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The Impact of Self-Efficacy and Cognitive Appraisal on Coping  
Adaptability in Military Recruits: A Test of a Model and its Impact on  
Organisational Outcomes

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## **Abstract**

The present research aimed to test a model of adaptation in RNZAF recruits which was similar in structure to transactional models of stress such as Lazarus and Folkman's (1984) model. Using a longitudinal design and dispositional measures the study assessed the impact of general self-efficacy and cognitive appraisal at the start of recruit training on coping adaptability at the end of training. These variables were also assessed as to their impact on organisationally relevant variables including organisational commitment, perceived performance improvement and readiness for next career phase. Overall the study had two broad aims. The first was to confirm the relationships between appraisal, coping adaptability and outcomes as previously shown in transactional models of stress and coping. The second aim was to discover how self-efficacy impacted on the model, more specifically, whether it acted as a moderator, mediator or antecedent to the appraisal – coping relationship.

The results confirmed that challenge appraisal was associated with better organisational outcomes, this relationship was fully mediated by coping adaptability. Self-efficacy was strongly correlated with challenge appraisal however did not moderate the appraisal – coping relationship nor did it mediate the appraisal – coping adaptability relationship. The direct relationship between self-efficacy and coping adaptability was however, fully mediated by challenge appraisal.

Threat appraisal did not demonstrate strong relationships with the remaining variables in this sample. Additionally, general self-efficacy, challenge appraisal and coping adaptability were associated with organisational commitment and readiness but not with performance improvement.

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## **Chapter 1**

### **Training in the Military**

When a new recruit joins the Royal New Zealand Air Force (RNZAF) they typically spend the first 12 weeks of their career engaged in basic military training which for Officer trainees is extended to 20 weeks. In comparison with many organisations this is a relatively large amount of time dedicated to ensuring that new employees are inducted into the organisation in such a way that they become functional employees. Nonetheless, given that employees of the armed forces are often placed in demanding and dangerous roles, that are distinct from those encountered in civilian organisations, the large training investment in new recruits would appear wise.

There are currently more than 700 New Zealand Defence Force (NZDF) personnel involved in operational deployments, which is approximately 6 percent of uniformed staff, including territorial staff (NZDF, 2007). The implications of this are that new recruits joining the military must assume that, at some stage in their career, they will be deployed. Most importantly, this signifies that it is critical that these employees receive the maximum benefit possible from their training, both in learning outcomes and well-being. This is not only to ensure they are efficient and there is a good return on training investment, but also to ensure they are suitably equipped with skills that enable them to survive dangerous and demanding situations. A challenge lies in determining the best way to judge whether training has been effective.

### ***Training Outcomes***

One way to achieve this is to align training outcomes with measurable organisational strategy. In a recently published strategic plan the RNZAF specifically state that in order to make the most of resources to ensure capability, the RNZAF needs 90% of employees to be deployable, there should be a low rate of attrition from the service, specifically, less than 10%, and there should be an exceptionally high pass rate from RNZAF training courses with over 90% of trainees passing their training. In broad terms, the RNZAF requires its personnel

to be capable, committed and ready (Chief of Air Force, 2006). These three concepts form the organisational outcomes for the present study and will be assessed in terms of whether psychological variables act as effective predictors of these outcomes.

### **Predicting outcomes of military training.**

The military has a long history of attempting to predict who will succeed in training and who will not. The testing of military applicants and recruits was implemented during World War II and has remained common practice. Attributes of recruits that have been tested include intelligence, ability, psychomotor skills and personality with the aim of predicting performance and assigning recruits to vocational areas within the military (Mangelsdorff & Gal, 1991). Correspondingly, a large number of variables could also be included in studies attempting to predict learning outcomes for new recruits, and indeed research studies have taken a range of approaches in attempting to predict military training success or failure. Research approaches taken include demographic and motivational variables (McCraw & Bearden, 1988; Mobley, Hand, Baker, & Meglino, 1979), personality variables (May & Kline, 1987; Hogan & Hogan, 1989; Holden & Scholtz, 2002), attitudes and beliefs (Brown, 2004).

Although the studies listed above incorporate a wide range of variables, what they have in common is their focus on failure or attrition as an organisational outcome. While it is important to be able to reduce training attrition and failure, few studies focus on successful performance and assessing how trainees actually do well in meeting important organisational standards. A focus on positive aspects of attitudes, beliefs and performance was emphasised by Pajares (2001) when he argued that it is more useful to draw conclusions about adaptive performance from students who are capable and resilient than it is to focus on students who are “at risk or unmotivated” (p. 28).



## ***Objectives of the present research***

The current study examines psychological predictors of learning outcomes for those trainees who have graduated from their RNZAF initial military training course and will not include those who have left during the course of training. This is because the current research aims to determine how graduates of RNZAF initial training courses obtain the *most benefit* from their training which naturally precludes those that leave.

### **Organisationally relevant training outcomes.**

The learning outcomes to be assessed have been derived from the RNZAF strategic plan which requires that RNZAF personnel be committed, competent and prepared. Consequently, the organisational outcomes chosen for this study includes measurement of how committed recruits feel toward the organisation at the end of training; measurement of whether recruits feel they have improved over a number of areas during training including areas such as self-discipline, fitness and ability to cope with stress; and lastly, measurement of whether recruits feel prepared to enter the next stage of their career.

### **Psychological predictors of training outcomes.**

In order to predict these learning outcomes a number of psychological variables will be assessed. These variables have been drawn partly from Lazarus and Folkman's (1984) transactional model of the stress and coping process with the inclusion of additional variables and measures that differ from that originally used by Lazarus and Folkman. The variables to be included in the study include *general self-efficacy, cognitive appraisal and coping adaptability*. Whilst Lazarus and Folkman traditionally used variables such as appraisal and coping to predict more immediate stress related outcomes, in this case these variables are included in order to predict learning outcomes within the context of what is widely acknowledged to be a demanding course. Specifically, the research has the following aims.

1. To *confirm* whether the well established relationships among variables associated with a transactional stress model are relevant in the prediction of organisationally relevant outcomes and hold when measured at the dispositional level rather than at the situational level.
2. To *explore* whether self-efficacy as an individual difference adds explanatory value to the model. More specifically, the analysis will explore whether self-efficacy acts as a mediator or moderator of the appraisal – coping relationship, or alternatively, whether it is an antecedent to this process.

### ***Chapter summary***

This chapter has described the importance of recruit training in light of the current operational demands of the RNZAF and has described the aims of the current study. Chapter 2 provides an outline of the stress concept and some major models of stress and describes how the current study compares to those models.

## Chapter 2

### Model Development

#### *Models of stress*

Stress is a construct that is notoriously difficult to define. Dewe (1991) describes how stress has previously been portrayed as either a stimulus, a response, an environmental condition or as a result of a misfit between an individual and the environment. Subsequently, the models of stress described in this chapter differ in their operationalisation of stress as a construct and also the measurement of variables believed to impact on stress.

#### **Early Models.**

The widely used term *Fight or Flight* was originally proposed by Cannon (1929) to describe the biological response to a threatening environmental condition. This response was to either stay and fight the environmental condition or to flee from it. While this model of stress was descriptive of a completely biological response a later model proposed by Hans Selye incorporated both psychological and physiological aspects of the stress response. His model was termed the *general adaptation syndrome* which was thought to include non-specific physiological or psychological responses to stressors. The stress response in this model was thought to include three stages, the first being *alarm* which is the initial reaction upon exposure to the stressor. The second being *resistance* during which the body adapts to the presence of the stressor. The third stage is *exhaustion* during which the body is depleted of energy (Selye, 1980). In these models stress is defined as a response rather than as a stimulus. The widely used phrase “I’m feeling stressed” appears to stem from viewing stress as a response to events or situations. The concept of stress-related illness which is widely reported in the media also appears to be a result of defining stress as a response (Jones & Bright, 2001).

### **Stressor-Strain models.**

The stressor-strain model is sometimes known as an antecedent-consequence model and assumes a direct causative relationship between an event and stress. In contrast to the early models described above, this approach defines stress as a stimulus rather than as a response. Therefore, certain stimuli are believed to have inherently stressful features. Stimuli may be internal to the individual (such as hunger) or external to the individual (such as events or situations). Stimuli may also differ in intensity, duration or frequency (Lazarus & Folkman, 1984).

In line with the assumption that stress is a stimulus it was logical that scientists attempted to measure and make an inventory of the possible stressful events in our environment. This resulted in the development of stress event check-lists whereby respondents could indicate which potentially stressful events had occurred to them within a specific time period. An example of this type of approach is the Social Readjustment Rating Scale (Holmes & Rahe, 1967). They defined social readjustment as the intensity and length of time required to adapt to the changes to an individual's normal way of life as a result of a range of events that may occur. The scale asks respondents to assign a value to life events in relation to the arbitrary value of 500 assigned to marriage. Therefore, other life events such as change in residence, pregnancy or divorce are assigned values in relation to whether they require more or less adjustment than marriage. Many criticisms of this approach to conceptualising stress exist, for example, Wortman, Sheedy, Gluhoski and Kessler (1992) comment that it is important to obtain information about the context in which an event occurs and hence "clarify the meaning of the particular event to the respondent" (p. 232). Lazarus, Cohen, Folkman, Kanner and Schaefer (1980) also argue that this rating scale fails to consider individual appraisal of events as relevant or inconsistent between individuals.

Stressor-strain models have been readily applied to the workplace and have been the source of much work-related stress research. Typical organisational stress research attempts to connect stimuli such as working hours and working conditions to outcomes (Jones & Bright, 2001).

Briner, Harris and Daniels (2004) criticise the stressor-strain model being applied to occupational stress research chiefly because of the passive role assigned to people who are assumed to simply react in pre-determined ways to environmental cues. In support of this premise, they state three key arguments against the stressor-strain model. The first is that it is particularly difficult to accurately measure, describe, and define the characteristics of jobs and consequently it is difficult to accurately define the stressful stimuli. What they are implying here is that the measurement of job characteristics is perhaps not as objective or clear-cut as we may believe it to be. Their second argument is that aspects of work other than specific job characteristics may have an impact on stress. These aspects may be subtle and involve events or situations which are particularly difficult to measure and are likely to impact individuals by way of amount of exposure, duration, and intensity. Their last argument against the stressor-strain approach surrounds the difficulty of determining whether job characteristics are actually independent of the person in the job. In other words, is stress something we are exposed to or is it something we have a hand in creating? They illustrate this point by using the example of two different people in identical positions, who go about their job in entirely different ways, and subsequently shape the job so that the positions are no longer identical. Consequently, while stressor-strain approaches have been helpful in identifying some job characteristics that create stress for the majority of people, the criticisms of this approach suggest that it does not sufficiently take into account the role that the individual plays within the stress process.

Another significant problem with defining stress as either a stimulus or response is that a circular argument develops in which it is difficult to determine whether stimulus or response is the actual cause of stress. Lazarus & Folkman (1984) argue that response based measures of stress such as elevated heart rate are not reliable indicators of stress given that elevated heart rate could indeed be caused by stress but also by other less noxious causes such as exercise. Likewise, stimuli do not provoke universal or predictable responses across individuals and are therefore also not reliable measures of stress. This means that it is difficult to actually label either stimulus or response as being truly indicative of stress and calls for a different model of stress that accurately captures the complexity of stress as well as the role that the individual plays in the process.

### **Transactional model.**

In contrast to traditional approaches, the variables in the present study will be examined using a model similar to the transactional stress model developed by Lazarus and Folkman (1984). They describe transaction as a mutually influencing interaction between the environment and an individual. They emphasise that a transaction goes beyond the sum of its parts and is a constantly evolving process. Therefore, in this model stress may arise as a result of elements of the individual and elements of the situation interacting and avoids the problems of circularity associated with having to decide whether stress is a stimulus or a response. Within this model Lazarus and Folkman define stress as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (p. 19).

The transactional model which is shown in Figure 1 is characterised by the key mediating variables of cognitive appraisal and coping which in combination with situational and individual conditions determine whether a situation or event has positive outcomes for an individual (increased well-being) or whether it has negative outcomes for the individual (stress or poor-health).

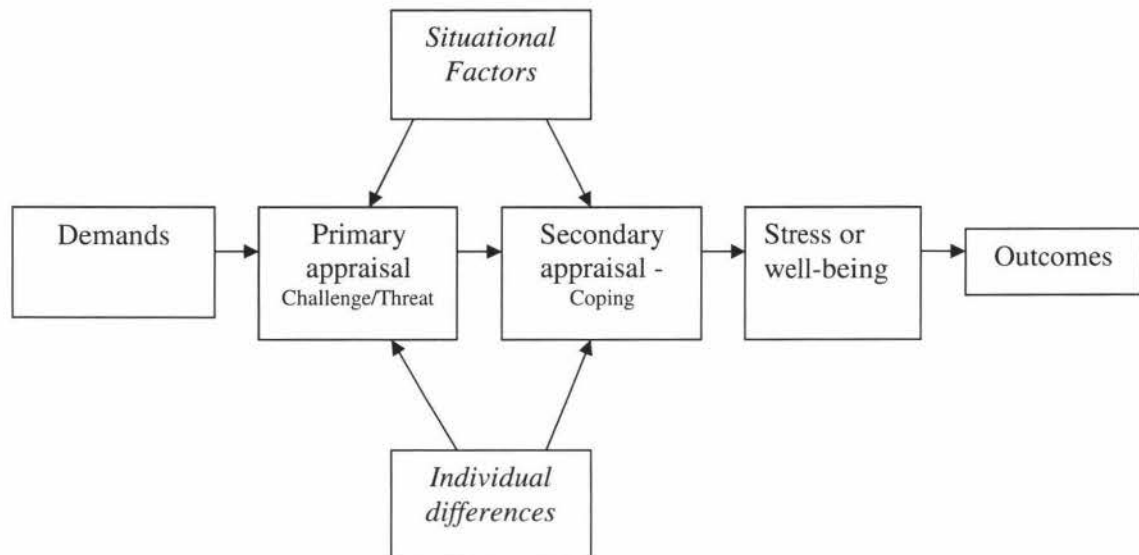


Figure 1. Transactional model of stress (Lazarus & Folkman, 1984)

A number of variables interact within the transactional model of stress. These variables are briefly overviewed below and will be examined in more depth individually regarding their research implications in subsequent chapters.

A key feature of the model is the labelling of potentially stressful situations as *demands* rather than as stressors. A demand is a neutral term in comparison with stressor and is consistent with the theory that a situation is not considered stressful until it is appraised as such (Lazarus & Folkman, 1984). This also allows for the important possibility that demands may result in both good and bad outcomes for a person. Therefore, whilst poor outcomes or stress may ultimately result from demands, there is also the opportunity for increased well-being to result from the presence of demands. The association between demands and well-being is well documented in the literature, although more negative aspects of the stress process often receive the most research attention (Folkman & Moskiwitz, 2000). Hans Selye (1974) argued that the term *distress* should be used to denote the unpleasant aspects of stress and should be differentiated from the existence of positive aspects of stress that are

associated with pleasant affect such as joy and fulfillment. Selye also argued that people need at least some level of stress in our lives as a total lack of stress can only occur with death. Selye used the U-shaped curve to illustrate the point that levels of stress that are either too low or too high may be detrimental. However, this may have been too simplistic as it does not allow for the possibility of both positive and negative affect occurring simultaneously in response to a demand (Folkman and Moskowitz, 2000). Research which highlights the potential for positive affect as a result of demands includes Gardner & Fletcher (2007), who found that, in a study of veterinarians, there was a degree of overlap between aspects of the role that were considered stressful and those that were sources of morale. For example, dealing with clients was both a source of stress and a source of morale and satisfaction for vets.

Whether a demand results in positive or negative affect depends on the process of appraisal which is the next step in the transactional model. Appraisal, put simply, is how a person evaluates a demand. More specifically, appraisal is broken down into two processes; primary appraisal and secondary appraisal. Primary appraisal relates to the meaning that an individual assigns to a demand, or in other words, how significant the demand or event is to them. Primary appraisal is important because it is here where the individual decides what is at stake, and what is at stake is likely to be different for different individuals (Lazarus & Folkman, 1984). It is also influenced by individual differences such as personality and beliefs (Lazarus & Folkman, 1984; Costa & McCrae, 1990). Of particular importance in primary appraisal are appraisals of either challenge or threat in response to demands. Challenge appraisals are characterised by the acknowledgement that the demand provides the potential for gain or growth. Challenge appraisals are formed as a result of the perception that an individual has sufficient resources to cope with the demand. In contrast, threat appraisals are characterised by the anticipation of harm or loss and are formed by the perception that the individual may have insufficient resources to adequately cope with the demand (Lazarus & Folkman, 1984).

Secondary appraisal relates to the individual's assessment of their capacity to cope with the demand. Lazarus and Folkman (1984) describe how secondary appraisal is an evaluation



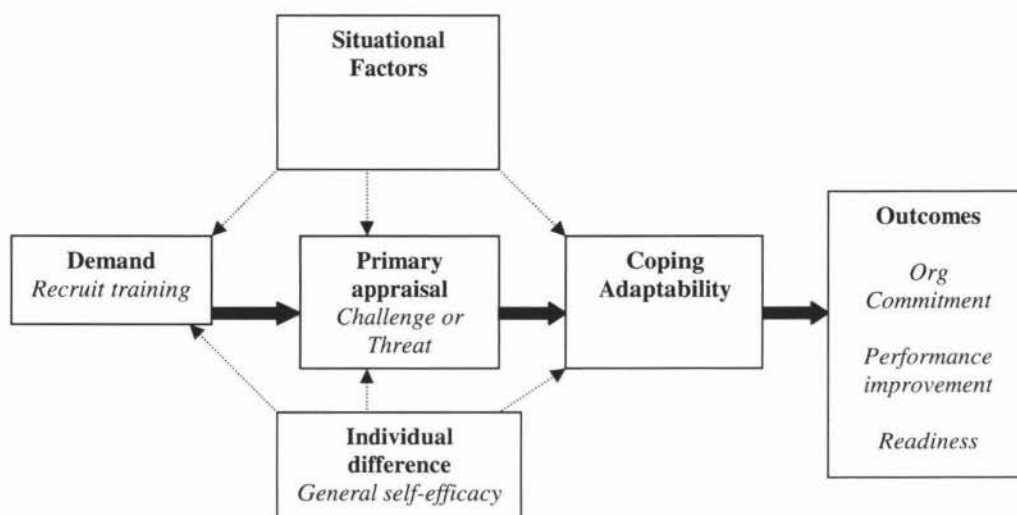
of coping options and resources and their potential outcomes. Secondary appraisal may also invoke a reappraisal of what is at stake in the situation. For example, an individual may assess that they have many resources to deal with a demand and will then perceive that demand as a challenge when it may have initially been a threat (Lazarus & Folkman, 1984).

Coping is a complex variable that, put simply, relates to the cognitive and behavioural efforts that an individual will use to deal with both threatening and challenging situations (Lazarus & Folkman, 1984). It is linked to appraisal via secondary appraisal in that it is the behavioural outcome of the assessment of coping options. Lazarus & Folkman emphasise that coping is a *process* which constantly changes in transaction with the environment.

## ***The Present Research***

### **Amended Model.**

The model proposed in the present research extends Lazarus and Folkman's (1984) model with the inclusion of self-efficacy as an individual difference variable and with the incorporation of a wider range of organisationally relevant outcome variables. This model also differs slightly from the traditional transactional model in that coping is not measured as a fixed type but as coping *adaptability*. This model is summarised in Figure 2.



**Figure 2. Amended model**

The inclusion of organisationally relevant outcome variables means that the results of the study are of direct relevance to the organisation being studied. If the outcome variables simply indicated that respondents either had increased levels of stress or well-being we would still not be sure what this actually means for the organisation. Linking the outcomes with the organisations strategic goals avoids this problem.

The inclusion of self-efficacy as a predictor variable makes the model in the present study more relevant to a training environment because self-efficacy is linked to performance. Self-efficacy also has relationships with the other predictor variables which are described in more detail in chapter 3. This part of the present research aims to establish how, or at what point, self-efficacy influences the appraisal and coping process.

In contrast with much transactional research the present study focuses on coping adaptability, rather than to coping types. Coping adaptability refers to an individual's ability to alter their coping related thoughts and behaviours about the demands they face (Cheng, 2001). It is also characterised by high levels of judgement in implementing the most

appropriate coping mechanism for the situation (Kohn, O'Brien-Wood, Pickering and Decicco, 2003). The relationships between this variable and the others in the amended model are of considerable interest as coping adaptability is a relatively new development in coping research.

### **Dispositional approach.**

Lazarus and Folkman (1984) specify that a situational approach should be taken when considering stress, appraisal and coping. Consequently, much transactional research uses situation-based measures. This means that many measures have asked people how they appraised and coped with a *particular* situation rather than a number of situations over time. Lazarus and Folkman argue that the way a person copes with a demand depends to a great extent on the situation they are dealing with. Additionally, a person's response may not generalise to other situations. There is a long history of debate surrounding the importance of situations versus dispositions and their ability to predict behaviour (Epstein, 1979; Epstein, 1981; Epstein & O'Brien, 1985; Lieberman, 1981; Mischel, 1968;). While both sides of the debate are valid, it is important to consider the features of the phenomenon being studied to determine the best approach to take. A situational approach would not be entirely suitable for the present study because an event is being studied that occurs over a long period of time (recruit training lasts from 3-5 months). Consequently, it is more appropriate that a dispositional approach is taken as a wide variety of demands occur during this time and the overall psychological approach taken to the variety of demands will impact on the learning outcomes. The variety of demands faced by recruits include moving away from home, adaptation to a new routine, less sleep, academic tests and physical tests. When considering the utility of results, it would also be more difficult to generalise appraisal and adaptation beyond a single situation. It can be argued that the results of a situational study can be less easily applied by trainers and psychologists than can the more generalisable dispositional model. Consequently, all of the measures included in this study assess the variables at the trait or dispositional level rather than being strictly situation specific.

### **Longitudinal research.**

The present study makes use of a longitudinal research design as measures were taken at the beginning and end of recruit training. This type of design has an advantage in that it assists in establishing whether variables measured at Time 1 will impact on variables measured at Time 2. In other words, this type of design helps to determine the direction of the relationship between variables. Ruspini (2002) explains that longitudinal studies have the advantage of not only assessing variables over time, but also over the course of events. In this case the event is the recruit training course which is of great relevance to the variables in the study. It should be noted that although direction of cause and effect between variables can be established with longitudinal research, the possibility of third variables impacting on correlational relationships is not controlled by a longitudinal research design. For the present research the longitudinal design assists in establishing that appraisal precedes and impacts upon coping mechanisms which is central to transactional theory. Also central to transactional theory is a process-oriented view of psychological phenomena. Longitudinal research designs are superior in capturing processes than cross-sectional designs are (Ruspini, 2002).

### ***Chapter summary***

The preceding chapter has described some common models of stress in order to illustrate that definitions of stress may differ as a result of whether it is considered as stimulus, a response, or an interaction between individual and environment. The limitations associated with defining stress as a stimulus or response were highlighted and the transactional model of stress was introduced as a means of overcoming those limitations. This chapter has also briefly introduced the proposed model of self-efficacy, appraisal and coping adaptation within the military training environment which is an extension of work by Lazarus & Folkman (1984). The following chapters will explain each of the variables to be included in the model in more detail and will describe how theory and research have informed the

hypothesised relationships between these variables. The first variables to be described are cognitive appraisal and coping as they are core variables in the stress and coping process.

## Chapter 3

### Cognitive Appraisal and Coping

#### ***Cognitive Appraisal***

Cognitive appraisal is an evaluative process during which a situation is assessed based on its significance and potential to either harm or improve the well-being of an individual (Lazarus & Folkman, 1984). Cognitive appraisal is a critical point in the stress and coping process because the way that a situation or demand is appraised will have significant consequences for an individual's subsequent emotional response and subsequent coping behaviour. Appraisal is also important because it links the individual to the environment and it is this interaction between individual and environment which is at the heart of transactional research (Dewe & Trenberth, 2004). Cognitive appraisals counteract the previously held positivist view that people respond directly and automatically to environmental reinforcement (Lazarus & Folkman, 1984). It is widely accepted that demands may have either a negative effect or a positive effect on a person's well-being and it appears that cognitive appraisals may be the vehicle for responses to stressors that lead to both adaptive and maladaptive pathways.

#### ***Primary appraisal***

Lazarus and Folkman (1984) categorise primary appraisal into three broad categories which are *irrelevant*; *benign-positive*; and *stressful* appraisals. The ability to appraise and classify some situations as being irrelevant is considered an adaptive response because it ensures people do not react and apply resources to *every* situation they find themselves in. Benign-positive appraisals are appraisals that result in the classification of a situation as being able to protect or boost an individual's well-being. The third category of appraisal consists of stress appraisals, which are further broken down into three areas. The first is stress

appraisals of *harm or loss*. If an appraisal of this type is made the individual has recognised that damage or loss of some sort has occurred; whether this be physical or psychological. The second stress appraisal is one of *threat*. When this appraisal occurs an individual recognises that there is a *potential* for harm or loss to occur. This tends to result in anticipatory coping and can therefore be adaptive if appropriate coping is employed. The third stress appraisal is a *challenge* appraisal. In the course of a challenge appraisal, an individual will continue to recognise that a situation is taxing however will also recognise a potential for gain or growth. Like threat appraisals a challenge appraisal will also result in anticipatory coping. Lazarus and Folkman stress that a challenge and a threat appraisal may occur simultaneously and so are not mutually exclusive constructs, nor are they poles of the same dimension.

### ***Secondary appraisal***

As described in Chapter 2, secondary appraisal is the assessments that an individual makes regarding their ability and the resources available to respond to or cope with a situation appraised as either a threat or challenge (Lazarus & Folkman, 1984). The process of secondary appraisal is what links appraisals and coping within the stress process by influencing subsequent coping behaviour. Like primary appraisal, secondary appraisal is also influenced by both environmental and individual factors. For example, secondary appraisal may be influenced by the *actual* resources available to the individual which is an environmental factor, and also by the *perception* of what resources are available which is an individual factor (Dewe, 1991). Perceptions of both control and self-efficacy are considered to be key influencers of secondary appraisal (Terry, 1994).

### ***Physiological effects of appraisal***

In an overview of the effects of appraisal on human neuro-endocrine systems Olff, Langeland and Gersons (2005) noted that threat appraisals influence the neuro-endocrine system (and subsequent health) through heightened levels of cortisol and vascular resistance.

In contrast challenge appraisals were associated with quicker recovery from arousal which may mitigate the physical toll of arousal. They summarised that the physiological responses to threat appraisal seem to be geared to protect the person from potential attack whereas the physiological responses associated with challenge appraisal appear to be geared toward increasing energy to mobilise resources.

An example of research which supports this theory includes a series of experiments by Tomaka, Blaskovich, Kelseu, & Leitten (1993), who assessed both psychological and physiological responses to a mental arithmetic task. Physiologically, challenge appraisals were associated with greater arousal, this was thought to be due to challenge appraisals eliciting a mobilisation response in which the demand is more actively responded to. Physiological consequences of appraisal are of relevance as they bring a level of objectivity to the concept of appraisal and signify how appraisal may be linked to both coping reactions and longer term health.

### ***Determinants of appraisal***

#### **Components of relevance.**

Lazarus (1999) explains that there are three components of relevance which determine the meaning assigned by an individual to a situation during primary appraisal. The first is *goal relevance* which is whether a person views the outcome of a situation as being able to impact on their well-being. An example is a secondary-school exam which may have a high degree of relevance for someone wanting to gain entrance to university but may have low relevance for someone that does not. Subsequently, failure on the exam would have greater implications on stress and well-being for the person wanting to gain university entrance which determines the stakes that a person has in a situation. The second is *goal congruence* which relates to the situation a person finds themselves in and whether the conditions of that situation assist or impede the person. The last is *type of ego involvement* which relates to concepts that are important to the person such as social and self-esteem, moral values, meanings and ideas, life goals etc.



This theory links the situation in the current research (recruit training) to appraisals that may be made by recruits. Recruits may make appraisals based on how important their goal of passing recruit course is to them, whether the training environment they find themselves in promotes their goal or is an impediment to it. Lastly, they may make appraisals based on how recruit training may influence their self-esteem or values.

### **Dispositions.**

The way that a demand is appraised by an individual in a situation is affected by the personality traits or dispositions that influence their view of the world. This argument was put forward by Costa and McCrae (1990) who reasoned that knowledge of what a person *does* in a situation requires knowledge of what they are *like*. A criticism that Costa and McCrae have of previous transactional research is that dispositions have received too little attention, this is despite the fact that Lazarus and Folkman (1984) did acknowledge the likelihood that *person variables* are likely to affect the stress and coping process. They also reason that dispositions account for how people become chronically stressed over time because although demands and situations may change, dispositions are comparatively stable and subsequently may cause patterns of appraisal.

Research supports the theory that dispositions affect the process of appraisal. Chang (1998) found that dispositional optimism was an important variable in the stress and coping process. Specifically, whilst optimistic and pessimistic people had similar primary appraisals of threat, challenge or harm/loss, optimistic people tended to perceive that they had more resources to cope with the situation. Moreover, optimism was able to account for variance in coping beyond appraisals. Likewise, Oliver and Brough (2002) found that negative-affectivity had a negative relationship with well-being and this relationship was also mediated by the process of cognitive appraisal. This suggests that negative affectivity is a determinant of appraisal. These studies have separated the variables of dispositions and appraisals however it is also possible to operationalise appraisal as a dispositional type in itself.

### **Appraisal as a trait.**

Many psychological variables have been measured at both the level of trait and state. Examples include coping (Carver & Scheier 1994) and anxiety (King, Heinrich, Stephenson & Spielberger, 1976). Therefore, it is important to consider the possibility that not only is appraisal *impacted* by dispositions but that appraisals may also be thought of *as* dispositions or trait-like variables themselves. Traits are defined by Hamaker, Nesselroade and Molenaar (2007) as “relatively stable, inter-individual differences in proneness, tendency, style or disposition to behave, feel or think in certain ways” (p. 297). A key word in that definition is *inter-individual* which indicates that people can be compared to others with respect to the traits they hold, as traits are part of what defines them. They also conceptualise traits as a type of *intra-individual* mean, which indicates that traits are aggregated across time and situations. In contrast states are a result of intra-individual variability and are more situational in nature. Research which examines the relationships between states and traits suggests that trait measures do predict state measures to some degree. Examples include Carver and Scheier (1994) who found that dispositional measures of coping influence actual coping behaviour, and King et al. (1976) who found that trait anxiety predicted state anxiety. Roesch and Rowley (2005) argue that it is reasonable to assume that people bring trait-like tendencies to the situational task of cognitive appraisal despite the previous emphasis on situational measures within transactional models. This is because stable characteristics may colour a person’s perceptions of what is stressful. They argue that trait appraisal measures are especially important when considering the effects of appraisal over a range of situations and time. In the present research a trait measure of appraisal was used and it could be expected that the trait-levels of threat and challenge will be related to how each recruit evaluates the many potentially demanding situations they find themselves in. Those trait appraisals are therefore predicted to have a strong influence on subsequent coping, which is an important mediating variable within process or transactional models of stress.

## *Coping*

### **What is coping?**

Definitions of coping depend greatly on the viewpoint of the researcher; consequently, there is no single definition of coping. For example, in a biologically driven model coping is defined as behaviour associated with controlling aversive stimuli (Lazarus & Folkman, 1984). Alternatively, in an ego-defence model, coping is concerned with pathology and unconscious processes (Folkman & Moskowitz, 2004). For the purposes of the current research the definition of coping within a transactional model has been adopted. Lazarus and Folkman (1984) define coping as “constantly changing cognitive and behavioural efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources of the person” (p.141).

There are several key points to be noted with this definition. The first is that coping is not considered a static construct but is considered to be a dynamic process. Secondly, coping itself is not confounded with outcome rather it is viewed simply as the efforts made to manage stressful demands regardless of the outcome of the situation. An example of confounding coping with outcome can be heard in the commonly used question “how are you coping?” which assumes that coping itself is the outcome. Thirdly, this definition is concerned with effortful behaviour or cognitions rather than unconscious processes (Lazarus & Folkman, 1984).

## *Types of coping*

### **Problem and emotion focused coping.**

Coping as a construct can be broken down into sub-types. Two broad categories of coping including problem-focused coping and emotion-focused coping predominate much research. Problem-focused coping incorporates efforts to define the problem, generate and analyse potential solutions, assess alternative solutions in terms of their likely costs and benefits and ultimately take action to resolve the problem (Lazarus & Folkman, 1984). In other words, problem-focused coping involves *active* attempts to alter the source of the stress (Carver, Scheier & Weintraub, 1989). Problem-focused coping may be either directed toward problems situated in the external environment or it may be directed inwardly. These inward directed problem solving attempts have been described as *cognitive reappraisal* and involve the control of cognitions as an active coping mechanism.

Emotion-focused coping was described by Lazarus and Folkman (1984) as “regulating the emotional response to a problem” (p.150). Emotion-focused coping is an especially broad category as there is a number of ways someone may put emotion-focused coping into practice. Consequently, a number of sub-processes relating to emotion-focused coping can be identified including avoidance, minimising, distancing, selective attention, and positive comparison. Lazarus and Folkman also describe how deliberately increasing emotional distress (feeling worse before feeling better) may be a form of emotion-focused coping.

Whilst Lazarus and Folkman (1984) described two discernable categories for coping they emphasise the fact they are not mutually exclusive when a person attempts to cope with a demand. For example, a person may have to initially use emotion regulation prior to attempting to implement active problem-focused strategies.

### **Meaning and social-focused coping.**

Subsequent research has highlighted the presence of other coping types. Folkman and Moskowitz (2004) add meaning-focused coping and social-focused coping to the list of coping types. An individual using meaning-focused coping would use cognitive strategies such as positive reinterpretation (finding the good in a situation), humour or acceptance. An individual using social-focused coping would turn to others for both instrumental support such as requesting advice or for emotional support. Carver, Scheier and Weintraub (1989), found evidence for a wide range of coping strategies in their development of a theoretically based measure of coping. The resulting measure had a number of scales encompassing active coping, planning, suppression of competing activities, restraint coping, instrumental social support, emotional social support, positive reinterpretation and growth, acceptance, turning to religion, focus on and venting of emotions, denial, behavioural disengagement, mental disengagement, and alcohol-drug disengagement. Theoretically each of these scales could be subsumed under one of the four main types of coping: emotion, problem, social and meaning focused coping. It could also be argued that some types of coping could fit into more than one category. For example, cognitive reappraisal, which is a form of problem-focused coping, has similarities with positive reinterpretation which is considered a type of meaning-focused coping. What is of greater interest however is the actual effectiveness of the coping method chosen.

### **Coping types and outcomes.**

It is important to identify the different ways in which people cope because this may be strongly related to outcomes. For example, Folkman and Moskowitz (2004) highlight the potential for some types of coping to be associated with the production of positive affect in demanding situations. Specifically, they argue that positive reappraisal, goal-directed problem-focused coping and finding meaning in situations are associated with the generation of positive affect. This acts as an extra resource in protecting against the damaging effects of

stress. McGowan, Gardner & Fletcher (2006) found that problem focused coping was associated with greater positive affect in a work related environment. Additionally, In a study of married couples with children Folkman et al. (1986) found that coping type was associated with satisfaction with situational outcomes. Those who used more planful problem solving and positive reappraisal reported higher levels of satisfaction. Those who used more confrontive coping (expressing anger, standing of ground) and distancing reported more dissatisfaction with situational outcomes.

### **Interaction between coping type and situation.**

Coping within a transactional model has been described as contextual in its nature which means that coping is tied in some ways to the situation (Folkman, 1992). One way of describing the interplay between coping and the situation is to elaborate on the *goodness of fit* of the coping type used. This suggests that the most appropriate or adaptive coping strategy used depends on some features of the situation. Controllability of the situation appears to be the most important factor here. The argument is that controllable situations would warrant an attempt at problem solving or problem focused coping. In contrast, situations in which an individual has little control may be better approached with the use of emotion focused coping such as distracting oneself. Consequently, using the wrong type of coping, such as trying to problem solve in an uncontrollable situation, will lead to maladaptive outcomes. Therefore in this context goodness of fit relates to the match between the coping tactic used and the controllability of the situation (Lazarus & Folkman, 1984).

An example of research that explores goodness of fit between situation and coping type was conducted by Terry and Hynes (1998) who analysed the relationship between coping strategy and adjustment in a situation deemed to offer little control, in this case adjustment after a failed in-vitro fertilisation (IVF) course. This research aimed to take a more comprehensive approach to the constructs of emotion and problem focused coping in that emotion-focused coping was further delineated into mental disengagement (escapism) and behavioural disengagement (avoidance, denial, minimisation). Problem-focused coping was

delineated into problem management (managing and finding solutions to problems) and problem appraisal strategies (actively managing one's internal appraisal of the experience). It was expected that in this low control situation, problem appraisal strategies would be the most effective method of assisting the participants of the study to adjust to the failed IVF attempt. The results were in support of this hypothesis in that escapism and problem management were associated with inferior adjustment outcomes in this low-control situation, while problem appraisal was associated with superior adjustment.

Conversely, other research has provided results that contradict the goodness of fit hypothesis. In a study of the effects of coping on job stressors Shimazu and Kosugi (2003) found that, regardless of the controllability of the job stressor, active (problem-focused) coping was significantly more effective at reducing day-to-day job related stress than non-active (emotion-focused) coping was. However, they also found that using active coping for long periods of time can contribute to fatigue and therefore a combination of active and non-active coping could actually improve outcomes. Studies such as this one highlights the intricacy of the coping process and more specifically, the complexity of the constructs of emotion and problem focused coping and their relationship to the circumstances to be coped with. What the study by Shimazu and Kosugi suggests is that people who can flexibly use a range of coping responses may have better adaptational outcomes. Folkman and Moskowitz (2004) also highlight the idea that being able to quickly adapt to situational demands by employing a wide range of coping responses may be an area for further research.

### ***Coping adaptability***

#### **Flexibility as a personal resource.**

Outside of the stress and coping literature flexibility and adaptability as personal resources have been associated with adaptive outcomes and adjustment. Paulhus and Martin (1988) cite interpersonal flexibility, or the ability to adapt behaviour to changing interpersonal situations, as an important precursor to adjustment. Accordingly, they developed a measure of interpersonal flexibility that combined the measurement of a wide range of interpersonal

responses combined with a measure of situational appropriateness. They found this measure to be a useful predictor of adjustment over and above the existing trait based measures already in existence that did not account for situational appropriateness.

Another author who favoured the idea of flexibility as a route to adjustment was Bem (1974) who developed the construct of psychological androgyny whereby individuals deemed to be androgynous are able to call upon a range of behaviours across the spectrum from masculine to feminine to facilitate adjustment when faced with changing situations. Using this theory Lefkowitz and Zeldow (2006) found that psychological androgyny was associated with better mental health scores in a sample of people seeking career consultation. While not directly related to coping, research of this nature indicates that flexibility and adaptability may be an important personal resource that could be extended to stress and coping research. Recent coping research supports this assertion and suggests that coping adaptability may have an important place within stress research.

### **How does coping adaptability relate to a transactional model of stress?**

Cheng (2001) situates coping adaptability within a transactional approach by describing coping adaptability as how “individuals constantly alter their thoughts and behaviour in response to the changes in their appraisals of stressful situations and in the demands of those situations” (p. 814). This is in line with the view that within a transactional model, coping is considered a continuous and changeable process rather than a discrete action (Lazarus & Folkman, 1984).

Cheng (2001) also argues that in order for someone to have coping flexibility, they must also have flexibility in their appraisals as the two processes are linked. This is particularly important for how an individual makes appraisals of controllability of situations. If an individual appraises all situations as being under their control the outcomes of the stress process are not likely to be as adaptive. Equally maladaptive are the outcomes for the person who appraises all or most situations as being out of their control. The maladaptive outcome may be a consequence of the limited range of coping responses used which are a result of the



limited range of appraisals made. Consequently, those who make more accurate judgements and decide that some situations are within their control and some are not, will most likely employ a wider range of coping responses. Specifically, Cheng (2001) describes that appraisals of control are linked to utilisation of problem focused coping and appraisals of lack of control are linked to emotion focused coping. This concept aligns with the goodness of fit theory of coping (Lazarus & Folkman, 1980). Problem and emotion focused coping may be adaptive when used adapt to controllable and uncontrollable situations respectively, but when an individual is rigid in their appraisal of coping the opportunities for subsequently using the best coping strategy are limited. This argument links coping adaptability to appraisal and affirms that it may be a useful addition to transactional research.

### ***Measuring coping adaptability***

As with other constructs in the present research, there is the potential to measure coping adaptively as either a situation specific occurrence or as an aggregated trait.

#### **Situation specific measurement.**

Cheng (2001) developed a measure of coping flexibility called the Coping Flexibility Questionnaire (CFQ) which asks respondents to describe a stressful situation, indicate the level of desirability (or undesirability) of the situation and the perceived impact (primary appraisals). They were also asked to indicate the degree of controllability of the situation (secondary appraisal). Respondents were then asked to indicate the coping strategies used and how effective those strategies were. This exercise was completed for six stressful events. The data generated from the 100 participants was examined using cluster analysis which resulted in four clusters of coping flexibility styles. The first cluster consisted of people who were likely to perceive events as variable in controllability and also tended to use a range of problem and emotion focused coping strategies accordingly this cluster was named the *flexible type*. The second cluster was named *active-inflexible* due to their propensity to evaluate most events as controllable and correspondingly used mostly problem focused coping strategies. The third cluster was named *passive-inflexible* which were characterised by the evaluation of most events as uncontrollable and therefore tended to report more emotion

focused coping. Lastly the fourth cluster was defined by their varied assessment of events as controllable/uncontrollable but also tended to use higher amounts of problem focused coping, hence they were named *active-inconsistent*. These clusters clearly show us the link between appraisal and coping strategies and in particular how variable appraisal can in some instances lead to more flexible coping responses. Most importantly, the flexible coping group tended to have better outcomes in goal attainment and success of coping strategy which suggests an adaptive quality to being able to cope flexibly.

### **Measuring coping adaptability as a trait.**

Kohn, et al. (2003) developed the trait oriented Personal Functioning Inventory (PFI) to accommodate the theory that the most appropriate coping style depends on the circumstances. In this approach, adaptability or the ability to change to the most appropriate coping style is important. Kohn et al. (2003) state that “Adaptiveness constitutes coping consistently so as to reduce distress, or at worst, not aggravate it. This would entail consistently acting appropriately for the circumstances, notably the controllability of the stressors encountered” ( p. 112).

The emphasis Kohn et al. (2003) place on *consistency* in adapting to the circumstances is consistent with a trait approach. In other words it is asking ‘is this person *usually* able to adapt to the circumstances?’ In order to measure this interaction between coping and situation the measure was written according to a number of underlying principles. The principles underlying the PFI are described as follows: *Judgement* is described as the ability to dependably ascertain a good response to demanding circumstances, this response should reduce stress or at least not make it worse; *Determination* is described as being able to surmount obstacles in carrying out an intended course of action to resolve a problem; *Self-control* is described as being able to prevent oneself from taking inappropriate action as a result of emotional impulse or provocation; lastly, *Adaptiveness* relates to responding to stress causing situations in such a way that stress is reduced or at least does not aggravate it further.

Whilst Lazarus and Folkman (1984) generally recommend the use of situation specific measures for transactional research the trait measure of coping adaptability developed by Kohn et al. (2003) nevertheless manages to tap into the dynamic nature of coping by way of its focus on variability and situation appropriateness. Using trait measures of coping may also avoid common pitfalls associated with situation specific measures. One such pitfall is that each respondent will have in mind a vastly different type of situation (Folkman & Moskowitz, 2004). Aspects of these situations will vary in seriousness, type, length and intensity and therefore it is difficult to make comparisons across individuals. Situation specific measures may also suffer from potential unreliability of recall of the participants. Whilst some daily measures of coping were put into practice to overcome this limitation they tended to be time consuming to implement and complete and may focus on the detail of coping at the expense of the big picture (Folkman & Moskowitz, 2004). Trait measures of coping appear to avoid these pitfalls and have the added benefit of generalising across situations.

### **Why is coping adaptability important for military recruits?**

The concept of coping adaptability is particularly important for military recruits. Firstly, because all recruits are new to the organisation they are required to adapt to new ways of doing things and this may extend to methods of coping. Chapter 1 discussed how aspects of recruit training are potentially stressful for recruits and the attitudes and dispositions that recruits bring with them may be a help or a hindrance when coping with the demands of training. RNZAF recruits are required to leave their home and family and existing support networks. They have little control over their daily routine which may be more physically and mentally arduous than they are used to. The recruits must share accommodation with a number of people who they did not previously know and must acquire many new skills to a standard prescribed by the Air Force. Therefore, the potential for the experience to be demanding is great. What is particularly important is that individuals' preferred methods of coping may not be appropriate in the recruit training environment (Brown, 2004). For example, limited freedom and privileges are available so a recruit may not be able to access their traditional support networks or partake in activities normally available to them.

## ***Research implications for this study***

### **Appraisals and coping adaptability.**

People who make more challenge appraisals may be advantaged when attempting to adapt to the military training environment. This is illustrated by Lazarus and Folkman (1984) who argue that a tendency toward challenge appraisals may have very real benefits for an individual, particularly benefits surrounding morale and physical well-being. People who tend to make more challenge appraisals will be more likely to experience positive emotions due to their perception of having sufficient resources to meet demands. Conversely, people who more often perceive that they have insufficient resources to meet demands may experience decreases in morale or well-being.

Skinner and Brewer (2002) examined the role of trait appraisals within a performance context (a university level examination). They found that participants who had a tendency to appraise situations as a challenge also had higher expectancies for coping and subsequently experienced more positive emotion. The reverse was found for threat appraisals which were associated with lowered coping expectancies.

Likewise in a study of US Navy recruits Brown (2004) found that tendencies to appraise situations as challenging were associated with higher levels of coping adaptability. Conversely, threat appraisals were negatively associated with coping adaptability. Therefore, it can be expected that there will be a strong relationship between appraisal and coping adaptability in the present research.

Hypothesis 1: There will be a positive relationship between challenge appraisals and coping adaptability.

Hypothesis 2: There will be a negative relationship between threat appraisals and coping adaptability.

The relationship between threat and challenge appraisals themselves is less clear cut. Intuitively, one would think that a tendency towards challenge appraisals would be negatively associated with a tendency towards threat appraisals however Lazarus and Folkman (1984) argue that the two constructs are not mutually exclusive and may in fact occur simultaneously. Brown (2004) found that there was a very small but positive correlation between threat and challenge appraisals in her study. Likewise, Peacock, Wong and Reker (1993) found a positive relationship between appraisals of threat and challenge in their study of student job-seekers.

Hypothesis 3: There will be a significant positive relationship between threat and challenge appraisals.

### **Appraisals and perceived performance.**

In a performance context appraisal is likely to impact a person's perceptions of their own performance. Tomaka et al. (1993) examined the effect of threat and challenge appraisals within a laboratory setting by requiring participants to complete a mathematics task. They found that those who reported having more challenge appraisals tended to perceive that they had performed well on the maths task. The opposite was the case for those that made threat appraisals. This effect is similar to earlier research by Smith and Ellsworth (1987) who found that, immediately after a first year university exam, those who reported challenge cognitions believed they had done better on the exams. Likewise, in a study of Australian and Swedish pilots who had experienced ejection from an aircraft, it was found that challenge appraisals were associated with higher self-ratings of performance during the ejection. Conversely, threat appraisals were associated with poorer self-ratings of performance (Larsson & Hayward, 1990). The results of these studies are relevant to the present research as recruits provided self-assessments of their performance improvement at the end of recruit course and self-assessments of their preparedness for the next phase of their career.

Hypothesis 4: Challenge appraisals at the start of recruit course will be positively associated with perceived performance improvement at the end of recruit course.

Hypothesis 5: Threat appraisals at the start of recruit course will be negatively associated with perceived performance improvement at the end of recruit course.

Hypothesis 6: Challenge appraisals at the start of recruit course will be positively associated with readiness for next career phase at the end of recruit course.

Hypothesis 7: Threat appraisals at the start of recruit course will be negatively associated with readiness for next career phase at the end of recruit course.

#### **Coping adaptability and outcomes.**

Cheng (2001) found that in a sample of students adjusting to university life, those who reported more coping adaptability also reported more success in implementing *both* problem and emotion focused strategies in pursuit of their goals. Like Cheng, Kohn et al. (2003) found that adaptability in coping was correlated positively with self-rated ability to deal with problems. This suggests that coping adaptability may be relevant to achievement and performance environments and therefore there may be a positive relationship between coping adaptability and perceived performance improvement and readiness for next career phase.

Hypothesis 8: There will be a positive relationship between coping adaptability and perceived performance improvement.

Hypothesis 9: There will be a positive relationship between coping adaptability and readiness for next career phase.

Traditional measures of coping types have explored the association between coping and organisationally relevant outcomes such as organisational commitment. Judge, Thoresen, Pucik and Welbourne (1999), in a study of managers experiencing extensive organisational change, found that higher scores on a measure of coping with change predicted organisational commitment, job satisfaction and job performance. There is less research in existence which tests whether the more recent coping adaptability construct is associated with organisational outcomes. However, even though the measure of coping adaptability differs in that it tests the recruits use of the most appropriate coping strategy, it could be expected that this would also be associated with positive organisational outcomes.

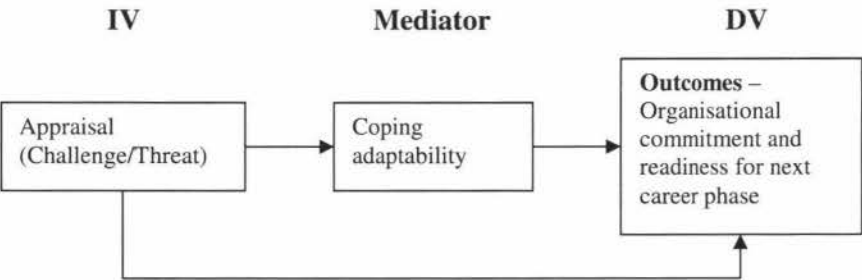
Attrition or employee turnover is an important organisational outcome that has been associated with a lack of organisational commitment (Mowday, Steers & Porter, 1979). Brown (2004) found that coping adaptability was negatively associated with recruit attrition when the attrition was for reasons that were considered controllable. This would include failure to adapt, misconduct, and voluntary removal from training. Specifically, increases in coping adaptability were associated with increases in the likelihood that a recruit would graduate from training. This indirectly suggests that coping adaptability may have a relationship with organisational commitment because commitment is associated with employee turnover. Therefore, in the present study it could be expected that there will be a positive relationship between coping adaptability and organisational commitment.

Hypothesis 10: There will be a positive relationship between coping adaptability and organisational commitment.

### **Coping adaptability as a mediating variable.**

Within the transactional model, Lazarus and Folkman (1984) emphasise the mediating role of coping in the stress process rather than situating coping as an outcome in itself. Baron and Kenny (1986) describe a mediating variable as one which accounts for the relationship between an independent variable and an outcome. In other words, it may explain why or how one variable impacts another. Lazarus (1995) explains that coping alters the person-

environment interaction subsequently, coping is a variable that explains how appraisal is linked to outcomes. Whilst coping adaptability as a variable is a departure from more static measures of coping the process of adapting coping strategies to changing circumstances is cognisant with the transactional approach which sees coping as a fluid and dynamic process. Therefore, it is expected that coping adaptability will also act as a mediating variable in the present research. The direct and indirect relationships are represented in Figure 3.



**Figure 3. Coping adaptability as a mediating variable**

Hypothesis 11a: Coping adaptability will mediate the direct relationships between challenge appraisal measured at the start of recruit training and organisational commitment measured at the end of recruit course.

Hypothesis 11b: Coping adaptability will mediate the direct relationship between threat appraisal measured at the start of recruit training and organisational commitment measured at the end of recruit course.

Hypothesis 11c: Coping adaptability will mediate the relationship between challenge appraisal measured at the start of recruit training and readiness for next career phase at the end of recruit training.



Hypothesis 11d: Coping adaptability will mediate the relationship between threat appraisal measured at the start of recruit training and readiness for next career phase at the end of recruit training.

### ***Chapter summary***

This chapter has explained the concepts of appraisal and coping in more detail. Specifically, the chapter has explained the concepts of primary appraisal and secondary appraisal and how appraisal provides a link between the individual and the environment. Determinants of appraisal were discussed as was the idea that appraisal may not only be impacted by individual differences but patterns of appraisal may lead us to consider appraisal as a trait or disposition in itself.

Coping within a transactional model was discussed with reference to types of coping and outcomes and how adaptability in coping may be an important route to adjustment and therefore an important research concept. Finally, research relating to appraisal and coping were discussed in reference to the hypothesised relationships in the present study.

The next chapter examines the role that self-efficacy, as an individual difference, may play in the transactional model of stress.

## **Chapter 4**

### **Self-efficacy**

The beliefs that individuals hold about themselves will have a large degree of impact on their lives and this is especially the case in performance and achievement environments. Bandura's (1986) Social Cognitive Theory of human functioning has been a key theory that promoted a shift from behaviourist theories to theories that incorporate the self and self beliefs (Schunck & Pajares, 2005). One such belief that is of particular importance in the domain of training and performance is self-efficacy. Bandura (1997) defines self-efficacy as the "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (p.3). Self-efficacy theory is therefore concerned with the implications that individuals' self-efficacy beliefs have on their behavior and adjustment (Maddux, 1995).

Many studies have been conducted which examine the implications self-efficacy has for important outcomes. Judge, Jackson, Shaw, Scott and Rich (2007) highlight that in the past 25 years self-efficacy has been included in more than 10,000 studies which indicates its importance as a construct. Describing and explaining the importance of self-efficacy and its implications as a construct is assisted by first situating it within the broader Social Cognitive Theory.

### ***Social Cognitive Theory***

Social Cognitive Theory is centred on the reasoning that people's actions are not governed solely by environmental factors. Consequently, in this theory people are not seen to respond passively to external cues (Bandura, 1997). Previous reinforcement theories suggested that behaviour is a response to reinforcement or punishment, in comparison social cognitive theory

suggests that what people *think* about the reinforcement or punishment will have an impact on their subsequent behaviour (Bandura, 1997).

One of the key ideas of Social Cognitive Theory proposed by Bandura is the idea of *reciprocal determinism* which posits that the basis of human functioning includes personal factors (including cognition, affect and biology), behavioural factors, and environmental factors, all of which impact on each other reciprocally with varying degrees of strength (Maddux, 1995). Radical behaviourism was an example of a theory in which individuals are driven entirely by environmental factors, where they are merely reacting to what is happening in their environment. The opposite view is held by theorists who strongly favour personal determinism, or the idea that traits and motivational forces within an individual are what drives their behaviour and cognitions. Because of its ability to incorporate facets of both the situation and environment as well as the individual, the idea of reciprocal determinism shares some qualities with transactional theory with its emphasis on person-environment interaction.

The utility of reciprocal determinism as a theory stems from the possibility of intervention at various points in this reciprocal triad, for example, changing thought patterns in order to change behaviour. Clearly then, this theory has utility within any domain that is interested in human behaviour and performance and in particular for organisational psychology.

### ***Self-efficacy***

Self-efficacy fits within the cognitive aspect of the reciprocal determinism triad. An individual's beliefs about their capabilities has a clear cognitive element which influences behaviour. Therefore, self-efficacy plays a large role in motivation or human agency which is the ability to interact with the environment and enact control over it (Pajares & Schunk, 2002). Maddux (1995) argues that self-efficacy theory is concerned with "adaptively responding to the environment" (p.3). Accordingly, Maddux argues that people are more likely to exert control over aspects of their environment when they believe they have the power to do so.

### **Determinants of self-efficacy.**

Maddux (1995) summarises six key sources in the development of self-efficacy. The first is *previous performance experience*. This is considered the most powerful source of self-efficacy and a person who has experienced past success will likely have higher self-efficacy than a person who has experienced failure. The second source of self-efficacy is *vicarious experience* or the ability to learn from others' experience. Vicarious experience is likely to be more powerful if the observer detects similarities between themselves and the observed and also if the situation being observed is salient. The third source of self-efficacy is *imaginal experiences* which is a consequence of our ability to represent ideas in symbolic form via the use of visualisation and the anticipation of possible events. *Verbal persuasion* is another source of self-efficacy and, whilst not as powerful as immediate experience, is heightened by the perception that the influencer is powerful or an expert, or is trustworthy and attractive. An individual's experience of their *physiological state* is also a source of self-efficacy where unpleasant physiological arousal is likely to lower the perception of self-efficacy. Conversely, a state of pleasant or neutral physiological arousal strengthens an individual's perception of their self-efficacy. Lastly, an individual's *emotional state* will be a source of efficacy information. Negative affect or mood is likely to reduce self-efficacy and positive affect will be associated with increased efficacy.

### **Differentiation from self-esteem.**

It is important that self-efficacy can be differentiated from a similar construct, self-esteem. Self-esteem is a global self-evaluation of worthiness as a person (Schmitt & Allik, 2005). Chen, Gully and Eden (2004) found evidence that while self-efficacy is highly related to motivation, self-esteem is more related to affective states. They reasoned that this is due to self-efficacy being more about task competence whereas self-esteem tended to render more emotive global evaluations of the self. Self-efficacy can also be differentiated from locus of control which, while similar, is more associated with evaluations of whether a situation is

within one's control rather than associated with one's ability to carry out an action as is the case with self-efficacy (Judge et al., 1999).

### **Self-efficacy and performance.**

Self-efficacy is an important construct for organisational psychology due to its links with performance. As a motivational variable self-efficacy underlies human performance, because people who have greater self-efficacy will accordingly have higher agency. This means that they will set more difficult challenges for themselves and will envisage success, thereby providing a roadmap for performance. The opposite happens for people with low efficacy in that they will imagine possible failure, which may have poor implications for performance (Bandura, 1997).

Stajkovic and Luthens (1998) performed a meta analysis exploring the link between self-efficacy and work related performance. They firstly conducted an analysis that aimed to aggregate the overall relationship between self-efficacy and work related performance. They predicted that there would be a positive relationship between the two constructs. As expected an overall positive relationship of moderate strength was found, indicating that self-efficacy is indeed associated with performance. However, they subsequently found that as task complexity increases the strength of this relationship decreases. This is because increasingly complex tasks will naturally incorporate a broader array of tasks and a highly specific measure of efficacy will not map on to all sub-tasks directly. This increases the opportunity for mismatch between a person's perceived self-efficacy and likely performance (Stajkovic & Luthens, 1998). As tasks become more complex an individual is required to attend to a greater amount of informational cues and perform more sub-tasks, they must effectively coordinate the sub-tasks required to complete the overall task and they must adapt as the requirements of the task change over time. Therefore, in situations of increasing task complexity measures of domain-specific self-efficacy become too precise to be predictors of overall performance. This is in line with the *skill acquisition model* (Ackerman, Kanfer & Goff, 1995) in which distal or trait-like personal resources tend to be a greater influence on

complex tasks, whereas proximal or immediate motivational processes influence more simple tasks.

Likewise, Judge et al. (2007) completed a meta-analysis of self-efficacy and performance in the organisational domain. They discovered that the incremental validity of specific self-efficacy was considerably lower when characteristics such as personality and general mental ability were controlled for. Given the results, Judge et al. suggest the incorporation of individual difference variables into existing models of motivation and performance and also point out that a broader self-efficacy measure could have more utility than a specific measure. These studies highlight a conceptual debate surrounding self-efficacy, which relates to the specificity and generality of the construct.

The idea that self-efficacy is a motivational variable that impacts subsequent performance has been subject to debate. It has been argued that the causal relationship between self-efficacy and subsequent performance is not entirely clear and some research indicates that self-efficacy is a result of past performance but not a predictor of future performance. Richard, Diefendorff and Martin (2006) used a longitudinal study design to assist in clarifying the matter. They found that performance on learning tasks did predict future self-efficacy however, the reverse did not apply. This supports the Social Cognitive Theory underlying self-efficacy which suggests that sources of self-efficacy include prior experience however, it does negate the motivational and performance attributes often associated with this construct. It should be noted that the self-efficacy measured in this study was very specific and it would be informative to test whether the direction of this relationship also exists for the more general form of self-efficacy which does not rely on such specific instances of performance.

### **The generality of self-efficacy.**

A considerable amount of debate exists regarding the generality and specificity of self-efficacy. Chen, Gully and Eden (2004) agree that there is a difference between self-

efficacy and general self-efficacy. They conceptualise general self-efficacy as a more stable, trait-like capability belief, in contrast to specific self-efficacy which is conceptualised as malleable and task-specific. It is important to note that task-specific self-efficacy requires the individual to have past experience of performing that task in order to determine the capability belief that they subsequently hold.

Ultimately, the generality of the approach to measuring self-efficacy should be determined by the utility and validity to be gained from using that particular approach. This was argued by Rotter (1975), who maintained that generalised notions of expectancies are important in situations that are novel and ambiguous, although he cautions that while this would allow prediction across a large number of situations the strength of the prediction would be less than a more specific approach.

In line with Rotter's (1975) argument, in the current study the concept of a more generalised self-efficacy construct fits well given the circumstances. The participants of this study are all at the beginning stages of military training in which they are required to learn many new skills that they would never have been exposed to before. The utility of a general measure of self-efficacy would seem higher than assessing the participants on only one specific task. Chen, Gully, Whiteman and Kilcullen (2000) also argue that distal measures of self-efficacy have more utility when trying to understand performance over time. These arguments indicate that a distal or generalised measure of self-efficacy is more appropriate for the present research given its longitudinal nature.

While it is clear that there are important relationships between self-efficacy and performance it is important to consider that there are other variables or mechanisms through which self-efficacy impacts on performance. Because self-efficacy has links with cognition, affect and adaptational outcomes it may have important relationships with other variables that are traditionally associated with stress and well-being.

### *Self-efficacy and the stress process*

Self-efficacy is a construct that is traditionally associated with performance outcomes (Stajkovic and Luthans, 1998; Richard, Diefendorff, & Martin, 2006; Judge et al., 2007). However, it was noted by Jex and Bliese (1999) that self-efficacy was a neglected variable in the stress process, particularly in organisational research. Despite this, theory surrounding self-efficacy provides clues as to how this construct is related to affective states associated with stress. Maddux (1995) argues that self-efficacy beliefs surrounding performance can influence affect via the beliefs that people hold about their ability to control potentially aversive situations or internal states. Likewise, Bandura (2000) argues that distress itself may be a result of a failure or lack of efficacy in regulating disturbing thoughts and that an individual's beliefs surrounding their ability to cope assist in controlling upsetting and distressing thought patterns. These arguments indicate that if someone believed they had little ability to prevent the occurrence of external harmful events or situations they would be more likely to experience distress. Additionally, if a person felt they did not have the efficacy to control their own internal harmful cognitions, they would also feel distress.

It could be expected then, that self-efficacy will have strong relationships with the variables in the present research. Self-efficacy may have a strong influence on cognitive appraisals of threat and challenge particularly in achievement or performance related settings. A person who perceives that they have low efficacy in a performance setting may be prone to experiencing threat appraisals which may then impact on how they choose to cope in that setting. Conversely, those who feel competent about their abilities would be more likely to make appraisals of challenge and recognise the potential for growth as a result of the situation (Karademas & Kalantzi-Azizi, 2004).

Because self-efficacy is concerned with judgements of whether a course of action can be successfully carried out and with motivation and control over one's environment it makes



sense that self-efficacy will impact on coping related thoughts and behaviour. In a performance setting, self-efficacy in relation to coping with failure and setbacks may be an important predictor of outcomes (Bandura, 1997). This is because self-efficacy is an important antecedent of judgements about whether a person has the ability to cope and maintain the effort required to carry out coping behaviours (Karademas & Kalantzi-Azizi, 2004) .

### ***Research implications for this study***

#### **Self-efficacy and appraisals.**

Research supports the arguments that self-efficacy has an impact on the type of cognitions a person is will make. Chemers, Hu and Garcia (2001), examined whether students who reported higher levels of self-efficacy would also demonstrate better adjustment as measured by performance and stress during their first year of university. They found that self-efficacy had a direct relationship with performance and also indirectly affected performance via appraisals and subsequent stress. Self-efficacy also indirectly impacted on adjustment and health via appraisals and stress. Of relevance to the present research, students who were more efficacious tended to make more challenge appraisals and had subsequently better outcomes in academic performance and adjustment.

Similarly, Karademas & Kalantzi-Azizi (2004), used a sample of university students undergoing exams to examine the place of self-efficacy in a transactional model of stress and coping. They predicted that self-efficacy, threat, challenge and stakes in a situation would predict subsequent psychological health and adaptive coping, even when prior psychological health was controlled for. They found that students who reported experiencing more challenge during examinations tended to report higher self-efficacy and better psychological health. Those students who reported more threat appraisals during exams also reported less self-efficacy, less use adaptive coping methods and more symptoms of psychological ill-health.

These studies both indicate that higher levels of self-efficacy are associated with challenge appraisals and may have a negative relationship with threat appraisals. Of relevance to the current research is the performance and achievement environment in which the studies were undertaken, which is consistent with the recruit training setting. Additionally, the study by Chemers, Hu and Garcia (2001) was undertaken during a period of intense transition for the participants (the first year of university) which is consistent with the intense transition phase being experienced by military recruits.

Hypothesis 12: There will be a significant positive relationship between self-efficacy and challenge appraisals.

Hypothesis 13: There will be a significant negative relationship between self-efficacy and threat appraisals.

### **Self-efficacy and coping.**

Jex, Bliese, Buzzell and Primeau (2001) examined self-efficacy within a stressor-strain model by examining how coping was related to self-efficacy. The authors state that "it has been suggested that those who are confident in their ability to carry out their job tasks are likely to use effective ways of coping with workplace stressors" (p. 401). The purpose of this research was to determine whether coping styles accounted for the buffering effect of high self-efficacy on the stressor strain relationship. They predicted that elevated self-efficacy would influence relations between stressors and psychological strain only among employees who also report frequent use of active coping strategies. More specifically, stressors will cause less strain for those people who used more active coping. The results supported the hypothesis. However, the study assumes that the use of active coping is *always* the best way to cope. Perhaps a stronger relationship could be found between self-efficacy and coping adaptability in determining the outcomes of stressful situations because a person higher in

self-efficacy may feel more confident about employing a wider range of coping skills, perhaps even ones they are not so familiar with, in order to achieve the *best* outcome. In line with this premise, Brown (2004), in a study of US Navy recruits, found that self-efficacy had a significant positive relationship with coping adaptability. This relationship was thought to be because participants who score high on both self-efficacy and coping adaptability measures have the ability to deal with a wide variety of demands in effective ways.

These studies are of particular relevance to the present research as they address the relationships between self-efficacy and coping within a military environment, this is especially so for the Brown (2004) study which used similar measures in a recruit population.

Hypothesis 14: There will be a positive relationship between self-efficacy measured at the start of recruit course and coping adaptability measured at the end of recruit course.

#### **Self-efficacy and organisational outcome variables.**

Jex & Bliese (1999) found that self-efficacy was a significant moderator between stressors (task significance; work-overload; work hours) and outcome measures (job satisfaction; organisational commitment; psychological and physical strain). Importantly, they found that when people with high self-efficacy were subject to stressors, their levels of organisational commitment tended to remain high. Additionally, a direct relationship between organisational commitment and self-efficacy was reported.

Along the same lines Siu, Spector, Cooper and Lu (2005) found that there was a direct relationship between self-efficacy and job satisfaction and that self-efficacy moderated the relationship between stressors and job satisfaction. They reasoned that those with low self-efficacy would feel they had less control over work stressors, and would experience them more intensely leading to lowered job satisfaction.

These studies indicate that self-efficacy plays a role in determining how a person feels about their organisation or their work therefore, we may expect self-efficacy to impact on the organisational outcome variables in the current study.

Hypothesis 15: Self-efficacy measured at the beginning of recruit training will have a positive relationship with organisational commitment at the end of recruit training.

Hypothesis 16: Self-efficacy measured at the beginning of recruit training will have a positive relationship with perceived performance improvement at the end of recruit training.

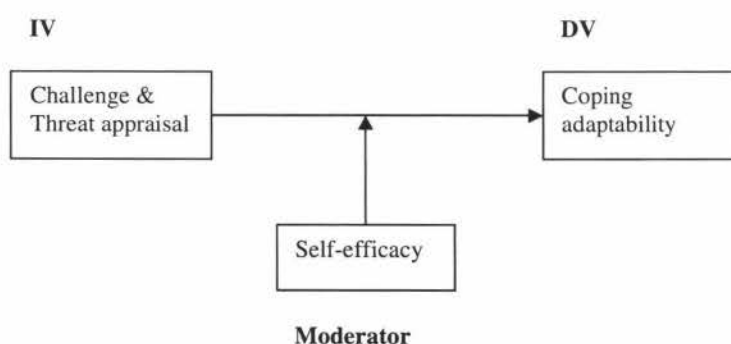
Hypothesis 17: Self-efficacy measured at the beginning of recruit training will have a positive relationship with readiness for next career stage at the end of recruit training.

#### **Self-efficacy as a moderating variable.**

Moderator variables influence the relationship between an independent variable and an outcome variable because moderators either strengthen or lessen the impact of the independent on the outcome variable (Baron & Kenny, 1986). Previous research has shown a range of individual difference variables to play moderating roles in the stress process. Kobasa, Maddi & Kahn (1982) demonstrated that hardiness had a buffering effect on the stress process while Ganster and Schaubroeck (1995) showed that self-esteem also had buffering properties. Theory suggests that high self-efficacy will also play a buffering role in the stress process by providing a link between cognitive processes and stress processes (Karademas and Kalantzi-Azizi, 2004) This is explained further by Chemers, Hu and Garcia (2001) who argue that self-efficacy is associated with a more positive analysis of demands and resources. This may be particularly important in performance or achievement settings as Bandura (1997) reasons that students who have high self-efficacy are able to focus on problem solving rather than becoming anxious and worrying about whether they have the resources to solve the problem.

Research supports the theory that self-efficacy plays a moderating role in the stress process and several studies already described have demonstrated the buffering effects of self-efficacy (Jex et al., 2001; Jex & Bliese, 1999; Siu et al., 2005). A further study by Betoret (2006) also found that self-efficacy lessened the impact of job stressors on anxiety in teachers. Likewise, Jerusalem & Schwarzer (1992) found that self-efficacy is a personal resource that buffers against the experience of stress. They demonstrated that when appraisals were measured at nine points in time over the course of repeated experimentally induced academic failures, those with high self-efficacy consistently reported more challenge appraisals when experiencing failure while those with low self-efficacy reported more threat appraisals. In other words, self-efficacy had a buffering effect when levels were high but it also made the participants more vulnerable when levels were low.

Therefore in the present research it is expected that self-efficacy will moderate the relationship between appraisal and coping adaptability such that those with high self-efficacy will be somewhat protected from the negative relationship between threat appraisal and coping adaptability. It is also expected that high self-efficacy will strengthen the positive relationship between challenge appraisal and coping adaptability. This relationship is demonstrated in Figure 4.



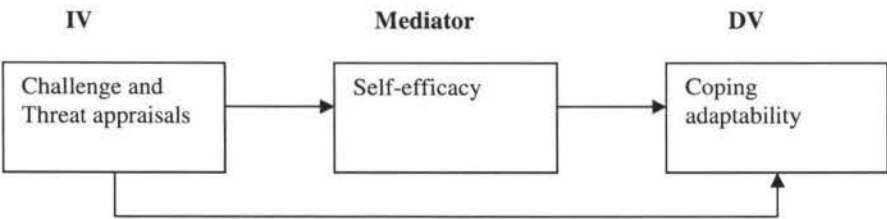
**Figure 4. Self-efficacy as a moderating variable**

Hypothesis 18a: Self-efficacy will moderate the relationship between challenge appraisals measured at the start of recruit course and coping adaptability measured at the end of recruit course.

Hypothesis 18b: Self-efficacy will moderate the relationship between threat appraisals measured at the start of recruit course and coping adaptability measured at the end of recruit course.

**Self-efficacy as a mediating variable**

The possibility that self-efficacy *accounts for* the relationship between appraisal and coping should also be considered. According to transactional theory, stress appraisals of challenge and threat trigger anticipatory coping which firstly requires an assessment of the coping options and resources available (Lazarus & Folkman, 1984). The general sense of competence associated with self-efficacy may be an important personal resource that is assessed in response to a stress appraisal. The self-efficacy assessment may then go on to influence the coping process as Terry (1994) argues that stable person factors influence coping, especially person factors that can be classified as *internal control beliefs*. This is because people who hold strong internal control beliefs will assume that actions they take will positively impact on the outcome of the situation. This is consistent with the idea that self-efficacy is a regulator of coping behaviour. This suggests that in the current study, levels of self-efficacy may mediate the relationship between challenge appraisals and coping adaptability and is shown in Figure 5.



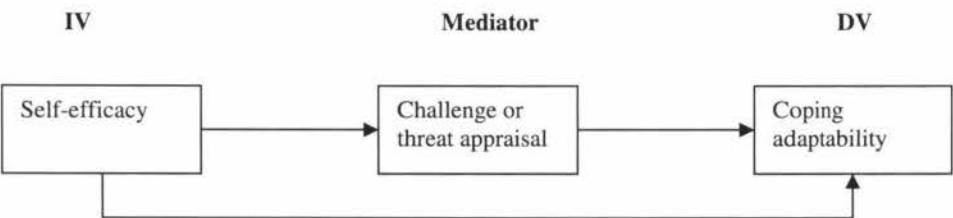
**Figure 5. Self-efficacy as a mediating variable**

Hypothesis 19a: Self-efficacy will mediate the relationships between challenge appraisals and coping adaptability.

Hypothesis 19b: Self-efficacy will mediate the relationships between threat appraisals and coping adaptability.

**Self-efficacy as a determinant of appraisal.**

Lazarus and Folkman (1984) propose that there are two important determinants of appraisal, these are commitments and beliefs. These are considered to be determinants of appraisal because they influence what is important for a person in a situation and influence how an individual understands an event. As self-efficacy is a belief concerning one’s competence to perform actions, it should also be considered as a potential determinant of appraisal. In this case, self-efficacy may trigger evaluations of challenge and threat. This supports the statement that “challenge appraisals are more likely to occur when the person has a sense of control over the troubled person-environment relationship” (Lazarus & Folkman, 1984, p. 36). Consequently, in the present study we may see that self-efficacy precedes the appraisal coping relationship. In other words, appraisal may mediate the self-efficacy – coping relationship. This relationship is displayed in Figure 6.



**Figure 6. Self-efficacy as a determinant of appraisal**

Hypothesis 20a: The relationship between self-efficacy and coping adaptability will be mediated by challenge appraisals.

Hypothesis 20b: The relationship between self-efficacy and coping adaptability will be mediated by threat appraisals.

### ***Chapter summary***

This chapter has described the theory of self-efficacy and related this to the broader social cognitive theory. This chapter has discussed the impact of self-efficacy, its links with performance, and has described the debate surrounding the generality of self-efficacy. Lastly, the relevance of self-efficacy to the stress and coping process has been looked at both in relation to theory and research results and the potential roles that self-efficacy plays in the stress and coping process have been evaluated. The next chapter will describe the methods used to conduct the present research.



## **Chapter 6**

### **Method**

#### ***Overview***

In 2005 the NZDF began a large scale study to track a cohort of new recruits from enlistment through to exit from the NZDF. As part of the study recruits were surveyed at several time points during their initial training: within the first few days of arriving for training; on graduation from training; and additionally, they were surveyed if they left the NZDF during training. Members of the NZDF cohort are to be tracked throughout their careers and surveyed approximately every 18 months.

The data for this study was obtained from the NZDF Cohort study. The data was collected at two time points and so is longitudinal in nature. The first questionnaire was provided to recruits within the first few days of beginning initial training. The second set of questionnaires was provided to recruits on completion of initial training, for non-commissioned ranks this was after approximately 12 weeks, and for officer-trainees this was after approximately five months. At the beginning of recruit course general self-efficacy and cognitive appraisals were measured. On the completion of recruit course coping adaptability, perceived performance improvement, organisational commitment and readiness for next stage of career were measured. Appendix 1 details the instructions and information provided to recruits. Details of the scales relevant to the present research that were embedded in the NZDF cohort study are also provided at Appendix 2.

Although the data used in this study was archival because it was collected prior to the commencement of this research, the researcher was heavily involved in the data entry phase for the data collected in 2006.

## **Ethics.**

Ethical approval to conduct this research was granted by Massey University Human Ethics Committee (MUHEC Ref 07/025). Additional approval to conduct this research was granted by the Chief of Air Force (RNZAF) in accordance with the regulations set out in the Defence Force Order 21/2002 Authority to Conduct Personnel Research.

## **Participants.**

The total number of participants was 238. Of this 74% were male and 26% were female. The proportion of officer recruits was 17% and the remaining 83% were non-commissioned recruits. The average age at enlistment was 20.48 years, the age of recruits ranged from 17.3 years to 46.09 years. Of the participants 48% completed their training in 2005 and the remaining 52% completed their training in 2006.

One-way ANOVA was used to assess whether participants in this study differed on any of the variables as a function of their gender; year of entry into the Air Force or whether they were officer or non-officer recruits. No significant differences were found for any of the groups with the exception being that males ( $M = 3.53$ ,  $SD = 1.84$ ) indicated they were significantly more ready for the next phase of their career than females ( $M = 2.77$ ,  $SD = 1.42$ );  $F(1, 232) = 7.60$ ,  $P < .01$ . Due to the minimal amount of overall differences between groups and in the interest of sample size all groups were analysed together for the remainder of the analysis.

## ***Procedure***

### **Questionnaire.**

The items relevant to the present study were embedded within a larger survey for the purposes of the NZDF cohort research. Parts of the survey were based on large scale research conducted on US Navy recruits (Marshall-Mies, Lupton, Hirose, White, Mottern, & Eshwar,

2007). The original surveys for both the US Navy sample and the NZDF Cohort study were developed for the purposes of studying attrition and retention during early career stages.

At each data collection point participants were briefed by RNZAF staff and were provided with detailed written information as to the nature and purpose of the study. The data collection was conducted during a classroom period in normal training hours. The participants returned their responses on the paper-based survey with pen. To ensure that the initial survey could be matched with subsequent surveys participants either included their name or service number (if this had been issued). For the purposes of the current research, once surveys were matched all personal identifiers were removed. The survey took recruits approximately 40 minutes to complete.

## ***Materials***

### **General self-efficacy.**

Participants completed a measure of general self-efficacy at the beginning of recruit training. The measure used was based on a measure developed by Chen, Gully and Eden (2001). This measure is designed to assess the degree to which an individual tends to view themselves as capable of successfully completing tasks across a number of contexts. For the present research a 10 item measure was used. Typical positive items include "When I set important goals for myself, I usually achieve them" and typical negative items include "If something looks too complicated, I will not even bother to try it. The six item response scale ranged from *definitely true* to *definitely false*. The Cronbach's alpha for the present scale was .70 which is an acceptable level of internal reliability.

### **Cognitive appraisal.**

The cognitive appraisal scale used in this study was based on previous research conducted by Lazarus and Folkman (1984) and Skinner and Brewer (2002) and was provided to recruits at the beginning of their training. There were 10 items in total, six of which were designed to measure challenge appraisal and four of which were designed to measure threat appraisal. There was a six-point response scale for this measure ranging from *definitely true* through to *definitely false* in answer to the question "how true or false each of the following statements are of you". An example of a challenge item is "I enjoy challenging situations" and an example of a threat item is "I worry about what other people will think of me". The Cronbach's alphas obtained for the sample used in this research were .57 for the challenge scale and .46 for the threat scale. These alphas are lower than desired however, in the original NZDF Cohort sample which included recruits that did not complete training higher reliabilities were obtained (.79 for challenge appraisal and .69 for threat appraisal).

Because the present research relied heavily on the differentiation between threat and challenge appraisal, principal component analysis was performed on the cognitive appraisal measure in order to confirm the presence of a threat and challenge sub-scale.

An initial principal component analysis returned a Kaiser-Meyer-Olkin measure of sampling adequacy of .61 which indicates that the data is suitable for analysis (Giles, 2002). Bartlett's test of sphericity tests whether the variance-covariance matrix is significantly different from an identity matrix, this test returned a significant result which also confirms the suitability of the data for undergoing factor analysis (Field, 2005). The initial analysis was run according to Kaiser's stopping rule in which factors with eigenvalues greater than one are extracted. Examination of the Scree plot for this analysis indicated a clear elbow at two factors, therefore the analysis was re-run with an instruction to extract two factors which were subjected to orthogonal rotation via Varimax prior to interpretation. The factor loadings on the rotated component matrix clearly fit the predicted challenge and threat scales. The

challenge factor explained 22.58% of the variance and the threat factor explained 14.94% of the variance.

### **Coping adaptability.**

A 30-item measure was used to assess recruits approach to coping and was provided to recruits at the completion of recruit training. The measure used was based on the Personal Functioning Inventory (Kohn et al., 2003). In the present study the measure was adapted slightly to suit the expected reading level of the participants (the original measure was developed for a university population). Half of the items were positively worded and half were negatively worded. Participants indicated their response on a 5-point rating scale ranging from *strongly agree* to *strongly disagree* in response to the question of how much the respondent agreed with each statement. Typical items include “I try not to get upset over minor insults” and “I try to be fully informed about the choices I have to make”. The Cronbach’s alpha for the present sample was .84 which is considered a good level of reliability.

### **Organisational Commitment.**

For this study a 15-item measure was used to assess participant’s level of organisational commitment at the end of recruit training. This measure used items from an existing NZDF ongoing attitude survey. Several of the items were similar in nature to a measure of organisational commitment developed by Mowday, Steers and Porter (1979). A typical positively worded item is “I speak highly of the Air Force to my friends” and a typical negatively worded item is “deciding to join the Air Force was a definite mistake on my part”. Responses were on a four-point scale ranging from *strongly agree* to *strongly disagree*. The Cronbach’s alpha for this scale was .62 which is slightly lower than desired.

Because the measure used was not established in the literature, and because organisational commitment has been associated with the presence of sub-scales such as affective, normative and continuance commitment (Allen and Meyer, 1996), the scale was subjected to principal

component analysis to confirm the underlying structure of the scale. The Kaiser-Meyer-Olkin and Bartlett's tests revealed the data to be suitable for analysis. The analysis was initially run according to Kaisers stopping rule and examination of the Scree plot showed a clear elbow at two components. The analysis was re-run specifying that two factors were to be extracted and rotated via Varimax rotation. The first factor which explained 28% of the variance contained all 11 of the positively worded items in the scale and the second factor which explained 18% of the variance contained all four of the negatively worded items therefore, both scales were combined into a total organisational commitment scale by the use of reverse scoring.

### **Perceived Performance improvement.**

At the end of recruit training participants were asked to indicate how much they believed they had improved over a range of seven areas. Participants could indicate on a three point ordinal scale that they had either gotten worse, stayed the same or improved their performance. The seven areas assessed included level of self-discipline, level of confidence, ability to cope with stress, ability to lead, ability to succeed in the Air Force, level of physical fitness and motivation for future service.

### **Readiness for next phase of career.**

At the end of recruit training participants were asked to indicate on a five point scale whether they felt adequately prepared to go onto the next stage. Answers could range from *Yes, very well prepared* through to *No, not prepared at all*.

### **Data Analysis.**

The data in this research was analysed using Statistical Package for the Social Sciences (SPSS®) version 14.0. A web-based program created by Preacher and Leonardelli (2003) was used to calculate the Sobel's test for mediation analyses.

### *Preliminary analysis.*

A missing value analysis was run in SPSS and confirmed that missing values did not exceed 5% for any of the variables in the study. Missing values were treated with Pairwise exclusion for the analysis.

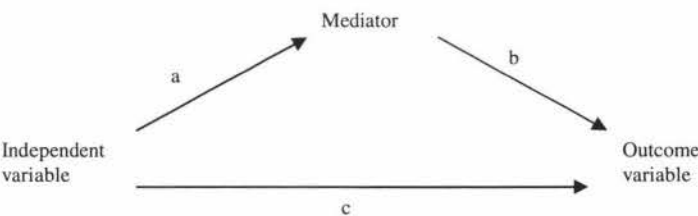
All variables were visually tested for normality using a histogram with an overlaid normal curve. Additionally, skewness and kurtosis statistics and the Kolmogorov-Smirnov significance test of normality was used to assess the data. In initial exploration of the data all variables returned significant results on the Kolmogorov-Smirnov test which suggests that the data is not normally distributed. Visual inspection of the histograms showed some skewness and kurtosis although most visually approximated a bell shaped curve. It should be noted that significance testing for normality in larger samples may result in overly conservative results. This should be taken into account along with the tendency for large samples (over 100) to diminish the impact of departures from normality (Tabachnick & Fidell, 2007). However, given that there remained potential for non-normality to impact the results the variables were subjected to transformations to assess whether normality could be improved. A natural log transformation was applied and although the variables continued to return significant results on the Kolmogorov-Smirnov test, visual inspection of the histograms and normal probability plots showed improvement. Consequently, transformed variables were used in the subsequent analysis.

One variable remained a particular concern even after transformation. The single-item measure relating to readiness for the next phase of career had a clear bi-modal distribution. This was initially thought to be due the significant difference in mean between male and female recruits on this variable. Subsequently, separate histograms for males and females were examined. The separate histograms continued to indicate that there was a bi-modal distribution. That recruits either felt very ready for the next phase of their career or not ready at all is an interesting result in itself but may make its relationships with other variables more difficult to interpret and therefore should be treated with caution.

Performance improvement was heavily skewed as the majority of participants indicated that they felt they had improved. Because only a 3-point ordinal scale was used for this variable, rather than a scale with more data points, only non-parametric methods will be used to examine the correlations with this variable.

***Hypothesis testing.***

The hypotheses were examined in two stages. The first stage explored the overall bivariate relationships among variables using Pearson’s and Spearman’s correlations. The second stage explored mediating and moderating relationships. Mediation was tested with regression techniques using the method advocated by Baron and Kenny (1986), who define a mediating variable as one that “accounts for the relationship between a predictor and a criterion” (p. 1176). Baron and Kenny (1986) describe three conditions that must be present for mediation to have occurred. Firstly, there must be a predictive relationship between levels of the independent variable and levels of the mediating variable. Secondly, levels of the mediating variable must be able to predict levels of the dependant or criterion variable. Lastly, when the mediating variable is included as a control, the direct relationship between the independent and dependant variable becomes insignificant. This is summarised by Figure 7 below.



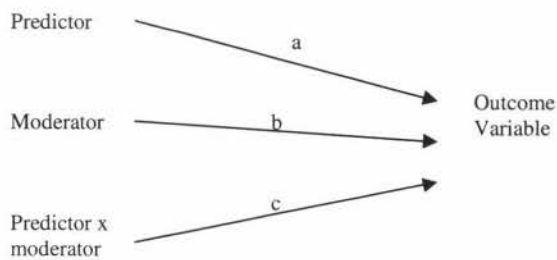
**Figure 7. Mediation model (Baron & Kenny, 1986)**

After mediation analyses were carried out according to the Baron & Kenny method a Sobel test was conducted to test the significance of the observed mediation effect. Preacher and Hayes (2004) explain that the Sobel test “compares the strength of the indirect effect of X on



Y to the point null hypothesis that it equals zero” (p. 718). Preacher and Hayes also explain that this additional test of mediation assists in protecting against Type I error.

Moderation is used to test relationships in which the level of one variable changes the relationship between a predictor variable and a dependant variable (Baron & Kenny, 1986). For the present research data analysis focused on whether general self-efficacy moderated the relationship between appraisal and coping adaptability. Figure 8 shows a graphical representation of moderation.



**Figure 8. Moderation model (Baron & Kenny, 1986)**

In this model if the predictor times moderator path is significant (path c) then moderation is supported. Regression methods advocated by Aitken and West (1991) were used in that the independent variables were centred prior to analysis. This controls for the increased risk of multi-collinearity associated with the inclusion of an interaction term which is composed of the remaining predictor variables and is achieved by subtracting the mean from data points.

## Chapter Seven

### Results

#### *Descriptive statistics*

Table 1. presents the means and standard deviations for both raw and transformed variables.

**Table 1. Means and Standard Deviations**

Variable	Raw		Transformed	
	Mean	SD	Mean	SD
General self-efficacy	35.3	7.55	3.54	0.2
Challenge appraisal	19.75	5.68	2.94	0.28
Threat appraisal	15.01	3.27	2.68	0.22
Coping adaptability	101.39	13.92	4.61	0.13
Organisational				
Commitment	42.7	3.97	3.74	0.09
Readiness	3.34	1.77	1.02	0.41
Variable	Median			
Performance				
Improvement	20			

#### *Hypothesis testing*

##### **Correlations.**

Table 2 presents the results of correlations calculated using Pearson's product moment and Table 3 presents the results of correlations with perceived performance improvement which were calculated using Spearman's correlations.

Hypothesis one was supported as there was a significant positive relationship between challenge appraisals and coping adaptability. Hypothesis two was not supported as the relationship between threat appraisals and coping adaptability did not reach significance. Hypothesis three was supported with a small but significant positive correlation between threat and challenge appraisals. Hypotheses four and five were not supported as no significant relationship between challenge and threat appraisal and subsequent performance improvement were found. Hypothesis six was supported as there was a significant positive correlation between challenge appraisal and readiness for next career phase. Hypothesis seven was not supported as no significant relationship was found between threat appraisal and readiness. Hypothesis eight suggested there would be a relationship between coping adaptability and performance improvement however this was not supported. Hypothesis nine suggested there would be a relationship between coping adaptability and readiness for next career phase, this was supported with a small but significant relationship being found. Hypothesis 10 was supported as there was a positive relationship found between coping adaptability and organisational commitment. Hypothesis 12 was supported with a significant relationship being found between self-efficacy and challenge appraisals. Hypothesis 13 suggested there would be a negative relationship between self-efficacy and threat appraisal, this was not upheld as there was an unexpected significant positive relationship between these variables. Hypothesis 14 was upheld with a significant positive relationship between self-efficacy and coping adaptability. Hypothesis 15 predicted a significant positive relationship between self-efficacy and organisational commitment, this was upheld. Hypothesis 16 was not upheld as there was no significant relationship between self-efficacy and performance improvement. Finally, hypothesis 17 was upheld as there was a positive relationship between self-efficacy and readiness for next career phase.

**Table 2. Correlations (Pearson's)**

	Variable	1	2	3	4	5	6
1	General self-efficacy	~					
2	Challenge appraisal	.56**	~				
3	Threat appraisal	.18**	.15*	~			
4	Coping adaptability	.22**	.26**	0.08	~		
	Organisational						
5	Commitment	.20**	.20**	0.03	.37**	~	
7	Readiness	0.11	.14**	0.08	.19**	.34**	~

\*\*  $P < .01$  \* $P < .05$

**Table 3. Correlations (Spearman's)**

	Variable	Performance Improvement
1	General self-efficacy	0.033
2	Challenge appraisal	0.073
3	Threat appraisal	-0.035
4	Coping adaptability	-0.042
	Organisational	
5	Commitment	.150**
7	Readiness	0.093

\*\*  $P < .01$  \* $P < .05$

### **Coping adaptability as a mediator.**

Hypothesis 11a. predicted that coping adaptability would mediate the relationship between challenge appraisals at the beginning of recruit training and organisational commitment at the end of recruit training. In this analysis organisational commitment (the DV) was regressed on challenge appraisal (the IV) which returned a significant result. Next, coping adaptability (the

mediator) was regressed on challenge appraisal which also returned a significant result. When organisational commitment was regressed on coping adaptability with challenge appraisal as a control, there was a significant relationship between the mediator and the DV however the relationship between the IV and DV became non-significant which indicates full mediation. This was confirmed with a significant Sobel test. The results of this analysis are displayed in Table 4.

The second mediation analysis tested hypothesis 11b, whether coping adaptability mediated the threat appraisal-organisational commitment relationship. No significant relationship was found between threat appraisal and organisational commitment. The mediation analysis did not proceed as the Baron & Kenny (1986) method requires a direct relationship between the IV and DV.

Hypothesis 11c tested whether coping adaptability mediated the relationship between challenge appraisal at the beginning of recruit training and readiness for next career phase at the end of recruit training. The analysis found significant direct effects when readiness was regressed on challenge appraisal and when coping adaptability was regressed on challenge appraisal. When readiness was regressed on both challenge appraisal and coping adaptability the challenge appraisal-readiness relationship became non-significant. This indicates full mediation had occurred in accordance with the Baron and Kenny (1986) method. The Sobel test supported this with a significant result at the 5% level. The results of this analysis are displayed in Table 5.

Hypothesis 11d predicted that coping adaptability would mediate the relationship between threat appraisal and readiness. This hypothesis was not supported as no direct relationship between threat appraisal and readiness could be established.

**Table 4. Coping adaptability as a mediator of the challenge appraisal - readiness relationship**

DV	IV	Beta	B	SE B	Sobel test	P-value for Sobel test	df
1. Organisational commitment	Challenge appraisal	0.201**	.067**	.022			225
2. Coping adaptability	Challenge appraisal	0.261**	.130**	.033			218
3. Organisational commitment	Challenge appraisal	0.102	.035	.022			212
	Coping adaptability	0.348**	.239	.045			
					3.164	0.001	
* P < .05, ** P < .01							

**Table 5. Coping adaptability as a mediator of the challenge appraisal - readiness relationship**

Dependent variable	Independent variable	Beta	B	SE B	Sobel test	P-value for Sobel test	df
1. Readiness	Challenge appraisal	.143*	.210*	.097			226
2. Coping adaptability	Challenge appraisal	.261**	.130	.033			218
3. Readiness	Challenge appraisal	.068	.101	.103			214
	Coping adaptability	.158*	.466*	.206			
					1.962	.044	
* P < .05, ** P < .01							

**Self-efficacy as a moderator.**

Table 6 displays the results for the tests of interaction between self-efficacy and appraisals on coping adaptability. The first analysis tested hypothesis 18a, whether self-efficacy moderated the relationship between challenge appraisal at the beginning of recruit training and coping adaptability at the end of recruit training. A main effect for challenge appraisal was found however there was no main effect for self-efficacy when challenge appraisal was controlled for. The interaction terms for this analysis did not reach significance. The second analysis, in Table 7, tested whether self-efficacy moderated the relationship between threat appraisal and coping adaptability (hypothesis 18b). A significant main effect for self-efficacy was found when threat appraisal was controlled for however the interaction term did not reach significance therefore there was no support for the moderating role of self-efficacy.

**Table 6. Self-efficacy as a Moderator of the Challenge Appraisal - Coping Adaptability Relationship**

DV	Order of entry of variables	Beta	B	SE B	R <sup>2</sup> Change	df
Coping adaptability	1. <i>Independent variable</i> Challenge appraisal	.261**	0.13**	.033	0.068**	218
	2. <i>Independent variable and moderator</i> Challenge appraisal Self-efficacy	.201** .114	0.1** .081	.038 .055	.078**	216
	3. <i>Independent variable, moderator and interaction term</i> Challenge appraisal Self-efficacy Challenge appraisal X self-efficacy	.186* .090 .092	.092* .064 .218	.039 .057 .166	.085**	215

\* P < .05, \*\* P < .01

Table 7. Self-efficacy as a Moderator of the Threat Appraisal - Coping Adaptability Relationship

DV	Order of entry of variables	Beta	B	SE B	R <sup>2</sup> Change	df
Coping adaptability	1. <i>Independent variable</i> Threat appraisal	.078	.050	.043	.006	220
	2. <i>Independent variable and moderator</i> Threat appraisal Self-efficacy	.046 .211**	.029 .149**	.042 .047	.050**	217
	3. <i>Independent variable, moderator and interaction term</i> Threat appraisal Self-efficacy Challenge appraisal X self-efficacy	.032 .214** -0.07	.020 .151** -.265	.043 .047 .255	.054**	216

\* P < .05, \*\* P < .01

Self-efficacy as a mediator.

Hypothesis 19a predicted that self-efficacy would mediate the relationships between challenge appraisal and coping adaptability. Table 8 shows the results of this analysis. While significant relationships were found between challenge and coping and also between challenge and self-efficacy; when challenge was a control, self-efficacy was no longer significant. This means that self-efficacy did not have a mediating role in this study.



As no direct relationship between threat appraisal and coping adaptability was established the analysis of hypothesis 19b (whether self-efficacy mediated this relationship) could not proceed.

**Table 8. Self-efficacy as a Mediator of the Challenge Appraisal - Coping Adaptability Relationship**

DV		IV	Beta	B	SE B	Sobel test	P-value for Sobel test	df
1.	Coping adaptability	Challenge appraisal	.261**	.130**	.033			218
2.	Self-efficacy	Challenge appraisal	.557**	.395**	.039			
3.	Coping adaptability	Challenge appraisal	.201**	.100**	.038			
		Self-efficacy	.114	.081	.055			

\* P < .05, \*\* P < .01

**Self-efficacy as a determinant of appraisal.**

Hypothesis 20a predicted that challenge appraisal would mediate the self-efficacy – coping adaptability relationship. In this analysis coping adaptability was regressed on self-efficacy which produced a significant relationship. Then, challenge appraisal was regressed on self-efficacy which also produced a significant relationship. When coping adaptability was regressed on self-efficacy with challenge appraisal included as a control the self-efficacy – coping adaptability relationship became non-significant. This indicates that full-mediation was present and this result was supported with a significant Sobel test. Table 9 displays the results of this analysis.

Hypothesis 20b predicted that threat appraisal would mediate the relationship between self-efficacy and coping adaptability. The first step involved regressing coping adaptability on self-efficacy which returned a significant result. Next, threat appraisal was regressed on self-efficacy which also returned a significant result. Lastly coping adaptability was regressed on self-efficacy with threat appraisal as a control. In this step self-efficacy remained significant and threat appraisal became non-significant which means that no mediation occurred. The results of this analysis are in Table 10.

Table 9. Challenge Appraisal as a Mediator of the Self-efficacy - Coping Adaptability Relationship

DV	IV	Beta	B	SE B	Sobel test	P-value for Sobel test	df
1. Coping adaptability	Self-efficacy	.219**	.155**	.047			219
2. Challenge appraisal	Self-efficacy	.557**	.784**	.077			229
3. Coping adaptability	Self-efficacy	.114	.081	.055			
	Challenge appraisal	.201**	.100**	.038	2.548	0.011	216
* P < .05, ** P < .01							

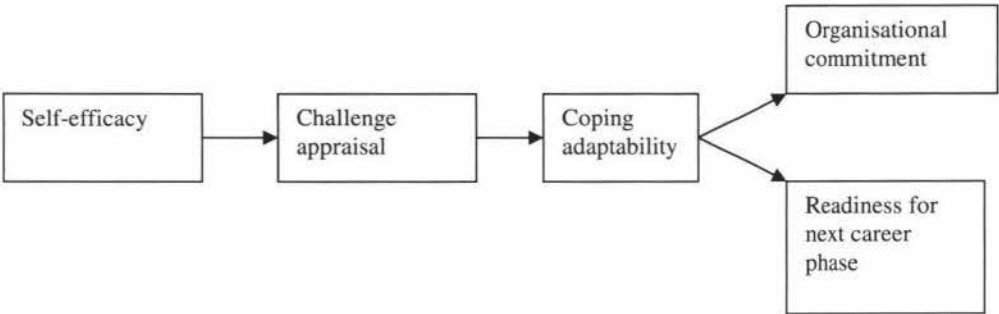
Table 10. Threat Appraisal as a Mediator of the Self-efficacy - Coping Adaptability Relationship

DV	IV	Beta	B	SE B	Sobel test	P-value for Sobel test	df
1. Coping adaptability	Self-efficacy	.219**	.155**	.047			219
2. Threat appraisal	Self-efficacy	.184**	.203**	.071			230
3. Coping adaptability	Self-efficacy	.211**	.149**	.047			217
	Threat appraisal	.046	.029	.042			

\* P < .05, \*\* P < .01

The significant associations between the variables in this study are summarised in Figure 9. below. This figure demonstrates how, in this study, self-efficacy was an antecedent to the appraisal and coping process which ultimately had an impact on organisational commitment and readiness for next career phase.

Figure 9. Final model of significant relationships



## **Chapter Eight**

### **Discussion**

The present research studied the variables of general self-efficacy, cognitive appraisal and coping adaptability in relation to organisational commitment, readiness for next career phase and perceived performance improvement within a longitudinal research design. The research used an adapted transactional model of stress to examine the relationships between these variables. The research firstly aimed to confirm whether relationships would mimic those found in a transactional model and whether the model was associated with organisational outcomes. Secondly the place of self-efficacy as an individual difference variable in the model was explored.

### ***Findings***

#### **Research aim: Confirmation of transactional model.**

The first goal of this research was to establish if the relationships between the variables were consistent with those in a the transactional model of stress. The hypotheses used to support this research goal predicted positive bivariate relationships between the variables of challenge appraisal, self-efficacy, coping adaptability and organisational outcomes. Negative relationships were expected between these variables and threat appraisal. An important feature of transactional models is the mediating role that coping plays therefore in this research it was hypothesised that coping adaptability would mediate the relationship between appraisals and outcomes.

The findings in the present research suggested that challenge appraisal played a particularly important role as it had positive correlations with indicators of adaptive outcomes (coping adaptability) and organisationally relevant outcomes (organisational commitment and

readiness). The longitudinal research design also assisted in confirming challenge appraisal's place as a determinant of adaptation because it was measured prior to the outcome measures.

Because this study found challenge appraisal to be a determinant of adaptation this gives more weight to the idea of a positive pathway existing in which demands can be faced in such a way that produces positive experiences for the individual. Confirmation of the positive pathway to adaptation and organisational commitment in this study also gives weight to the argument for a more positive psychology in which a research focus on optimal functioning is thought to aid in promoting well-being rather than simply aiming to avoid or alleviate distress (Pajares, 2001). The positive pathway may be a particularly important one as Cotton and Hart (2003) found in studies of police and teachers that the *absence* of positivity may in fact be more detrimental on outcomes for individuals and organisations than the presence of negativity.

The findings in the present research suggested that positive appraisal played a far greater role in the stress process for this sample than threat appraisal, as threat appraisal had either weak or non-significant relationships with the other variables. This result was unexpected as previous research has demonstrated that both a negative and a positive pathway exist for transactional type models (Skinner & Brewer, 2002; Tomaka et al., 1997; Herrald & Tomaka, 2002). The lack of significance for the negative pathway should be interpreted cautiously as the non significant result could be due to variety of reasons. It should be noted that the participants in this study all successfully completed recruit training and the measure was originally implemented to assess the differences between recruits that completed training and those that did not. Therefore, whilst the measure may have been sensitive enough to discern between successful and non-successful recruits, it may not have been sensitive enough to discern between average and high performing recruits. One other reason may be that the measure did not adequately capture the construct of negative appraisal. This should be considered a plausible reason given that the measure returned a low reliability coefficient for this sample. Further work needs to be done to incorporate another more established measure of appraisal into studies of this type in order to increase the sensitivity.

Coping adaptability is a relatively new inclusion to stress research as many more studies have approached this topic using fixed coping typologies, rather than looking for a tendency to be adaptive. Therefore the relationships between this variable and others in the study were of considerable interest, particularly as fixed typologies have often failed to explain much variance beyond appraisal (Carver & Scheier, 1994). The measure itself demonstrated particularly good internal reliability in the sample used, which went some way to demonstrate its usefulness as a construct. Additionally, coping adaptability itself acted as a full mediator of the relationship between challenge appraisals and subsequent organisational commitment and readiness showing that it has implications for organisations as well as individuals. The finding that coping adaptability did play a mediating role in the stress process is entirely in line with the transactional theory of stress and gives some weight to the argument that dispositional measures may also be relevant in a transactional model (Lazarus and Folkman, 1984).

Out of the three organisational outcome variables organisational commitment appeared to be the most affected by the predictor variables. Specifically, higher self-efficacy, higher challenge appraisal and higher coping adaptability were all associated with higher organisational commitment. It was important to include constructs in the study that have implications for the organisation in order to make the stress and well-being process as relevant as possible. Organisational commitment was included as one of the aims of recruit training is to produce employees who are committed to the organisation and provide a good return on the training investment by remaining within the organisation. Employees that leave the RNZAF shortly after they complete training are not a good return on the training investment (which is a considerable investment in comparison with many organisations). The finding that the proposed model had a significant relationship with organisational commitment so early on in the participants' careers demonstrates that it is a potentially important finding.

Significant correlational relationships were found between readiness for next career phase, positive appraisal and coping adaptability which indicates that the appraisal - coping process may have some bearing on readiness. Interestingly, this was the only variable in which differences were found for gender with males reporting significantly higher readiness than females. In addition recruits returned quite polarised responses, they tended to either feel they

were very ready or not ready at all. Future research may be needed to examine the cause of this effect. It should be remembered however that this is a single item measure and therefore a more comprehensive scale measure could provide more detailed information about whether this polarised result remains consistent over a number of items.

Whilst the three outcome variables were significantly correlated with each other, perceived performance improvement was not predicted by any of the independent variables. This could be because the stress process simply does not predict performance, however this could also be due to the measurement of this variable. Potentially, more objective measures of performance such as test results or course reports could render more significant results.

#### **Research aim: Exploration into the place of general self-efficacy in the model.**

The second goal of the research was to assess how general self-efficacy was related to the other variables in the model. Previous research and theory surrounding self-efficacy and the stress process was not clear as to exactly where this variable would fit within a transactional model and several arguments as to its likely place were formulated. To determine its place bivariate relationships between general self-efficacy and all other variables in the model were tested. It was hypothesised that self-efficacy would have positive relationships with challenge appraisal, coping adaptability and the organisational outcome variables. Further analysis aimed to determine whether self-efficacy acted as a moderator, mediator or antecedent of the appraisal – coping relationships.

As predicted, self-efficacy was positively associated with coping adaptability and challenge appraisal. It was also positively associated with organisational commitment. Rather unexpectedly there was a small but positive correlation with threat appraisal. This indicates that people do make threat appraisals even when they have high self-efficacy and is in line with the idea that both threat and challenge appraisals co-occur. This result however should be considered in the context of the much stronger correlation between self-efficacy and challenge appraisal.



When challenge appraisal was controlled for, self-efficacy did not add further power to the prediction of coping adaptability nor did it act as a moderating variable in the appraisal coping relationship. Whilst previous research had suggested that self-efficacy would play a moderating role in the stress process this was not supported by the current study. When looking to explain this result the ways in which the current study differs from previous research should be considered. Previous research used a stressor-strain model to test the moderating effects of self-efficacy whereas the current research used a process or transactional model where there are many more relationships between sets of variables in which self-efficacy could play a moderating role. Despite returning a non-significant result in the moderation analysis, the strongest correlation in the model was between challenge appraisal and self-efficacy which indicates that it has potential to influence the stress process.

The possibility that self-efficacy was a mediator of the appraisal – coping adaptability relationship was also tested and found to be non-significant. This means that for the present sample, self-efficacy did not *explain* the relationship between threat or challenge appraisals and coping adaptability. However, challenge appraisal was found to mediate the direct relationship between self-efficacy and coping adaptability. This suggests that challenge appraisals explains how self-efficacy is related to coping adaptability. This result is in line with Lazarus and Folkman's (1984) assertion that beliefs may be determinants of the appraisal process and that beliefs of having control of a situation may be associated with challenge appraisals. For the present sample, recruits who believed they had the competence (and therefore control) to achieve certain outcomes tended to make challenge appraisals and subsequently had higher coping adaptability.

These results provide some clarity surrounding the place of self-efficacy in a transactional model of stress and coping and suggest that self-efficacy is an antecedent to appraisal and coping. It should be noted however, that self-efficacy and challenge appraisal were measured at the same point in time and therefore it is unwise to proclaim a definite direction of causality, particularly when using correlational techniques. Future research could attempt to

measure self-efficacy at a point in time that precedes the measurement of appraisal to confirm the direction of this relationship.

### ***Limitations***

The present research used archival data and therefore the measures were initially implemented to serve a purpose which differed from the present research. This may have resulted in measures which were not sensitive enough to accurately capture the relationships between the variables in the present study. This was particularly apparent with the threat appraisal measure (which was also constrained by its low internal reliability), and the perceived performance and readiness measures. Whilst these measures were useful to differentiate between recruits who passed training and those that failed or left voluntarily, different measures may be needed to tap into the subtle differences that may lie between those that had acceptable and those that had high levels of adaptation to military training.

Because the sample in the present research consisted of military recruits it may be difficult to generalise the results to other organisational populations. Including only recruits that successfully completed the training in the sample further constrains generalisation as the further along recruits are in their training, the further they move from the characteristics of the general population.

### ***Areas for future research***

The present research opens up several areas for development. Firstly, it has been argued that personality or individual differences may play a large role in the stress process (Costa & Mcrae, 1990). Therefore future research could look to incorporate a wider range of personality and individual difference variables. An example would be looking at whether any of the 'big five' personality factors influence the process. Other self-beliefs such as goal orientation (Dweck, 1986) would also be relevant to the stress process in achievement and performance environments.

Secondly, it would be useful to include a wider range of organisational outcomes in addition to utilising measures which are specifically designed to measure these outcomes. Objective and longer term outcomes such as job-turnover or sick-days taken may provide useful information. Performance improvement could also be measured objectively with actual test scores.

The present research could also be extended by the inclusion of emotion related variables to assess the amount of positive emotion or distress being experienced by participants prior to longer term organisational outcomes.

### ***Practical implications***

This study has shown that higher levels of challenge appraisal and self-efficacy can have significant adaptational outcomes for both individual coping and organisational commitment and readiness. This means that it is in the best interests of both the RNZAF and recruits to be able to successfully harness the benefits to be gained from having higher levels of these variables.

One key question to firstly address is whether recruit training should become less demanding, or should we attempt to increase the resilience of recruits? The aim of recruit training is to develop resilient individuals who are later able to perform and cope well with the demanding nature of their jobs. To this end recruit training must, to a degree, approximate the demanding conditions that recruits will face in the future. In support of this, research has confirmed that removing demands from jobs, for example work-load, does little to reduce the amount of distress felt by individuals (Cotton & Hart, 2003).

Therefore, rather than remove all potentially threatening conditions of recruit training it makes sense to consider ways in which we may enhance recruits self-efficacy and tendency to appraise situations as a challenge in order to assist them to achieve positive outcomes and

increase their well-being. Psychologists may be well placed to assist with this as they are involved in instructing recruits in ways to manage stress. Ensuring that recruits are aware of the impact of their self-beliefs may be a useful adjunct to the stress-management training repertoire. Psychologists are also able to promote positive self-beliefs at the individual level if they are required to provide one on one counselling to a recruit who is experiencing difficulties in adjusting to the military environment or who is having difficulty meeting training requirements.

It is highly likely that there is scope for any organisation to incorporate leadership behaviours that promote the type of positive self-beliefs that were shown to be beneficial in the present study. This is particularly the case in the training environment where instructors can play a large role in shaping the self-beliefs of students.

#### **Increasing general self-efficacy.**

In this study recruits who reported higher levels of self-efficacy also tended to report higher levels of challenge appraisal, coping adaptability, organisational commitment and readiness. This means that self-efficacy is an individual difference that may be useful to enhance in recruits to assist them in adapting to the military environment.

The determinants of self-efficacy described by Maddux (1995) provide a useful framework for instructors to increase the self-efficacy of trainees. Previous performance experience is the strongest determinant of efficacy which suggests that trainees performance experiences during early recruit training may impact on their self-efficacy for the rest of their training. Of course each recruit will have performance experiences prior to attending recruit course which are beyond the control of instructors however, instructors may be well placed to ensure that trainees experience some degree of performance achievement early on. Increasing task complexity as the course progresses is likely to be an already utilised method of achieving this.

Vicarious experience is another determinant of self-efficacy and can be especially strong if the observer detects similarities between themselves and the observed. Consequently, observing other recruits fail or succeed is likely to have an impact on a recruits self-efficacy. This knowledge may influence the way instructors deal with both success and failure. Therefore dealing with failure in a constructive fashion and promoting success may be paths to increasing self-efficacy.

Verbal persuasion is another determinant of efficacy that is likely to be important in this training environment. Maddux (1995) explains that when verbal persuasion originates from a powerful or trusted source the effect of verbal persuasion on efficacy increases. This has large implications for recruit training where there is a power imbalance between instructors and recruits. Therefore, any verbal messages relating to performance from instructors whether they are positive or negative are likely to have a large impact on recruits self-efficacy.

### **Influencing appraisal.**

The results of this research suggest that challenge appraisals increase organisational commitment and readiness via the mechanism of coping adaptability. In the present research appraisals were shown to have an impact when measured at the trait level which suggests that people may have habitual appraisal tendencies. A first step in increasing challenge appraisals would be to highlight the existence of more than one way to perceive a demand as well as highlighting the possibility for positive outcomes as a result of the demand. It may also be useful to allow individuals to discover their own appraisal tendencies via the use of measures, such as the one used in this study, as development tools. Having knowledge of the benefits of challenge appraisals may assist instructors to help trainees that appear to find aspects of recruit training threatening and subsequently stressful by reframing demands in a positive way.

### **Improving coping adaptability.**

In this study coping adaptability was impacted by previously held efficacy and appraisal tendencies, therefore coping adaptability is likely to be enhanced by the interventions

described above. This study also showed that coping adaptability was the mechanism through which challenge appraisals resulted in higher organisational commitment and readiness. Therefore any interventions that enhance coping adaptability may enhance organisational outcomes. The measure used in the current study was heavily based on the Personal Functioning Inventory (Kohn et al., 2003). This measure was written according to some underlying principles which provide a framework for enhancing coping adaptability. Training in coping adaptability could therefore be centred around increasing recruits judgements and appraisals of demands, increasing determination to reach the best outcomes, using self-control to prevent impulsive action and being flexible in the type of problem solving that is applied to situations (Kohn, et al., 2003).

## ***Conclusion***

When measured at the dispositional level the variables of general self-efficacy and challenge appraisal were found to predict coping adaptability, organisational commitment and readiness in RNZAF recruits. Challenge appraisal and coping adaptability appeared to be central to the process of adaptation. The implications of the findings include the likelihood that boosting these attributes in recruits is likely to have beneficial outcomes for both the recruit in terms of adaptation and the organisation in terms of employee commitment and readiness.

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## **Appendix A**

### Information Provided to Participants



## NEW ZEALAND DEFENCE FORCE COHORT RESEARCH

Dear Participant,

Welcome to the New Zealand Defence Force (NZDF).

The NZDF is conducting a NZDF wide Cohort Study. A cohort study involves tracking a group of people over time. This cohort study will track a group of NZDF personnel from when they first enter the organization, through training and their career until they exit the organization. The group for the cohort study includes officer and non-commissioned recruit intakes from the Navy, Army, and Air Force. You have been selected as part of the NZDF cohort study group!

The NZDF cohort study will involve administering a number of surveys to the selected cohort (you) over time. The NZDF is interested in learning how well recruit expectations are aligned with what happens during training, how you find training, and if you decide to leave; for what reason.

The surveys will be used:

- To assist in decision-making, regarding current practice and policy decisions, relating to your recruitment, training, and employment.
- To monitor trends over time.

The first survey is being administered today and will ask you a variety of questions about your recruitment experience, your expectations of initial training and the Air Force, your social support networks, and how you work and behave in different situations.

You will also be asked to complete a cohort survey at graduation from training; 18 months after you joined the Air Force; and annually for the remainder of your career. If you leave the organization during training or once you are 'on the job' you will be asked to complete an exit survey. Administering a number of surveys over time allows the NZDF to monitor trends and changes in opinions and attitudes over time.

It is important that you are honest when you fill out the survey. At no time will your individual results be presented and the information gained from the surveys **will not** be used to rate your performance in any way.

There is significant benefit in the conduct of this research and, although participation is voluntary, I strongly encourage you to complete the surveys. Your opinions are important to shaping effective future human resource policy and practice, and I would like to thank you in advance for your participation.

If you have any questions relating to the research, please contact the Directorate of Strategic Human Resource Requirements by email at [Fre.pers-Strat.HR@nzdf.mil.nz](mailto:Fre.pers-Strat.HR@nzdf.mil.nz).

Regards

A handwritten signature in black ink, appearing to be 'B. Pepperell', is written below the 'Regards' text.

B. PEPPERELL  
CDRE, RNZN  
Assistant Chief (Personnel)



## **NEW ZEALAND DEFENCE FORCE NEW RECRUIT COHORT SURVEY**

The New Zealand Defence Force (NZDF) is conducting a NZDF wide Cohort Study. The Cohort Study will assist the NZDF in ensuring the quality of the recruitment and training process. This survey asks you about a variety of areas including your recruitment experience, your expectations of initial training, your social support networks, and the way you work and behave in different situations.

The information you provide will be used for two purposes:

- To assist in decision-making, regarding current practice and policy decisions, relating to your recruitment, training and employment.
- To monitor trends over time.

This survey is being administered to all new recruits joining the Navy, Air Force and Army (across both officers and other ranks). By completing this survey you are giving your consent for participation in the cohort study research.

In the survey you are asked to provide your Name, or service number if you have one. This will allow us to link your survey responses with a range of personal information (trade, service, age, gender, ethnicity etc) from the NZDF personnel information system (ATLAS) so that you do not have to provide this information yourself. This will allow us to determine whether there are differences in opinions across sub-groups such as age, rank and trade. We also want to monitor trends in groups over time, to allow the NZDF to track expectations and changes in attitudes and values.

While some of you may be concerned about providing information that identifies you, legislation prohibits us from publishing information that identifies you, and using the information gathered for any other reasons than the ones stated above. The results of the survey and the outcomes generated will be published on the NZDF intranet. The way the data is stored, analysed and reported will not allow for the identification of individuals, and at no time will data about individuals be reported.

There is significant benefit in the conduct of this research and I strongly encourage you to complete this survey. Your opinions are important to shaping effective future human resource policy and practice, and in particular the future recruitment and induction of personnel.

B. Pepperell  
Assistant Chief (Personnel)

**IT IS VERY IMPORTANT THAT YOU TAKE THE TIME TO COMPLETE  
THIS SURVEY HONESTLY AND THOUGHTFULLY.**

***PLEASE READ THE FOLLOWING BOX AND THE INSTRUCTIONS OVERLEAF***

This survey is administered in accordance with the Privacy Act (1993) and guidelines for research practice outlined in DFO 21/2002. The information collected from respondents will be treated strictly as "in-confidence". Data will not be reported in a manner whereby respondents can be identified. The information will be stored in a central database within Personnel Branch, HQ NZDF for further research as required.

## Instructions

### Please only fill out one questionnaire.

This is not a test. There are no right or wrong answers. It is very important that your answers accurately reflect your own experiences and opinions. When you answer the questions, please follow these three steps.

1. Each statement requires that you read it carefully and then decide which response best reflects how you feel about the statement.
2. Throughout this survey we are interested in your experiences and opinions of the recruitment process and other areas, your expectations of training, your opinions on your social support networks, and the way you work and behave in different situations.
3. Record your answers with the black pen provided. Follow the instructions carefully on how to answer each question. When you are required to make a choice between answers, please completely darken the circle that corresponds with your response:

Like this: ☒ Not like this ☒ OR ☒ OR ☒

For example: ☐ ☐ ☒ ☐ AND ☐ ☐ ☒ ☐ ☐ ☐ ☐

If you make an error put a cross through it like this ☒ and then darken the circle that corresponds to your correct response.

**Please note: Questions are printed on both sides of the questionnaire.**

When you have finished answering the questionnaire return it in the envelope that you received with the questionnaire. **Do not fold the questionnaire, leave it A4 size.**

**Your participation in this research is greatly appreciated.**



## **NEW ZEALAND DEFENCE FORCE GRADUATE COHORT SURVEY**

The New Zealand Defence Force (NZDF) is conducting a NZDF wide Cohort Study. The Cohort Study will assist the NZDF in ensuring the quality of the recruitment and training process. You would have already completed the New Recruit cohort survey that was administered to you at the beginning of your initial training. This survey is the Graduate survey and asks you about a variety of areas including your recruitment experience, your experiences of initial training, your career, your social support networks, the way you work and behave in different situations, and your attitude towards future Service.

The information you provide will be used for two purposes:

- To assist in decision-making, regarding current practice and policy decisions, relating to your recruitment and employment.
- To monitor trends over time.

This survey is being administered to all recruits graduating from initial training in the Navy, Air Force and Army (across both officers and other ranks). By completing this survey you are giving your continuing consent for participation in the cohort study research.

In the survey you are asked to provide your Service Number. This will allow us to link your survey responses with a range of personal information (trade, service, age, gender, ethnicity etc) from the NZDF personnel information system (ATLAS) so that you do not have to provide this information yourself. This will allow us to determine whether there are differences in opinions across sub-groups such as age, rank and trade. We also want to monitor trends in groups over time, to allow the NZDF to track expectations and changes in attitudes and values.

While some of you may be concerned about providing information that identifies you, legislation prohibits us from publishing information that identifies you and the use of the information gathered for any other reasons than those stated above. The results of the survey and the outcomes generated will be published on the NZDF intranet. The way the data is stored, analysed and reported will prevent the identification of individuals, and at no time will data about individuals be reported.

I believe there is significant benefit in the conduct of this research and I strongly encourage you to complete this survey. Your opinions are important to shaping effective future human resource policy and practice, in particular recruitment, induction, and training of personnel.

B. Pepperell  
Assistant Chief (Personnel)

**IT IS VERY IMPORTANT THAT YOU TAKE THE TIME TO COMPLETE  
THIS SURVEY HONESTLY AND THOUGHTFULLY.**

***PLEASE READ THE FOLLOWING BOX AND THE INSTRUCTIONS OVERLEAF***

This survey is administered in accordance with the Privacy Act (1993) and guidelines for research practice outlined in DFO 21/2002. The information collected from respondents will be treated strictly as "in-confidence". Data will not be reported in a manner whereby respondents can be identified. The information will be stored in a central database within Personnel Branch, HQ NZDF for further research as required.

## Instructions

### Please only fill out one questionnaire.

This is not a test. There are no right or wrong answers. It is very important that your answers accurately reflect your own experiences and opinions. When you answer the questions, please follow these three steps.

1. Each statement requires that you read it carefully and then decide which response best reflects how you feel about the statement.
2. Throughout this survey we are interested in your experiences and opinions of the recruitment process and other areas, your experience of training, and your opinions on your social support networks.
3. Record your answers with the black pen provided. Follow the instructions carefully on how to answer each question. When you are required to make a choice between answers, please completely darken the circle that corresponds with your response:

Like this:    ●    Not like this    ☑    OR    ⊗    OR    ①

For example:    ① ② ● ④    AND    ① ② ● ④ ⑤ ⑥ ⑦

If you make an error put a cross through it like this    ⊗    and then darken the circle that corresponds to your correct response.

**Please note: Questions are printed on both sides of the questionnaire.**

When you have finished answering the questionnaire return it in the envelope that you received with the questionnaire. **Do not fold the questionnaire, leave it A4 size.**

**Your participation in this research is greatly appreciated.**

## **Appendix B**

### Instructions and Scales



## Time 1 Measures

*The NZDF is interested in the differences between individuals and their ways of looking at different situations. In particular, the confidence you have in yourself, your approach to work situations, and your ability to perform across a wide variety of situations. It is important to remember that your responses to this survey will not be used on an individual basis. Although it may be difficult to see how the items are relevant to this survey, they have been used in overseas military cohort research to better understand the relationship between individual styles and military training. Your answering the items below will assist future recruits through the aims identified on the front page of the survey.*

### General Self-efficacy scale

1. When I decide to do something new, I go right to work on it
2. If something looks too complicated, I will not even bother to try it (Reverse coded)
3. I think that I can succeed in almost anything I set my mind to
4. When I set important goals for myself I usually achieve them
5. I feel very confident about my ability to get things done
6. When I can't do a job the first time, I keep on trying until I can
7. Compared to most other people my age, I can do most tasks very well
8. Even when things are tough, I can accomplish the task
9. I believe that I can overcome many difficulties and accomplish my goals

#### Response scale

- Definitely false
- Mostly false
- Somewhat false
- Somewhat true
- Mostly true
- Definitely true

### Challenge appraisal scale

1. I look forward to situations that test my abilities
2. I enjoy challenging situations
3. I am self-confident
4. I am confident in my ability to succeed
5. I look for the positive side of any situation
6. I usually expect the best

#### Response scale

- Definitely false
- Mostly false
- Somewhat false
- Somewhat true
- Mostly true
- Definitely true

### Threat appraisal scale

1. When I am under a lot of stress, I worry that I will say the wrong thing
2. When meeting new people, I worry about making a bad impression
3. Sometimes things pile up until I can't cope with the stress
4. I worry about what other people will think of me

## Time Two Measures

### Coping Adaptability

1. I have no trouble staying calm when friends disagree with my opinion
2. Threatening events that have even the slightest chance of happening worry me
3. I don't get too upset when someone doesn't like me
4. I tend to worry too much about my problems, even ones that go away by themselves
5. If I think somebody wants to hurt me, I often lose my cool
6. I can relax even when waiting to find out something important
7. I've learned not to get down on myself for minor mistakes I make
8. I often get impatient with people I have to deal with
9. When I feel threatened, I get too upset to act in the most effective way
10. When things go badly, I find it hard to avoid making things even worse
11. I often lose my cool when I'm having problems with other people
12. I try not to get upset over minor insults
13. I rarely get angry when others criticise me
14. When my productivity falls, I try to keep my cool
15. I can't stop thinking about people's criticism of me whether it seems valid or not
16. Under pressure, I tend to make hasty decisions
17. I keep my temper under control when dealing with others
18. I've been known to blow my personal problems way out of proportion
19. When I'm waiting to find out something important, I just can't get it out of my mind
20. I try to be fully informed about the choices I have to make
21. Past embarrassing moments tend to bother me for a long time
22. I generally stay cool, even when I think somebody wants to hurt me
23. I often can't control my anger
24. I usually learn from my mistakes more than I let them upset me
25. Being emotionally upset often gets in my way in dealing with major problems in my life
26. I rarely allow others to control my anger to their own end
27. I'm not very practical in dealing with everyday problems
28. Minor physical problems don't upset me much
29. If I can't control whether or not something bad is going to happen, I try not to worry about it
30. I try to be calm when I'm having problems with other people.

#### Response Scale

- Strongly agree
- Mostly agree
- Unsure
- Mostly disagree
- Strongly disagree

## Organisational Commitment

Being in the Air Force gives me a sense of belonging to one big family  
I really care about the future of the Air Force  
I am willing to put in effort beyond that normally expected in order to help the Air Force be successful  
I feel very little loyalty towards the Air Force  
I speak very highly of the Air Force to my friends  
I think I am doing something worthwhile for my country by being in the Air Force  
I am extremely glad that I chose to join the Air Force over other jobs I was considering at the time  
I feel there is not much to be gained by staying in the Air Force  
Deciding to join the Air Force was a definite mistake on my part  
Often I find it difficult to agree with Air Force policies in important matters relating to its employees  
I understand the mission, goals, and objectives of the Air Force  
I understand how I contribute to the Air Force's mission  
The future prospects of the Air Force are good

### Response Scale

- Strongly agree
- Mostly agree
- Mostly disagree
- Strongly disagree

## Readiness

Do you feel adequately prepared to go onto the next stage?

### Response scale

- Yes, very well prepared
- Yes, well prepared
- Just prepared enough
- No, not prepared well enough
- No, not at all prepared

## Performance Improvement

Compared to before you started initial training, would you say each of these areas improved, stayed the same, or became worse:

1. Level of self discipline
2. Level of self confidence
3. Ability to cope with stress
4. Ability to lead
5. Ability to succeed in the Air Force
6. Level of physical fitness
7. Motivation for future service

### Response scale

- Improved
- Stayed the same
- Became worse