttraumaticGrowthInventory.pdf](http://466.199.228.237/boundary/Childhood_trauma_and_PTSD/PosttraumaticGrowthInventory.pdf).

- Tedeschi, R. G., & Calhoun, L. G. (2003). Routes to post-traumatic growth through cognitive processing. In D. Paton, J. M. Violanti & L. M. Smith (Eds.), *Promoting capabilities to manage posttraumatic stress* (pp. 12-26). Springfield, IL: Charles C. Thomas.
- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, *15*(1), 1-18. doi: 10.1207/s15327965pli1501\_01
- Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (1998). Posttraumatic growth: Conceptual issues. In R. G. Tedeschi, C. L. Park & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 1-22). Mahwah, NJ: Lawrence Erlbaum Associates.
- Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of Intrinsic task motivation. *Academy of Management Review*, *15*(4), 666-681. Retrieved from <http://www.jstor.org.ezproxy.massey.ac.nz/stable/258687>.
- Tinsley, H. E., & Tinsley, D. J. (1987). Uses of factor analysis in counseling psychology research. *Journal of Counseling Psychology*, *34*(4), 414-424. doi: 10.1037/0022-0167.34.4.414
- Trent Regional Health Authority, & Mersey Regional Health Authority. (1990). *Hillsborough, the lessons for health care: Recommendations of a joint symposium*. Sheffield, England.
- Trevor, C. O., & Nyberg, A. J. (2008). Keeping your headcount when all about you are losing theirs: Downsizing, voluntary turnover rates, and the moderating role of HR practices. *Academy of Management Journal*, *51*(2), 259-276. doi: 10.5465/amj.2008.31767250
- Trice, H. M., & Beyer, J. M. (1993). *The cultures of work organizations*. Englewood Cliffs, NJ: Prentice Hall.
- Tuckey, M. (2004). *Psychological debriefing in police organisations*. Payneham, South Australia: Australian Centre for Policing Research. Retrieved from <https://www.ncjrs.gov/App/abstractdb/AbstractDBDetails.aspx?id=206709>.
- United Nations. (2000). International Decade for Natural Disaster Reduction: Successor arrangements. Retrieved from <http://www.unisdr.org/files/resolutions/N0027175.pdf>
- Ursano, R. J., Fullerton, C. S., & McCaughey, B. G. (2001). Trauma and disaster. In R. J. Ursano, B. G. McCaughey & C. S. Fullerton (Eds.), *Individual and community responses to trauma and disaster: The structure of human chaos* (pp. 3-27). Cambridge, England: Cambridge University Press.
- Ursano, R. J., McCaughey, B. G., & Fullerton, C. S. (Eds.). (2001). *Individual and community responses to trauma and disaster: The structure of human chaos*. Cambridge, England: Cambridge University Press.

- Vestre, N. D. (1984). Irrational beliefs and self-reported depressed mood. *Journal of Abnormal Psychology, 93*(2), 239-241. doi: 10.1037/0021-843x.93.2.239
- Vingerhoets, A. J. J. M., & Marcelissen, F. H. G. (1988). Stress research: Its present status and issues for future developments. *Social Science & Medicine, 26*(3), 279-291. doi: 10.1016/0277-9536(88)90392-9
- Violanti, J. M. (2001). Post traumatic stress disorder intervention in law enforcement: Differing perspectives. *The Australasian Journal of Disaster and Studies 2001-1, 2*. doi: <http://www.massey.ac.nz/~trauma/issues/2001-2.htm>
- Violanti, J. M., Paton, D., & Dunning, C. (2000). *Post-traumatic stress intervention: Challenges, issues and perspectives*. Springfield, IL, : Charles C. Thomas.
- Wagner, R. K., & Sternberg, R. J. (1985). Practical intelligence in real-world pursuits: The role of tacit knowledge. *Journal of Personality and Social Psychology, 49*(2), 436-458. doi: 10.1037/0022-3514.49.2.436
- Wanous, J. P., & Lawler, E. E. (1972). Measurement and meaning of job satisfaction. *Journal of Applied Psychology, 56*(2), 95-105.
- Weick, K. E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage.
- Weick, K. E., & Sutcliffe, K. (2007). *Managing the unexpected: Resilient performances in an age of uncertainty* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Weinburg, A. (2000). Stress and psychiatric disorder in healthcare professionals and hospital staff. *The Lancet, 355*(9203), 533 - 537. doi: 10.1016/S0140-6736(99)07366-3
- Weiss, D. S., & Marmar, C. S. (1997). The impact of event scale-revised. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399-411). New York, NY: Guilford Press.
- West, M. A. (1990). The social psychology of innovation in groups. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies* (pp. 4-36). Chichester: Wiley.
- Williams, L. J., Cote, J. A., & Buckley, M. R. (1989). Lack of method variance in self-reported affect and perceptions at work: Reality or artifact? *Journal of Applied Psychology, 74*(3), 462-468. doi: 10.1037/0021-9010.74.3.462
- World Health Organisation. (1948). *Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference 19 June - 22 July 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948*. New York: World Health Organisation. Retrieved from <http://www.who.int/about/definition/en/print.html>
- Yousef, D. A. (2002). Job satisfaction as a mediator of the relationship between role stressors and organizational commitment: A study from an Arabic cultural

perspective. *Journal of Managerial Psychology*, 17(4), 250-266. doi: 10.1108/02683940210428074

Zangaro, G. A. (2001). Organizational commitment: A concept analysis. *Nursing Forum*, 36(2), 14.

Zellars, K. L., Justice, L., & Beck, T. E. (2011). Resilience: New paths for building and sustaining individual and organizational capacity. In P. L. Perrewé & D. C. Ganster (Eds.), *The role of individual differences in occupational stress and well being* (Vol. 9, pp. 1-37): Emerald Group Publishing Limited. doi: 10.1108/S1479-3555(2011)0000009005

# 10 APPENDICES

## Appendix A Study 1 Global Email

Dear All,

The following invitation is being forwarded to you from Debra Ellis, a PhD student who has been assisting us to prepare for the recent pandemic exercising. Debra is in the process of using ADHB experiences to carry out a piece of research that we believe will be of immense value to our future emergency management operations and to your participation in those operations.

We would really appreciate your inputs into this project - you will enjoy the experience and we can learn how to respond better, together.

**David Allen**

**Coordinator - Emergency Management Service**

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Dear ADHB staff member,

Everyone has a role to play in the response to major events that will, at some time in the future, occur in the Auckland region. This project aims to provide a means of enhancing your adaptive capacity (preparedness) as individuals and as teams within the ADHB organisation, to become more resilient when faced with major hazard events.

Hi, my name is Debra Ellis some of you already know me, as I have been working at the ADHB for a few months to assist with the preparations for the National Pandemic Influenza Exercise Cruickshank which took place in May. I'm a PhD candidate at the Joint Centre for Disaster Research, Massey University; as one of the researchers on this project I have a special interest in how people adapt to testing situations at work; having been involved in a few myself (RAF – air traffic control; Territorial Army – Nursing Officer in a Field Hospital and a local authority Emergency Manager, UK & NZ).

How do you work as an individual or as part of a team and how does this interact with health sector organisations? How do you react to your daily work and the testing times that it often throws your way? How do you adapt your ability to cope that makes you more resilient the next time you face a challenging event? These are questions which are being addressed in this operational research project entitled 'Health Sector Emergency Management Roles: Promoting adaptive capacity in incident response and Health Boards'.

See the attached information sheet for further details.

All ADHB staff with an email address will be receiving this email inviting them to participate in the project. Staff wishing to participate will be sent a sealed anonymous questionnaire (questions based upon work perceptions and experiences) via the internal mail structure complete with a return envelope, this will be a tick the box questionnaire.

So please, sit back, tick the boxes and tell us how you work best. To request a questionnaire just email [verbenaw@adhb.govt.nz](mailto:verbenaw@adhb.govt.nz) with the word "Research" in the subject line and a questionnaire will be sent to you.

This research has ethical approval from HDEC Northern X (NTX/07/29/EXP) and the ADHB (A+3712).

Thank you for your time and support, it is appreciated.

Debra

# Appendix B Study 1 Research Information Sheet

## RESEARCH INFORMATION SHEET

### Health Sector Emergency Management Roles: Promoting adaptive capacity in incident response and Health Boards

This empirical study, which will investigate the personal, team and organisational factors that contribute to the adaptive capacity or resilience of the health sector in New Zealand during the response and recovery phase of disasters. It will focus on the adaptive capacity of personnel, teams and Health Boards during response and recovery to hazardous events such as a flu pandemic and volcanic eruption.

The aim of this research is to integrate these into a comprehensive, systematic model of occupational experience and well-being for health sector personnel. To provide an evidence-based approach for the development of intervention strategies designed to increase the adaptive capacity of employees called upon to deal with the consequences of major crisis events.

In examining the positive influences on subjective and collective well-being from an individual and organisational perspective, particular emphasis will be placed on analysis of the relationship between organisational climate and employee well-being, and the interrelationships between these variables and personality, coping and daily experiences will be examined.

Although focussing on disaster response, the outcomes of this research will provide information that can inform the development of staff well-being programmes that can be used in routine contexts.

Anonymity will be maintained throughout all stages of the study.

All participation in the study is voluntary and completion of the questionnaire is deemed to be written consent.

If you require any further information please contact the researchers and/or ADHB contacts listed.

If after completing the questionnaire you feel that you need to discuss any issues please contact the researchers/ADHB contacts or access your department welfare support network.

<p><b>Researchers:</b> Professor Douglas Paton PhD CPsychol University of Tasmania Email: <a href="mailto:Douglas.Paton@utas.edu.au">Douglas.Paton@utas.edu.au</a></p> <p>Debra Ellis MSc Dip HE RGN Massey University Email: <a href="mailto:debra.ellis@xtra.co.nz">debra.ellis@xtra.co.nz</a> PhD Candidate Massey University ADHB Ext 26310 Cell: 027 344 1136</p>	<p><b>ADHB Contacts</b> David Allen Coordinator - Emergency Management Service Ext 27589</p> <p>Gayl Humphrey Research Manager Ext 4077</p>
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# Appendix C Study 1 Reminder

## E-NOVA weekly insert

### Emergency Response Capacity Research

If you have received a questionnaire regarding the above research, and haven't yet posted it back please don't forget to pop it in the internal mail as your participation really counts.

If you haven't yet received a questionnaire and research information sheet through the system, and would like to participate, just email [verbenaw@adhb.govt.nz](mailto:verbenaw@adhb.govt.nz) with the word "Research" in the subject line and a questionnaire will be sent to you. If you have any questions regarding this research please contact David Allen extn 27589.

How do you work as an individual or as part of a team and how does this interact with health sector organisations? How do you react to your daily work and the testing times that it often throws your way? These are questions which are being addressed in an operational research project entitled 'Health Sector Emergency Management Roles: Promoting adaptive capacity in incident response and Health Boards'. The results of the research will be of immense value to our future emergency management operations and to your participation in those operations.

All ADHB staff are encouraged to participate. On receipt of your interest you will be sent a sealed anonymous questionnaire (questions based upon work perceptions and experiences) via the internal mail structure complete with a return envelope, this will be a tick the box questionnaire.

So please, sit back, tick the boxes and tell us how you work best.

This research has ethical approval from HDEC Northern X (NTX/07/29/EXP) and the ADHB (A+3712).

Thank you for your time and support, it is appreciated.

## Appendix D Study 1 Covering Letter



### Health Sector Emergency Management Roles: Promoting adaptive capacity in incident response and Health Boards

Hello

Thank you for volunteering to take part in this research.

1. Please take time to read through the Research Information Sheet (RIS), if you have any questions about the research please contact researcher Debra Ellis (contact details on RIS).
2. Please complete the enclosed questionnaire - this should take about 30 minutes (do not put your name on the questionnaire as they are designed to be anonymous) and return in the pre-addressed **large envelope**.

N.B. the methodology is designed to test the validity of the questions being asked. It may appear that the questions are repetitive at times but this is part of the study design, so please bear this in mind.

3. If you would like to participate in a Focus Group please put your contact details on the separate sheet and return in the pre-addressed **small envelope**, separately to the questionnaire. You will then be contacted with further information.

Your interest in the research is greatly appreciated, thank you for your time.

## Focus Groups

If you would like to participate in a focus group in relation to this research please complete the details below, place in the **small envelope attached**, seal and return via the internal mail system and we will contact you.

It is anticipated the focus groups will consist of 6 - 12 participants who are invited to discuss key themes of the research. These will last for 40 – 60 minutes.

If you would like to help provide data which could have a positive input towards increasing the provision of a comprehensive, systematic model of occupational experience and well-being for health sector personnel. The model will provide an evidence-based approach for the development of intervention strategies designed to increase the adaptive capacity/resilience of employees called upon to deal with the consequences of major crisis events and disasters. It will also provide models of stress management that can be used to assist the development of resilience for routine work.

Although we have to know who you are to contact you, please be assured that your identity will be anonymous in the data collection.

**Name:**

**Contact details: email/phone:**

**Job title:**

*n.b.* In addition to the survey, a Focus Group and 21 semi-structured interviews were conducted these are not reported as they are outside the scope of the thesis.

## Appendix E Study 1 Questionnaire Survey



### Health Sector Emergency Management Roles: Promoting adaptive capacity in incident response and Health Boards

#### Questionnaire

##### Researchers:

Debra Ellis MSc DipN RGN  
Joint Centre for Disaster Research, Massey University  
PhD Candidate Massey University  
Email: [debra.ellis@xtra.co.nz](mailto:debra.ellis@xtra.co.nz)  
ADHB extn: 26310; Cell: 027 344 1136

Professor Douglas Paton PhD CPsychol  
University of Tasmania  
Email: [Douglas.Paton@utas.edu.au](mailto:Douglas.Paton@utas.edu.au)

##### Supervisor:

Associate Professor David Johnston PhD  
Director  
Joint Centre for Disaster Research  
GNS/Massey University  
Email: [david.johnston@gns.cri.nz](mailto:david.johnston@gns.cri.nz)

##### ADHB CONTACTS FOR THIS RESEARCH

David Allen  
Coordinator - Emergency Management Service  
Extn: 27589

Gayl Humphrey  
Research Manager  
Extn: 4077

## RESEARCH INFORMATION SHEET

This empirical study, which will investigate the personal, team and organisational factors that contribute to the adaptive capacity or resilience of the health sector in New Zealand during the response and recovery phase of disasters. It will focus on the adaptive capacity of personnel, teams and Health Boards during response and recovery to hazardous events such as a flu pandemic and volcanic eruption.

The aim of this research is to integrate these into a comprehensive, systematic model of occupational experience and well-being for hospital personnel. To provide an evidence-based approach for the development of intervention strategies designed to increase the adaptive capacity of employees called upon to deal with the consequences of major crisis events.

In examining the positive influences on subjective and collective well-being from an individual and organisational perspective, particular emphasis will be placed on analysis of the relationship between organisational climate and employee well-being, and the interrelationships between these variables and personality, coping and daily experiences will be examined.

Although focussing on disaster response, the outcomes of this research will provide information that can inform the development of staff well-being programmes that can be used in routine contexts.

The study will consist of a questionnaire (this document) and focus group sessions to gain a more detailed description of the topics covered. If you would like to participate in a focus group session please complete the enclosed form and place in the small envelope and return via the internal mail.

Anonymity will be maintained throughout all stages of the study.

All participation in the study is voluntary and completion of this questionnaire is deemed to be written consent.

If you require any further information please contact the researchers and/or ADHB contacts listed.

If after completing this questionnaire you feel that you need to discuss any issues please contact the researchers/ADHB contacts or access your department welfare support network.

**Please indicate by ticking the appropriate boxes:**

**1. To which area you identify your role within ADHB?**

Administrative

Clinical - medical

Clinical - nursing

Management

Profession allied to medicine

Hotel services

**2. Are you?**

Male

Female

**3. To which age range do you belong?**

18 – 29

30 – 49

50+

PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I am not a worrier					
I keep my belongings clean and neat					
I often feel inferior to others					
I'm pretty good about pacing myself so as to get things done on time					
When I'm under a great deal of stress sometimes I feel like I'm going to pieces					
I'm not a very methodical person					
I rarely feel lonely or blue					
I try to perform all the tasks assigned to me conscientiously					
I often feel tense and jittery					
I have a clear set of goals and work towards them in an orderly fashion					
Sometimes I feel completely worthless					
I waste a lot of time before settling down to work					
I rarely feel anxious or fearful					
I work hard to accomplish my goals					
I often get angry at the way people treat me					
When I make a commitment I can always be counted on to follow through					
Too often, when things go wrong I get discouraged and feel like giving up					
Sometimes I'm not as dependable or reliable as I should be					
I am seldom sad or depressed					
I am a productive person who always gets the job done					
I often feel helpless and want someone else to solve my problems					
I never seem to be able to get organised					
At times I have been so ashamed I just want to hide					
I strive for excellence in everything I do					

Please indicate the degree to which each experience has hassled or bothered you as a result of your work during the past month.

Please indicate 0 if a listed experience did not occur, or if the experience occurred, but was not a hassle or bother.

Please answer according to the scale provided, and **circle one number only**

Did not occur/ Definitely does not apply to me	Has seldom applied to me	Does apply to me somewhat	Has applied to me generally	Strongly applies to me	
0	1	2	3	4	
1. Working with people who lack professionalism	0	1	2	3	4
2. Unnecessary forms	0	1	2	3	4
3. Studying (for work purposes)	0	1	2	3	4
4. Poor media coverage	0	1	2	3	4
5. Not being able to help someone who requires assistance	0	1	2	3	4
6. Irregular meal times	0	1	2	3	4
7. Having no say in decisions that affect me	0	1	2	3	4
8. Exams (for work purposes)	0	1	2	3	4
9. Dealing with road victims	0	1	2	3	4
10. Complaints by the public	0	1	2	3	4
11. Being responsible for others	0	1	2	3	4
12. Working with people who do not listen	0	1	2	3	4
13. Unfair assessment system	0	1	2	3	4
14. Hospital instability / changing systems	0	1	2	3	4
15. Poor facilities	0	1	2	3	4
16. Missing meals	0	1	2	3	4
17. Interference in my decisions by others	0	1	2	3	4
18. Dealing with situations which have the potential to escalate	0	1	2	3	4
19. Equipment failure	0	1	2	3	4
20. Dealing with people who abuse the hospital staff	0	1	2	3	4
21. Bottling up my feelings	0	1	2	3	4
22. Concerns about the status of health professionals	0	1	2	3	4
23. Delivering bad news	0	1	2	3	4
24. Excessive paperwork	0	1	2	3	4
25. Having to make an unwelcome decision	0	1	2	3	4
26. Lack of clarity in operational guidelines	0	1	2	3	4
27. Not being able to get vital information for patients	0	1	2	3	4
28. Problems with co-workers	0	1	2	3	4
29. Taking patient information / history	0	1	2	3	4
30. Unreasonable expectations from others outside the department	0	1	2	3	4
31. Working with people who are not suited for health sector work	0	1	2	3	4
32. Too much red tape to get something done	0	1	2	3	4
33. Responsibility without authority to make decisions	0	1	2	3	4
34. Not being able to speak my mind	0	1	2	3	4
35. Lack of equipment	0	1	2	3	4
36. Working in a stressful situation	0	1	2	3	4
37. Doing work I don't like	0	1	2	3	4
38. Dealing with other people's problems	0	1	2	3	4
39. Being told what to do by others	0	1	2	3	4

Did not occur/ Definitely does not apply to me	Has seldom applied to me	Does apply to me somewhat	Has applied to me generally	Strongly applies to me	
0	1	2	3	4	
40. Dealing with abused children	0	1	2	3	4
41. Doing things I don't agree with	0	1	2	3	4
42. Feelings of just being a number	0	1	2	3	4
43. Inability to change the system	0	1	2	3	4
44. Low morale	0	1	2	3	4
45. Quick changeovers	0	1	2	3	4
46. Wasting time in other departments	0	1	2	3	4
47. Untidy work areas	0	1	2	3	4
48. Working with people who are incompetent	0	1	2	3	4
49. Trying to show interest in people	0	1	2	3	4
50. Rushed eating	0	1	2	3	4
51. Personality clashes at work	0	1	2	3	4
52. Heavy workload	0	1	2	3	4
53. Inconsistent application of rules and policy	0	1	2	3	4
54. Feelings of having to conform to pressure from peers	0	1	2	3	4
55. Dirty rooms	0	1	2	3	4
56. Not being able to speak my mind (e.g., child abuse)	0	1	2	3	4
57. Meeting deadlines	0	1	2	3	4
58. Other team members not pulling their weight	0	1	2	3	4
59. Jobs "for our department" again	0	1	2	3	4
60. Seeing other people in pain	0	1	2	3	4
61. Insufficient time to complete a job	0	1	2	3	4
62. Giving bad news	0	1	2	3	4
63. Feeling generally inadequate	0	1	2	3	4
64. Difficulty staying objective (not expressing my emotions)	0	1	2	3	4
65. Dealing with domestic problems of patients	0	1	2	3	4
66. Working with people who are inconsiderate	0	1	2	3	4
67. Too much supervision	0	1	2	3	4
68. Shift work interfering with other activities	0	1	2	3	4
69. Too much work to do	0	1	2	3	4
70. Disagreement about how to do something	0	1	2	3	4
71. Setting of inconvenient clinic dates	0	1	2	3	4
72. Dealing with assault victims	0	1	2	3	4
73. Departmental handling of complaints	0	1	2	3	4
74. Not receiving recognition for a job well done	0	1	2	3	4
75. Too much expected of me	0	1	2	3	4
76. Outside interference with health work	0	1	2	3	4
77. Lack of powers	0	1	2	3	4
78. Lack of forward planning	0	1	2	3	4
79. Poor administration	0	1	2	3	4
80. Feelings of not being able to do anything	0	1	2	3	4
81. Sitting around then suddenly active	0	1	2	3	4
82. Non-attendees at clinics – time wasting	0	1	2	3	4
83. Lack of honesty about my work by superiors	0	1	2	3	4
84. Unfair promotional policy	0	1	2	3	4
85. Poor standards of care	0	1	2	3	4
86. Inappropriate rules and regulations	0	1	2	3	4

Indicate for each of the statements below the degree to which this change occurred in your life as a result of a crisis situation you have been involved with at work, using the following scale and **circle one number only**.

- 0 - I did not experience this change as a result of my crisis
- 1 - I experienced this change to a very small degree as a result of my crisis
- 2 - I experienced this change to a small degree as a result of my crisis
- 3 - I experienced this change to a moderate degree as a result of my crisis
- 4 - I experienced this change to a great degree as a result of my crisis
- 5 - I experienced this change to a very great degree as a result of my crisis

1. I changed my priorities about what is important in life	0	1	2	3	4	5
2. I have a greater appreciation for the value of my own life	0	1	2	3	4	5
3. I have developed new interests	0	1	2	3	4	5
4. I have a greater feeling of self-reliance	0	1	2	3	4	5
5. I have a better understanding of spiritual matters	0	1	2	3	4	5
6. I more clearly see that I can count on people in times of trouble	0	1	2	3	4	5
7. I established a new path for my life	0	1	2	3	4	5
8. I have a greater sense of closeness with others	0	1	2	3	4	5
9. I am more willing to express my emotions	0	1	2	3	4	5
10. I know better that I can handle difficulties	0	1	2	3	4	5
11. I am able to better do things with my life	0	1	2	3	4	5
12. I am better able to accept the way things work out	0	1	2	3	4	5
13. I can better appreciate each day	0	1	2	3	4	5
14. New opportunities are available which wouldn't have been otherwise	0	1	2	3	4	5
15. I have more compassion for others	0	1	2	3	4	5
16. I put more effort into my relationships	0	1	2	3	4	5
17. I am more likely to try to change things which need changing	0	1	2	3	4	5
18. I have a stronger religious faith	0	1	2	3	4	5
19. I discovered that I'm stronger than I thought I was	0	1	2	3	4	5
20. I learned a great deal about how wonderful people are	0	1	2	3	4	5
21. I better accept needing others	0	1	2	3	4	5

The following is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you during the past 7 days with respect to one of the events you previously described. How much were you bothered by these difficulties?

**Put a cross in the relevant box**

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Any reminder brought back feelings about it					
2. I had trouble staying asleep					
3. Other things kept making me think about it					
4. I felt irritable and angry					
5. I avoided letting myself get upset when I thought about it or was reminded of it					
6. I thought about it when I didn't mean to					
7. I felt as if it hadn't happened or wasn't real					
8. I stayed away from reminders about it					
9. Pictures about it popped into my mind					
10. I was jumpy and easily startled					
11. I tried not to think about it					
12. I was aware that I still had a lot of feelings about it, but I didn't deal with them					
13. My feelings about it were kind of numb					
14. I found myself acting or feeling like I was back at that time					
15. I had trouble falling asleep					
16. I had waves of strong feelings about it					
17. I tried to remove it from my memory					
18. I had trouble concentrating					
19. Reminders of it caused me to have physical reactions such as sweating, trouble breathing, nausea, or a pounding heart					
20. I had dreams about it					
21. I felt watchful and on guard					
22. I tried not to talk about it					

There are a number of ways people attempt to deal with stress. This part of the questionnaire asks you to indicate what you generally do and feel after being involved in a stressful incident. Obviously the nature of the incident will bring about somewhat different responses, but think about what you usually do when faced with difficult and stressful situations. Please treat each item separately from every other item. There are no right or wrong answers, and your response should indicate what you actually do, rather than what most people do.

**Put a cross in the relevant box**

	I don't do this at all	I do this a little	I do this a medium amount	I do this a lot	I do this all the time
1. I ask people who have had a similar experience what they did					
2. I act as though it hasn't even happened					
3. I reduce the amount of effort I'm putting in					
4. I talk to someone who could do something about the problem					
5. I learn to live with it					
6. I put aside other activities in order to concentrate on this one					
7. I seek God's help					
8. I try to see it in a different light, to make it seem more positive					
9. I restrain myself from doing anything too quickly					
10. I turn to work or other substitute activities to take my mind off things					
11. I get sympathy and understanding from someone					
12. I accept that it has happened and can't be changed					
13. I focus on dealing with this problem and if necessary let other things slide a little					
14. I get upset and let my emotions out					
15. I do what has to be done, one step at a time					
16. I put my trust in God					
17. I make sure not to make matters worse by acting too soon					
18. I try hard to prevent other things from interfering with my efforts to deal with it					
19. I daydream about things					
20. I force myself to wait for the right time to do something					
21. I concentrate my efforts on doing something					
22. I try to get emotional support from my friends and relatives					
23. I look for some good in what is happening					
24. I try to come up with a strategy about what to do					
25. I just give up					
26. I drink alcohol or take drugs in order to think about it less					

Put a cross in the relevant box

	I don't do this at all	I do this a little	I do this a medium amount	I do this a lot	I do this all the time
27. I take additional action to try to get rid of the problem					
28. I keep myself from getting distracted by other thoughts or activities					
29. I try to grow as a person as a result of the experience					
30. I accept the reality of the fact that it happened					
31. I try to find comfort in my religion					
32. I let my feelings out					
33. I talk to someone to find out more about the situation					
34. I learn something from the experience					
35. I say to myself 'this isn't real'					
36. I pretend that it hasn't really happened					
37. I hold off doing anything about it until the situation permits					
38. I think hard about what steps to take					
39. I admit to myself that I can't deal with it and quit trying					
40. I feel a lot of emotional distress and find myself expressing those feelings a lot					
41. I pray more than usual					
42. I go to the movies or watch T.V. to think about it less					
43. I get advice from someone about what to do					
44. I get used to the idea that it happened					
45. I sleep more than usual					
46. I make a plan of action					
47. I discuss my feelings with someone					
48. I get upset and I am really aware of it					
49. I refuse to believe that it has happened					
50. I think about how I might best handle the problem					
51. I take direct action to get around the problem					
52. I talk to someone about how I feel					

Please answer all four sections, and try to answer each question.  
 The questions in the first three sections are work-related, while the fourth section contains questions relating to some demographic variables. Remember, there are no right or wrong answers to any of these questions. The questions are devised to gain an insight into your personal views only; you do not need to be an “expert” to complete this questionnaire.

**Section 1** **Circle either Yes (Y) or No (N)**  
**At Auckland District Health Board...**

1	Management usually give full credit to ideas contributed by employees	Y	N
2	The atmosphere is somewhat impersonal	Y	N
3	Management tend to look down on their employees	Y	N
4	Employees rarely socialize with co-workers after work	Y	N
5	People take a personal interest in each other	Y	N
6	Management usually compliment an employee who does something well	Y	N
7	People go out of their way to help a new employee feel comfortable	Y	N
8	Management tend to discourage criticisms from employees	Y	N

**Section 2**

Please respond to questions 9-26 using the scale below to describe yourselves as accurately as possible **(circle one)**

Disagree Strongly	Disagree Moderately	Disagree Slightly	Neutral	Agree Slightly	Agree Moderately	Agree Strongly
1	2	3	4	5	6	7

9	I try to perform all the tasks assigned to me conscientiously	1	2	3	4	5	6	7
10	Sometimes I'm not as dependable or reliable as I should be	1	2	3	4	5	6	7
11	I keep myself informed and usually make intelligent decisions	1	2	3	4	5	6	7
12	I am not a very methodical person	1	2	3	4	5	6	7
13	I have a clear set of goals and work toward them in an orderly fashion	1	2	3	4	5	6	7
14	I waste a lot of time before settling down to work	1	2	3	4	5	6	7
15	I am a productive person who always gets the job done	1	2	3	4	5	6	7
16	I often come into situations without being fully prepared	1	2	3	4	5	6	7
17	I never seem to be able to get organized	1	2	3	4	5	6	7
18	When I make a commitment, I can always be counted on to follow through	1	2	3	4	5	6	7

Disagree Strongly	Disagree Moderately	Disagree Slightly	Neutral	Agree Slightly	Agree Moderately	Agree Strongly					
1	2	3	4	5	6	7					
19	I work hard to accomplish my goals				1	2	3	4	5	6	7
20	I strive to achieve all I can				1	2	3	4	5	6	7
21	I am efficient and effective at my work				1	2	3	4	5	6	7
22	I would rather keep my options open than plan everything in advance				1	2	3	4	5	6	7
23	I have a lot of self-discipline				1	2	3	4	5	6	7
24	I think things through before coming to a decision				1	2	3	4	5	6	7
25	I always consider the consequences before taking action				1	2	3	4	5	6	7
26	I rarely make hasty decisions				1	2	3	4	5	6	7

### Section 3

Please respond to questions 27-67 using the scale below to reflect your views about work at Auckland District Health Board (**circle one**)

Disagree Strongly	Disagree Moderately	Disagree Slightly	Neutral	Agree Slightly	Agree Moderately	Agree Strongly					
1	2	3	4	5	6	7					
27	Management is sincere in its attempts to meet the workers point of view				1	2	3	4	5	6	7
28	I can trust the people I work with to lend me a hand if I needed it				1	2	3	4	5	6	7
29	Management can be trusted to make sensible decisions for the organisation's future				1	2	3	4	5	6	7
30	I have full confidence in the skills of my workmates				1	2	3	4	5	6	7
31	Our management would be quite prepared to gain advantage by deceiving the workers				1	2	3	4	5	6	7
32	I can rely on other workers not to make my job more difficult by careless work				1	2	3	4	5	6	7
33	If I got into difficulties at work I know my workmates would try and help me out				1	2	3	4	5	6	7
34	I feel quite confident that ADHB will always try to treat me fairly				1	2	3	4	5	6	7
35	Most of my fellow workers would get on with their work even if supervisors were not around				1	2	3	4	5	6	7
36	ADHB has a poor future unless it can attract better managers				1	2	3	4	5	6	7
37	Most of my workmates can be relied upon to do as they say they will do				1	2	3	4	5	6	7
38	Management at work seems to do an efficient job				1	2	3	4	5	6	7
39	I have access to the strategic information I need to do my job well				1	2	3	4	5	6	7
40	I can obtain the resources to support new ideas and improvement in my unit				1	2	3	4	5	6	7
41	I understand the strategies and goals of the organization				1	2	3	4	5	6	7

Disagree Strongly	Disagree Moderately	Disagree Slightly	Neutral	Agree Slightly	Agree Moderately	Agree Strongly					
1	2	3	4	5	6	7					
42	I have access to the resources I need to do my job well				1	2	3	4	5	6	7
43	I understand top management's vision of the organization				1	2	3	4	5	6	7
44	When I need additional resources to do my job, I can usually get them				1	2	3	4	5	6	7
45	The work I do is meaningful				1	2	3	4	5	6	7
46	I have a great deal of control over what happens in my department				1	2	3	4	5	6	7
47	My job activities are personally meaningful to me				1	2	3	4	5	6	7
48	I am confident about my ability to do my job				1	2	3	4	5	6	7
49	I can decide on my own how to go about doing my work				1	2	3	4	5	6	7
50	I have mastered the skills necessary for my job				1	2	3	4	5	6	7
51	I have significant autonomy in determining how I do my job				1	2	3	4	5	6	7
52	I am self-assured about my capability to perform my work				1	2	3	4	5	6	7
53	I have considerable opportunity for independence and freedom in how I do my job				1	2	3	4	5	6	7
54	My impact on what happens in my department is large				1	2	3	4	5	6	7
55	The work I do is very important to me				1	2	3	4	5	6	7
56	I have significant influence over what happens in my department				1	2	3	4	5	6	7
57	I would be very happy to spend the rest of my career in this organisation				1	2	3	4	5	6	7
58	If I had to decide all over again whether to take the job I have, I would take it without hesitation				1	2	3	4	5	6	7
59	I really feel as if this organisation's problems are my own				1	2	3	4	5	6	7
60	I enjoy discussing my organisation with people outside it				1	2	3	4	5	6	7
61	I do not feel a strong sense of belonging to my organisation				1	2	3	4	5	6	7
62	If a good friend was interested in doing the same kind of work I do, I would strongly recommend taking the same job I have				1	2	3	4	5	6	7
63	I do not feel like "part of the family" at my organisation				1	2	3	4	5	6	7
64	This organisation has a great deal of personal meaning for me				1	2	3	4	5	6	7
65	Generally, I am satisfied with my job				1	2	3	4	5	6	7
66	I do not feel emotionally attached to this organisation				1	2	3	4	5	6	7
67	I think I could easily become as attached to another organisation as I am to this one				1	2	3	4	5	6	7

## Appendix F Study 2 Global Email

Dear All,

The following invitation is being forwarded to you from Debra Ellis, a PhD student who has been assisting us with recent exercises and preparing the Auckland DHB Health Emergency Plan. Debra is in the process of using our experiences to carry out a piece of research that we believe will be of immense value to future emergency management.

We would appreciate your input into this project on how we can learn to respond better, together.

To request a questionnaire just email [verbenaw@adhb.govt.nz](mailto:verbenaw@adhb.govt.nz) with the word "Research" in the subject line and a questionnaire will be sent to you.

**Justin Rawiri**  
**Emergency Management Coordinator**

Dear Auckland DHB staff member,

Hi, my name is Debra Ellis I have been working with the Emergency Management Service Team for the past year to assist with the Pandemic Influenza - Exercise Cruickshank and more recently Exercise Ruaumoko (Auckland volcanic field unrest). I'm a PhD candidate at the Joint Centre for Disaster Research, Massey University and I have a special interest in how people adapt to testing situations at work.

Everyone has a role to play in the response to major events that will, at some time in the future, occur in the Auckland region. This project aims to provide a means of enhancing your adaptive capacity (preparedness) as individuals and as teams within the Auckland DHB organisation, to become more resilient when faced with major hazard events. This operational research project entitled is 'Health Sector Emergency Management: Promoting adaptive capacity in emergency response within Health Boards'.

All ADHB staff with an email address will be receiving this email inviting them to participate. Those who reply will be sent a sealed anonymous questionnaire (questions based upon work perceptions and experiences) via the internal mail structure complete with a return envelope, this will be a tick the box questionnaire which can be completed over a coffee. So please, sit back, tick the boxes and tell me how you work best.

**To request a questionnaire just email [verbenaw@adhb.govt.nz](mailto:verbenaw@adhb.govt.nz) with the word "Research" in the subject line and a questionnaire will be sent to you.**

Thank you for your time and support, it is appreciated.



Debra Ellis

This research has ethical approval from HDEC Northern X (NTX/07/29/EXP) and Auckland DHB (A+3712).

## Appendix G Study 2 Research Information Sheet

### 'Health Sector Emergency Management: Promoting adaptive capacity in emergency response within Health Boards'

#### RESEARCH INFORMATION SHEET

This empirical study, which will investigate the personal, team and organisational factors that contribute to the adaptive capacity of the health sector in New Zealand during the response and recovery phase of disasters. It will focus on the adaptive capacity of personnel, teams and Health Boards during response and recovery to hazardous events such as a flu pandemic and volcanic eruption.

The aim of this research is to integrate these into a comprehensive, systematic model of occupational experience and well-being for hospital personnel. To provide an evidence-based approach for the development of intervention strategies to increase the adaptive capacity of employees called upon to deal with the consequences of major crisis events

Although focussing on disaster response, the outcomes of this research will provide information that can inform the development of staff well-being programmes that can be used in routine contexts.

The study will consist of a questionnaire and focus group sessions to gain a more detailed description of the topics covered

Anonymity will maintained throughout all stages of the study.

All participation in the study is voluntary and completion of the questionnaire is deemed to be written consent and Focus Group participants will be required to sign a consent form.

If you require any further information please contact the researcher and/or Auckland DHB contacts listed.

If after participating in the research you feel that you need to discuss any issues please contact the researchers/ADHB contacts or access your department welfare support network.

Researchers	Auckland DHB Contacts
Debra Ellis MSc DipN RN Massey University PhD Candidate Email: <a href="mailto:debrae@adhb.govt.nz">debrae@adhb.govt.nz</a> Ext 26310	Justin Rawiri Coordinator - Emergency Management Service Email: <a href="mailto:jrawiri@adhb.govt.nz">jrawiri@adhb.govt.nz</a> Ext 27589
Professor Douglas Paton PhD CPsychol University of Tasmania Email: <a href="mailto:Douglas.Paton@utas.edu.au">Douglas.Paton@utas.edu.au</a>	Samantha Jones Manager – Research Office Email: <a href="mailto:samanthaj@adhb.govt.nz">samanthaj@adhb.govt.nz</a> Ext 23854

***n.b.*** In addition to the survey, a Focus Group and 21 semi-structured interviews were conducted these are not reported as they are outside the scope of the thesis.

## **Appendix H Study 2 Email Reminder**

### **Emergency Management Research**

This operational research project entitled is 'Health Sector Emergency Management: Promoting adaptive capacity in emergency response within Health Boards'.

If you would like to participate in this research or haven't yet received a questionnaire email [verbenaw@adhb.govt.nz](mailto:verbenaw@adhb.govt.nz) with the word "Research" in the subject line and a questionnaire will be sent to you. If you have any questions regarding this research please contact Debra Ellis extn 26310 [debrae@adhb.govt.nz](mailto:debrae@adhb.govt.nz)

If you have received a questionnaire regarding the above research, and haven't yet posted it back please don't forget to pop it in the internal mail as your participation really counts.

## Appendix I Study 2 Questionnaire Survey



# Health Sector Emergency Management: Promoting Adaptive Capacity in Emergency Response within Health Boards

This research has ethical approval from HDEC Northern X (NTX/07/29/EXP) and ADHB (A+3712).



Please read this information before answering the questions.

Thank you for responding to the invitation to take part in this research and agreeing to participate. My name is Debra Ellis and I am a PhD student at the Albany Campus of Massey University and I am working with Professor Douglas Paton from the University of Tasmania. I am interested in adaptive capacity (or resilience) and in how this can help people working in the health sector to cope with major hazard events.

The study is supported by Auckland DHB and all staff are being invited to take part. This is part of a series of studies looking at factors that can help to build resilience in individuals and organisations during hazardous events such as a flu pandemic or volcanic eruption. Participation is voluntary. If there are any questions that you do not wish to answer please leave those answers blank. Completion and return of the questionnaire implies that you consent to take part in the study.

Your answers will be completely anonymous and confidential.

The study will consist of a questionnaire (this document) and focus group sessions to gain a more detailed description of the topics covered. If you would like to participate in a focus group session please complete the enclosed form and place in the small envelope and return via the internal mail.

A Summary of findings will be available from the researchers via email, published in peer-reviewed journals and as part of my PhD thesis. If you have any questions or would like to know more about the research don't hesitate to contact me. If you would like to take part please continue to the next page. It will take about 30 minutes to complete. An important point - do not spend more than a few seconds on each question.

Do not write your name on this questionnaire as the information you provide is anonymous.

Thank you very much for your help and support.

Yours sincerely,

A handwritten signature in blue ink that reads 'Debra E. Ellis'.

Debra Ellis MSc DipN RN  
Phone: 027 344 1136  
Email: [debrae@adhb.govt.nz](mailto:debrae@adhb.govt.nz)

This research has ethical approval from HDEC Northern X (NTX/07/29/EXP) and ADHB (A+3712). If you have any concerns about the conduct of this research, please contact Samantha Jones, ADHB Manager – Research Office, extn 23854, email: [SamanthaJ@adhb.govt.nz](mailto:SamanthaJ@adhb.govt.nz)

**Section 1** This section asks about your workplace. There are no right or wrong answers so please give the answer that is true for you. Do not spend more than a few seconds on each question

Please answer according to the following scales:

		Not at all	Seldom	Occasionally	Generally	Frequently	Almost Always	Completely
1	How clear are you about what your team's objectives are?	1	2	3	4	5	6	7
2	To what extent do you think they are useful and appropriate objectives?	1	2	3	4	5	6	7
3	How far are you in agreement with these objectives?	1	2	3	4	5	6	7
4	To what extent do you think other team members agree with these objectives?	1	2	3	4	5	6	7
5	To what extent do you think your team's objectives are understood by other members of the team?	1	2	3	4	5	6	7
6	To what extent do you think the team's objectives can actually be achieved?	1	2	3	4	5	6	7
7	How worthwhile do you think these objectives are to you?	1	2	3	4	5	6	7
8	How worthwhile do you think these objectives are to the organisation (Auckland DHB)?	1	2	3	4	5	6	7
9	How worthwhile are these objectives to the wider society?	1	2	3	4	5	6	7
10	To what extent do you think these objectives are realistic and can be attained?	1	2	3	4	5	6	7
11	To what extent do you think members of your team are committed to these objectives?	1	2	3	4	5	6	7

Please answer according to the following scales:

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	We share information generally in the team rather than keeping it to ourselves.	1	2	3	4	5
2	We have a 'we are in it together' attitude.	1	2	3	4	5
3	We all influence each other.	1	2	3	4	5
4	People keep each other informed about work related issues in the team.	1	2	3	4	5
5	People feel understood and accepted by each other.	1	2	3	4	5
6	Everyone's view is listened to even if it is in a minority.	1	2	3	4	5
7	There are real attempts to share information throughout the team.	1	2	3	4	5
8	There is a lot of give and take.	1	2	3	4	5

Please answer according to the following scales:

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	The team is always moving toward the development of new answers.	1	2	3	4	5
2	Assistance in developing new ideas is readily available.	1	2	3	4	5
3	The team is open and responsive to change.	1	2	3	4	5
4	People in this team are always searching for fresh, new ways of looking at problems.	1	2	3	4	5
5	In this team we take the time needed to develop new ideas.	1	2	3	4	5
6	People in the team co-operate in order to help develop and apply new ideas.	1	2	3	4	5
7	Members of the team provide and share resources to help in the application of new ideas.	1	2	3	4	5
8	Team members provide practical support for new ideas and their application.	1	2	3	4	5
9	Team colleagues provide useful ideas and practical help to enable you to do the job to the best of your ability.	1	2	3	4	5
10	You and your colleagues monitor each other so as to maintain a higher standard of work.	1	2	3	4	5
11	Team members are prepared to question the basis of what the team is doing.	1	2	3	4	5
12	The team critically appraises potential weaknesses in what it is doing in order to achieve the best possible outcome.	1	2	3	4	5
13	Members of the team build on each other's ideas in order to achieve the best possible outcome.	1	2	3	4	5
14	There is real concern among team members that the team should achieve the highest standards of performance.	1	2	3	4	5
15	The team has clear criteria which members try to meet in order to achieve excellence as a team.	1	2	3	4	5
16	We keep in touch with each other as a team.	1	2	3	4	5
17	We keep in regular contact with each other.	1	2	3	4	5
18	Members of the team meet frequently to talk both formally and informally.	1	2	3	4	5
19	We interact frequently.	1	2	3	4	5

Please respond with the answer that is true for you.  
Do not spend more than a few seconds on each question

		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
1	The work I do is very important to me.	1	2	3	4	5	6	7
2	I am confident about my ability to do my job.	1	2	3	4	5	6	7
3	I have significant autonomy in determining how I do my job	1	2	3	4	5	6	7
4	My impact on what happens in my department is large.	1	2	3	4	5	6	7
5	My job activities are personally meaningful to me.	1	2	3	4	5	6	7
6	I am self-assured about my capabilities to perform my work activities.	1	2	3	4	5	6	7
7	I can decide on my own how to go about doing my work.	1	2	3	4	5	6	7
8	I have a great deal of control over what happens in my department/area.	1	2	3	4	5	6	7
9	The work I do is meaningful to me.	1	2	3	4	5	6	7
10	I have mastered the skills necessary for my job.	1	2	3	4	5	6	7
11	I have considerable opportunity for independence and freedom in how I do my job.	1	2	3	4	5	6	7
12	I have significant influence over what happens in my department/area.	1	2	3	4	5	6	7
13	I have access to the strategic information I need to do my job well.	1	2	3	4	5	6	7
14	I understand top management's vision of the organisation.	1	2	3	4	5	6	7
15	I understand the strategies and goals of the organisation.	1	2	3	4	5	6	7
16	I have access to the resources I need to do my job well.	1	2	3	4	5	6	7
17	I can obtain the resources to support new ideas and improvement in my department/area.	1	2	3	4	5	6	7
18	When I need additional resources to do my job, I can usually get them.	1	2	3	4	5	6	7
19	I enjoy discussing my organisation with people outside it.	1	2	3	4	5	6	7
20	I really feel as if this organisation's problems are my own.	1	2	3	4	5	6	7

Please respond with the answer that is true for you.

		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
1	I would be very happy to spend the rest of my career in this organisation.	1	2	3	4	5	6	7
2	I think I could easily become as attached to another organisation as I am to this one.	1	2	3	4	5	6	7
3	I do not feel like "part of the family" at my organisation.	1	2	3	4	5	6	7
4	This organisation has a great deal of personal meaning for me.	1	2	3	4	5	6	7
5	I do not feel "emotionally attached" to this organisation.	1	2	3	4	5	6	7
6	I do not feel a strong sense of belonging to my organisation.	1	2	3	4	5	6	7
7	I frequently think about leaving the organisation.	1	2	3	4	5	6	7
8	It is likely that I will search for a job in another organisation.	1	2	3	4	5	6	7
9	It is likely that I will actually leave the organisation within the next year.	1	2	3	4	5	6	7

Again, there are no right or wrong answers so please give the answer that is true for you.

**At Auckland District Health Board...**

Circle either Yes or No

1	Management usually give full credit to ideas contributed by employees.	Y	N
2	The atmosphere is somewhat impersonal.	Y	N
3	Management tend to look down on their employees.	Y	N
4	Employees rarely socialise with co-workers after work.	Y	N
5	People take a personal interest in each other.	Y	N
6	Management usually compliment an employee who does something well.	Y	N
7	People go out of their way to help a new employee feel comfortable.	Y	N
8	Management tend to discourage criticisms from employees.	Y	N

The next set of questions have slightly different responses →

		I strongly disagree	I disagree quite a lot	I disagree just a little	I'm not sure	I agree just a little	I agree quite a lot	I agree strongly
1	Management is sincere in its attempts to meet the worker's point of view.	1	2	3	4	5	6	7
2	Auckland DHB has a poor future unless it can attract better managers.	1	2	3	4	5	6	7
3	If I got into difficulties at work I know my workmates would try and help me out.	1	2	3	4	5	6	7
4	Management can be trusted to make sensible decisions for the organisation's future.	1	2	3	4	5	6	7
5	I can trust the people I work with to lend me a hand if I needed it.	1	2	3	4	5	6	7
6	Management at work seems to do an efficient job.	1	2	3	4	5	6	7
7	I feel quite confident that Auckland DHB will always try to treat me fairly.	1	2	3	4	5	6	7
8	Most of my workmates can be relied upon to do as they say they will do.	1	2	3	4	5	6	7
9	I have full confidence in the skills of my workmates.	1	2	3	4	5	6	7
10	Most of my fellow workers would get on with their work even if supervisors were not around.	1	2	3	4	5	6	7
11	I can rely on other workers not to make my job more difficult by careless work.	1	2	3	4	5	6	7
12	Our management would be quite prepared to gain advantage by deceiving the workers.	1	2	3	4	5	6	7

Which statement best describes best describes how you feel about your present job?		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	My job is like a hobby to me.	1	2	3	4	5
2	My job is usually interesting enough to keep me from getting bored.	1	2	3	4	5
3	It seems that my friends are more interested in their jobs than I am in mine.	1	2	3	4	5
4	I consider my job rather unpleasant.	1	2	3	4	5
5	I enjoy my work more than my leisure time.	1	2	3	4	5
6	I am often bored with my job.	1	2	3	4	5
7	I feel fairly well satisfied with my present job.	1	2	3	4	5
8	Most of the time I have to force myself to go to work.	1	2	3	4	5
9	I am satisfied with my job for the time being.	1	2	3	4	5
10	I feel that my job is no more interesting than other I could get.	1	2	3	4	5
11	I definitely dislike my work.	1	2	3	4	5
12	I feel that I am happier in my work than most other people.	1	2	3	4	5
13	Most days I am enthusiastic about my work.	1	2	3	4	5
14	Each day of work seems like it will never end.	1	2	3	4	5
15	I like my job better than the average worker does.	1	2	3	4	5
16	My job is pretty uninteresting.	1	2	3	4	5
17	I find real enjoyment in my work.	1	2	3	4	5
18	I am disappointed that I ever took this job.	1	2	3	4	5

**Section 2** This section asks about you and the approach you take to work. Again there are no wrong or right answers. Do not spend more than a few seconds on each question. Please answer according to the following scale, only choose one number:

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I am not a worrier.	1	2	3	4	5
2	I keep my belongings clean and neat.	1	2	3	4	5
3	I often get angry at the way people treat me.	1	2	3	4	5
4	I am not a very methodical person.	1	2	3	4	5
5	Sometimes I feel completely worthless.	1	2	3	4	5
6	I never seem to be able to get organised.	1	2	3	4	5
7	I rarely feel fearful or anxious.	1	2	3	4	5
8	I try to perform all the tasks assigned to me conscientiously.	1	2	3	4	5
9	At times I have been so ashamed I just wanted to hide.	1	2	3	4	5
10	Sometimes I'm not as dependable or reliable as I should be.	1	2	3	4	5
11	I often feel helpless and want someone else to solve my problems.	1	2	3	4	5
12	I often feel tense and jittery.	1	2	3	4	5
13	When I make a commitment, I can always be counted on to follow through.	1	2	3	4	5
14	I have a clear set of goals and work toward them in an orderly fashion.	1	2	3	4	5
15	I rarely feel lonely or blue.	1	2	3	4	5
16	I work hard to accomplish my goals.	1	2	3	4	5
17	I am seldom sad or depressed.	1	2	3	4	5
18	I strive for excellence in everything I do.	1	2	3	4	5
19	Too often, when things go wrong, I get discouraged and feel like giving up.	1	2	3	4	5
20	I'm pretty good about pacing myself so as to get things done on time.	1	2	3	4	5
21	I often feel inferior to others.	1	2	3	4	5
22	I waste a lot of time before settling down to work.	1	2	3	4	5
23	When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.	1	2	3	4	5
24	I am a productive person who always gets the job done.	1	2	3	4	5

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**Section 3** This section asks about the ways in which you manage stressful and demanding situations at work. To help you answer the questions it might be useful to think about an event from the last few weeks or so which you found challenging in a stressful or demanding way. Once again do not spend more than a few seconds on each question. Please answer according to the following scale.

As a result of the stressful situation:

- 0** I did not experience this change
- 1** I experienced this change to a very small degree
- 2** I experienced this change to a small degree
- 3** I experienced this change to a moderate degree
- 4** I experienced this change to a great degree
- 5** I experienced this change to a very great degree

1	I changed my priorities about what is important in life.	0	1	2	3	4	5
2	I have a greater appreciation for the value of my own life.	0	1	2	3	4	5
3	I have developed new interests.	0	1	2	3	4	5
4	I have a greater feeling of self-reliance.	0	1	2	3	4	5
5	I have a better understanding of spiritual matters.	0	1	2	3	4	5
6	I more clearly see that I can count on people in times of trouble.	0	1	2	3	4	5
7	I established a new path for my life.	0	1	2	3	4	5
8	I have a greater sense of closeness with others.	0	1	2	3	4	5
9	I am more willing to express my emotions.	0	1	2	3	4	5
10	I know better that I can handle difficulties.	0	1	2	3	4	5
11	I am able to better do things with my life.	0	1	2	3	4	5
12	I am better able to accept the way things work out.	0	1	2	3	4	5
13	I can better appreciate each day.	0	1	2	3	4	5
14	New opportunities are available which wouldn't have been otherwise.	0	1	2	3	4	5
15	I have more compassion for others.	0	1	2	3	4	5
16	I put more effort into my relationships.	0	1	2	3	4	5
17	I am more likely to try to change things which need changing.	0	1	2	3	4	5
18	I have a stronger religious faith.	0	1	2	3	4	5
19	I discovered that I'm stronger than I thought I was.	0	1	2	3	4	5
20	I learned a great deal about how wonderful people are.	0	1	2	3	4	5
21	I better accept needing others.	0	1	2	3	4	5

There are a number of ways people attempt to deal with stressful demands. Obviously, the nature of the incident will bring about different responses, but think about what you usually do when faced with difficult and stressful situations. There are no right or wrong answers, please answer about what you actually do, rather than what most people do.

Note the slightly different responses

→

		I haven't been doing this at all	I do this a little	I do this a medium amount	I've been doing this a lot
1	I concentrate my efforts on doing something about the situation I'm in.	0	1	2	3
2	I take action to try to make the situation better.	0	1	2	3
3	I try to come with a strategy about what to do.	0	1	2	3
4	I think hard about what steps to take.	0	1	2	3
5	I try to see it in a different light, to make it seem more positive.	0	1	2	3
6	I look for something good in what has happened.	0	1	2	3
7	I accept the reality of the fact that it has happened.	0	1	2	3
8	I make jokes about it.	0	1	2	3
9	I learn to live with it.	0	1	2	3
10	I try to find comfort in my religion or spiritual beliefs.	0	1	2	3
11	I make fun of the situation.	0	1	2	3
12	I get emotional support from others.	0	1	2	3
13	I pray or meditate.	0	1	2	3
14	I get comfort and understanding from someone.	0	1	2	3
15	I try to get help or advice from other people about what to do.	0	1	2	3
16	I turn to work or other activities to take my mind off things.	0	1	2	3
17	I get advice or help from other people	0	1	2	3
18	I go to the movies, watch T.V., read, daydream, sleep or go shopping to think about it less.	0	1	2	3
19	I say to myself 'this isn't real'.	0	1	2	3
20	I blame myself for what happened.	0	1	2	3
21	I refuse to believe that it has happened.	0	1	2	3
22	I express my negative feelings.	0	1	2	3
23	I drink alcohol or take drugs to make myself feel better.	0	1	2	3
24	I give up trying to deal with it.	0	1	2	3
25	I say things to let my unpleasant feelings escape.	0	1	2	3
26	I give up attempting to cope.	0	1	2	3
27	I criticise myself.	0	1	2	3
28	I use alcohol or other drugs to help me get through.	0	1	2	3

Again, thinking about an event from the last few weeks or so which you found challenging in a stressful or demanding way. Read each item and indicate how the event has made you feel or react. Remember, not spend more than a few seconds on each question.

**0** Not at all  
**1** A little bit  
**2** Moderately  
**3** Quite a bit  
**4** Extremely

1	Any reminder brought back feelings about it.	0	1	2	3	4
2	I had trouble staying asleep.	0	1	2	3	4
3	Other things kept making me think about it.	0	1	2	3	4
4	I felt irritable and angry.	0	1	2	3	4
5	I avoided letting myself get upset when I thought about it or was reminded of it.	0	1	2	3	4
6	I thought about it when I didn't mean to.	0	1	2	3	4
7	I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
8	I stayed away from reminders about it.	0	1	2	3	4
9	Pictures about it popped into my mind.	0	1	2	3	4
10	I was jumpy and easily startled.	0	1	2	3	4
11	I tried not to think about it.	0	1	2	3	4
12	I was aware that I still had a lot of feelings about it, but I didn't deal with them.	0	1	2	3	4
13	My feelings about it were kind of numb.	0	1	2	3	4
14	I found myself acting or feeling like I was back at that time.	0	1	2	3	4
15	I had trouble falling asleep.	0	1	2	3	4
16	I had waves of strong feelings about it.	0	1	2	3	4
17	I tried to remove it from my memory.	0	1	2	3	4
18	I had trouble concentrating.	0	1	2	3	4
19	Reminders of it caused me to have physical reactions such as sweating, trouble breathing, nausea, or a pounding heart.	0	1	2	3	4
20	I had dreams about it.	0	1	2	3	4
21	I felt watchful and on guard.	0	1	2	3	4
22	I tried not to talk about it.	0	1	2	3	4

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer in the space next to the word. Indicate to what extent you have felt this way over the past few weeks. Do not spend more than a few seconds on each question.

Mark one number only

		Not at all Very slightly	A little	Moderately	Quite a bit	Extremely
1	Interested	1	2	3	4	5
2	Distressed	1	2	3	4	5
3	Excited	1	2	3	4	5
4	Upset	1	2	3	4	5
5	Strong	1	2	3	4	5
6	Guilty	1	2	3	4	5
7	Scared	1	2	3	4	5
8	Hostile	1	2	3	4	5
9	Enthusiastic	1	2	3	4	5
10	Proud	1	2	3	4	5
11	Irritable	1	2	3	4	5
12	Alert	1	2	3	4	5
13	Ashamed	1	2	3	4	5
14	Inspired	1	2	3	4	5
15	Nervous	1	2	3	4	5
16	Determined	1	2	3	4	5
17	Attentive	1	2	3	4	5
18	Jittery	1	2	3	4	5
19	Active	1	2	3	4	5
20	Afraid	1	2	3	4	5



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If you require any further information please contact the researchers and/or Auckland DHB contacts listed.

If after completing this questionnaire you feel that you need to discuss any issues please contact the researchers/Auckland DHB contacts or access your department welfare support network.