

School of Psychology and Speech Pathology

**Developing a Theory Driven and Evidence Based Targeted Intervention
for the Primary Prevention of PTSD**

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**This thesis is presented for the degree of
Doctor of Philosophy
of
Curtin University**

May 2015

DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Human Ethics The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number HR 113/2011

Petra May Skeffington

A handwritten signature in black ink, appearing to read 'Petra May Skeffington', with a horizontal line extending to the right.

Signed:

Date: 15/05/2015

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LIST OF ABBREVIATIONS

AACBT:	Australian Association for Cognitive Behavioural Therapy
ACPMH:	Australian Centre for Posttraumatic Mental Health
ADF:	Australian Defence Force
APA:	American Psychiatric Association
ASD:	Acute Stress Disorder
ASI:	Anxiety Stress Inventory
AUDIT:	Alcohol Use Disorders Identification Test
BAI:	Beck Anxiety Inventory
BattleSMART:	Self-Management and Resilience Training
CAGE:	Alcohol screening tool
CAPS:	Clinician Administered Posttraumatic Stress Scale
CCK2:	Cholecystokinin B
CES:	Combat Exposure Scale
CESD:	The Centre for Epidemiologic Studies Depression Scale
CIMA:	Critical Intervention and Management Australasia
CISD:	Critical Incident Stress Debriefing
CISM:	Critical Incident Stress Management
CR:	Conditioned response
CRF1:	Corticotropin-releasing hormone receptor 1
CSF:	Comprehensive Soldier Fitness
DFES:	Department of Fire and Emergency Services
DHEA:	Dehydroepiandrosterone
DSM:	Diagnostic and Statistical Manual
HADS:	Hospital Anxiety and Depression Scale
HPA:	Hypothalamic-pituitary-adrenal
IES:	Impact of Events Scale
GHQ:	General Health Questionnaire
GR:	Glucocorticoid receptor
LC/NE:	Locus coeruleus/norepinephrine-sympathetic
LSD:	Least Significant Difference
MAPS:	Mental Agility and Psychological Strength program
MTPP:	Mindfulness-based Trauma Prevention Program

OSTP:	Operational Stress Training Package
PCL-C:	PTSD Symptom Checklist- Civilian version
PFA:	Psychological First Aid
PHQ:	Patient Health Questionnaire
POMS:	Profile of Mood States
PRIDE:	Psychological readiness in a deployed environment
PTE:	Potentially traumatic event
PTG:	Post-traumatic growth
PTSD:	Post-traumatic stress disorder
RCT:	Randomised controlled trial
SCL:	Symptom Checklist
SD:	Standard deviation
SE:	Standard error of measurement
SIT:	Stress inoculation training
STAI:	State-Trait Anxiety Inventory
sr^2 :	Part correlation squared
TFF:	Trainee Fire Fighter
US:	Unconditioned stimulus
VAS:	Visual analogue scale
VR:	Virtual Reality
WA:	Western Australia

ACKNOWLEDGEMENTS

Firstly I'd like to thank the Department of Fire and Emergency Services in Western Australia, including all of the trainee fire fighters and career fire fighters who participated in this program of research. Without the hard work of the Wellness Team, in particular Anneliese Smith, in establishing our research collaboration, this project would not have been possible.

My primary supervisor, Associate Professor Clare Rees was always helpful in keeping me on track and my secondary supervisor Dr. Trevor Mazzucchelli always had kind and encouraging words. Some of the more technical parts of the analysis were made possible by the contributions of Dr. Robert Kane, for which I am appreciative. To Dr. Penelope Haskings for your lightning fast and astonishingly thorough internal review and to Dr. Neville Hennessey, my thesis chair, you have always been responsive to my requests and prompt to problem-solve, relieving much stress for me along the way. For any other colleagues from the School of Psychology and Speech Pathology at Curtin University who have been there to provide feedback on presentations or explore ideas and recommend readings, thank you.

To my fellow PhD students, this journey would not be possible for any of us without the day-to-day checking in, laughs and commiserations. We keep each other sane!

To the research and clinical colleagues whom I have met through conferences and workplaces, I have always been encouraged by the interest you have shown in this program of research. When I have become unsure there has always been somebody at hand to remind me of the significant contribution that trauma-related research can make.

NOTIFICATION OF PUBLICATION

Chapter three of this thesis has been published in the peer-reviewed journal: *Journal of Trauma and Dissociation*.

Skeffington, P., Rees, C. & Kane, R. T. (2013). The primary prevention of PTSD: A systematic review. *Journal of Trauma and Dissociation*, 14, 401-422. doi:10.1080/15299732.2012.753653

Significant portions of chapter four of this thesis are under review at the journal *Psychological Trauma: Theory, Research, Practice and Policy*.

Significant portions of chapter six of this thesis are being prepared for submission to the *Journal of Consulting and Clinical Psychology*.

Portions of this program of research have been presented (or are scheduled to be presented) at the following conferences:

2015

- European Society for Traumatic Stress Studies (ESTSS) abstract accepted "Developing an evidence-based resilience program for the primary prevention of PTSD"
- Stress, trauma and resilience (STAR) conference abstract accepted "Developing an evidence-based resilience program for the primary prevention of PTSD"
- Australasian Fire and Emergency Service Authorities Council (AFAC) National Conference abstract accepted "Developing a targeted resilience intervention for the Primary Prevention of PTSD"
- Abstract submitted for 50th Australian Psychological Society (APS) National Conference (2015) (1: 90-min How-to Session) "How do we build resilience to trauma? An overview in terms of the Mental Agility and Psychological Strength (MAPS) resilience program" (2: Paper presentation) "Developing an evidence-based, theory driven resilience intervention for the primary prevention of PTSD"

- Abstract submitted for inaugural PTSD Forum (2015) “Developing an evidence-based, theory driven resilience intervention for the primary prevention of PTSD”

2014

- Brain, Behaviour & Mental Health First Annual Conference “Trauma exposure & PTSD within Fire & Emergency Services in Western Australia”
- Denis Glencross Memorial Conference “The theory driven and evidence-based primary prevention of PTSD”
- Mark Liveris Research Seminar “The theory driven and evidence-based primary prevention of PTSD”
- Australian Association for Cognitive Behaviour Therapy national conference: “Trauma exposure and PTSD within Fire & Emergency Services in WA” and chaired trauma sessions.

2013

- Crisis Intervention & Management Australasia (CIMA) National Conference “A Resiliency Program for WA Fire and Emergency Service Workers”

2012

- Denis Glencross Memorial Conference: “The Primary Prevention of PTSD”
- Thirteenth Humanities Postgraduate Research Conference: “Can we Prevent Post-traumatic Stress Disorder?”
- 47th Australian Psychological Society (APS) National Conference: “The Primary Prevention of PTSD: A Systematic Review”

Other

- (2012) 3-Minute Thesis Grand Finalist and People’s Choice Award

ABSTRACT

The current “best practice” approach to trauma is to screen individuals for pathology and provide treatment when required (Cloitre, 2009; Cornum, Matthews, & Seligman, 2011). This reactive paradigm is seen in the wealth of information and numerous studies regarding debriefing, early intervention responses following trauma and therapeutic approaches to stress and trauma pathologies. When Seligman (Seligman & Csikszentmihalyi, 2000) launched the Positive Psychology movement, academic interest in resilience increased. Positive Psychology literature abounds with research exploring components of resilience, comparing resilient individuals with less resilient individuals and implementing resilience programs with children. Only in recent years have studies reflecting resilience training programs with adults appeared (Burton, Pakenham, & Brown, 2009, 2010; Cornum et al., 2011).

Some professions, by their nature, will be exposed to trauma. Fire and emergency work is widely recognised as a stressful occupation, with fire fighters often exposed to potentially traumatic situations. Fire fighters have abnormally high rates of stress-related negative outcomes such as alcoholism, physical health problems and divorce (Cook & Mitchell, 2013). Phase 1 of this project was to develop a program aimed at the primary prevention of Post-Traumatic Stress Disorder (PTSD) and comprised a systematic literature review, needs assessment and ongoing consultation with the target organisation (DFES; Department of Fire and Emergency Services in WA). Part of the needs assessment was a cross-sectional survey of DFES members to determine average exposure to trauma, maladaptive responses and pathology. Phase 2 of this project was the implementation and evaluation of the program and a randomised controlled trial (RCT) with a 12-month follow up.

This program of research led to the development and evaluation of the Mental Agility and Psychological Strength (MAPS) training program. Participation in the MAPS program led to a significant increase in trauma-related knowledge which was maintained for the duration of the 12-month follow-up period, but was not demonstrated to have a significant impact on symptoms of PTSD, depression, anxiety or stress. Perceived social support and coping strategies were also unaffected by participation in the MAPS program during the 12-month follow-up period. This may have been due to small sample size ($n = 75$), the follow-up time frame being too

short or failure to measure associated variables, such as post-traumatic growth, alcohol use and support seeking. Resilience was conceptualised as the absence of mental health symptoms; it seems that a separate measure of resilience could also have been helpful. It should also be considered that disrupting the learning process during recruit school was not beneficial (or detrimental) to psychological functioning and wellbeing.

The findings of this program of research represent an important step forward in the field of the primary prevention of PTSD, in that a robust RCT with a 12-month follow up was used to evaluate an evidence-based and theory driven program. The lack of efficacy of the MAPS program stresses the need for careful thought and planning for any future interventions. As observed in past controversial research regarding critical incident debriefing (Rose, Bisson, & Wessely, 2002), in some cases, the ethical pathway may be to allow the inherent resilience of each individual to function without interference. Where possible, future research should extend the longitudinal design to explore the impact of similar programs over two to five years of elevated potentially traumatic event exposure.

Chapter 1 : Introduction and Literature Review

1.1 Overview

The Australian Centre for Posttraumatic Mental Health (now known as Phoenix Australia) has estimated that 50-65% of the Australian population will experience at least one Potentially Traumatic Event (PTE) in their lifetime (ACPMH, 2013). The current “best practice” approach to trauma is to screen for pathology (e.g., Post-Traumatic Stress Disorder; PTSD) and provide treatment when required (Cloitre, 2009; Cloitre et al., 2010; Cornum et al., 2011). This reactive paradigm is seen in the wealth of information and numerous studies regarding debriefing, early intervention responses following trauma and therapeutic approaches to stress and trauma pathologies (Bisson, Roberts, Andrew, Cooper, & Lewis, 2013; Roberts, Kitchiner, Kenardy, & Bisson, 2010). Although efficacious treatments for PTSD have been developed and continue to be modified, there has been comparably less progress in the domain of PTSD prevention (Feldner, Monson, & Friedman, 2007).

While research indicates that stressful life events precipitate somatic and psychological disease (Beasley, Thompson, & Davidson, 2003; Kobasa, 1979) there is almost no literature on primary prevention of PTSD and other stress related pathology (Lombardo, 2005; Schiraldi, Jackson, Brown, & Jordan, 2010). Prevention is defined as preventing development of symptomatology, reducing symptomatology and maintaining reductions in symptomatology long after the intervention is over (Day, Kane, & Roberts, 2003). Current secondary PTSD prevention programs have a focus on early intervention following a PTE with an aim of decreasing the incidence of pathology in the long term (Deville, Gist, & Cotton, 2006). Currently, research investigating the possibility of building protective factors in individuals prior to PTE exposure, with a view to decreasing the incidence of post-trauma pathology, is limited.

The construct of resilience holds great promise for high-risk populations, and preliminary data indicates that resilience is an attribute that can be acquired through training (Schiraldi, Brown, Jackson, & Jordan, 2010; Yehuda & Flory, 2007). Children, adolescents and functioning adults have recorded measureable improvements in resilience and protective factors and decreased mental health issues

following resilience and primary prevention training programs (Burton et al., 2010; Cornum et al., 2011; Day et al., 2003).

This review of the literature will identify risk and protective factors for PTSD and highlight protective factors that have been shown to change following training interventions. To-date, there is very little research that tracks the long-term effects of resilience or primary prevention training and the possible impact that this training may have on the development of post-trauma pathology. People working in high risk professions are at increased risk for PTSD, depression, anxiety, sleep difficulties, problematic alcohol use, relationship breakdown and suicide (Antonellis & Thompson, 2012; Berger et al., 2012; Carey, Al-Zaiti, Dean, Sessanna, & Finnell, 2011; Corneil, Beaton, Murphy, Johnson, & Pike, 1999; Lee, Ahn, Jeong, & Chae, 2014). PTSD is a disorder that carries a high level of disability and high utilisation of the healthcare system, leading to significantly higher financial and social costs than other mental health issues (ACPMH, 2013; Chan, Air, & McFarlane, 2003; Zatzick et al., 2000). In recent years there have been calls for organisations involved in high-risk work to be considered responsible for the mental health of all employees and volunteers and make concerted efforts at the primary prevention of potentially debilitating and costly disorders such as PTSD (Berger et al., 2012; Community Development and Justice Standing Committee, 2012), but as yet robust research supporting the efficacy of primary prevention programs has not been conducted. The scarcity of research and literature relating to the primary prevention of PTSD and promotion of protective factors in adults highlights the need for further research exploring whether it is feasible to use a primary prevention strategy to reduce the incidence of pathology following PTE exposure.

1.2 Post-Trauma Pathology

A critical feature of PTSD as a disorder is that the symptoms follow exposure to one or more PTEs. According to the DSM-5 such events may include:

...exposure to war as a combatant or civilian, threatened or actual physical assault (e.g., physical attack, robbery, mugging, childhood physical abuse), threatened or actual sexual violence (e.g., forced sexual penetration, alcohol/drug-facilitated sexual penetration, abusive sexual contact, noncontact sexual abuse, sexual trafficking), being kidnapped, being taken hostage, terrorist attack, torture, incarceration as a prisoner of war, natural or human-made disasters, and severe motor vehicle accidents.... Witnessed events include, but are not limited to,

observing threatened or serious injury, unnatural death, physical or sexual abuse of another person due to violent assault, domestic violence, accident, war or disaster, or a medical catastrophe in one's child (e.g., a life threatening haemorrhage). Indirect exposure through learning about an event is limited to experiences affecting close relatives or friends and experiences that are violent or accidental (e.g., death due to natural causes does not qualify). Such events include violent personal assault, suicide, serious accident, and serious injury. (APA, 2013, pp. 271-274)

Approximately 1-3% of Australians have experienced PTSD in the past year and there is a 5-10% lifetime prevalence of the disorder (ACPMH, 2013). The DSM-5 (APA, 2013) outlines 20 possible symptoms, including re-experiencing the event, avoidance of thoughts, feelings, images or other triggers relating to the event, numbing or increased arousal, which must follow a traumatic event and significantly interfere with day-to-day functioning. The presence of symptoms less than one month following a traumatic event attracts a diagnosis of Acute Stress Disorder (ASD) rather than PTSD.

The A2 criterion, that "the person's response involved intense fear, helplessness, or horror" (APA, 1994, P. 467) was removed from the diagnostic criteria for PTSD in the DSM-5, following much debate about the definition of trauma and indications that it is possible to develop PTSD without the presence of peri-traumatic fear, hopelessness or horror. However, there is evidence that the presence of a traumatic event alone does not predict PTSD development and that the combination of the A1 and A2 criterion hold the most predictive power. Most contemporary theories of PTSD posit that fear conditioning underlies the disorder, and exposure based treatments (based on habituation) are known to be most effective in treatment of PTSD (Boals & Schuettler, 2009; Foa, Chrestman, & Gilboa-Schechtman, 2009). Events that elicit emotions other than fear, helplessness or horror are less likely to result in fear conditioning; for example, reactions of sadness and grief are more likely to lead to complicated grief than to PTSD (Dagliesh & Power, 2004).

It is estimated that 50-65% of the Australian population will experience at least one traumatic event in their lifetime (ACPMH, 2013). Commonly experienced potentially traumatic events include witnessing death or injury, involvement in an accident or natural disaster and physical assault (Creamer, Burgess, & McFarlane, 2001). Most people will experience a psychological reaction following a trauma,

such as fear, sadness, guilt or anger; however, most recover, with evidence showing that at least two-thirds of people exposed to a PTE will not meet diagnostic criteria for PTSD 12 months later (Ehlers & Clark, 2000; Isaacs, Pyett, Oakley Browne, Gruis, & Waples-Crowe, 2010). In a study of people involved in motor vehicle accidents, 21% met symptom criteria for Acute Stress Disorder (ASD) at initial assessment (Holeva, Tarrier, & Wells, 2001). Current research indicates that approximately half of people who experience an acute stress reaction do not go on to develop PTSD and that depression and generalised anxiety are more commonly diagnosed following a PTE exposure than PTSD (ACPMH, 2013).

It is generally accepted that major trauma, such as severe child abuse, rape or combat exposure, may have long-term negative effects (Aldwin, Levenson, & Spiro III, 1994), however it is important to note that PTSD is not the only, or even the most likely, pathological outcome associated with traumatic exposure. Psychological distress following PTE exposure is variable (APA, 2013). History of traumatic exposure has been indicated as a risk factor for depression (Deville et al., 2006). Lopez, Piffaut, and Seguin (1992) reported that 71% of women who had experienced rape suffered from major depression while only half that number (37.5%) developed chronic PTSD. A primary prevention intervention has the potential to mitigate distress and PTSD symptoms, reducing the impact of PTE exposure on individuals and their families.

1.3 Theories of PTSD

1.3.1 Learning Model

From a Pavlovian conditioning perspective (Pavlov, 1927), PTSD symptoms may be promoted by maladaptive learning in direct response to a PTE. Through fear conditioning, a previously neutral stimulus becomes associated with the PTE and acquires the capacity to trigger and maintain an intense fear response (Lissek & Grillon, 2012). In PTSD, this process has been linked to re-experiencing and avoidance due to the effect of the stimulus, which fails to degrade or habituate over time despite the absence of adverse consequences. While many people may experience what we describe as a “normal” stress response immediately following PTE exposure, the majority will habituate and recover over time. At the heart of learning models is the resistance to extinction seen in PTSD; learning models have supported the development of exposure therapy (e.g., prolonged exposure) to reduce

avoidance and provide the opportunity for extinction, as the gold standard treatment for PTSD (Foa et al., 2009).

Avoidance behaviours form one of the core symptom clusters in diagnosis of PTSD. Some people are predisposed towards the use of avoidant coping strategies, which are closely linked to PTSD development (Fledderus, Bohlmeijer, & Pieterse, 2010; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Marx & Sloan, 2005). From a Pavlovian or learning approach, avoidance of a fear-inducing conditioned stimulus is learnt. When the stimulus is encountered, fear increases, but when the individual moves away from or otherwise avoids the stimulus, fear will subside thus negatively reinforcing the avoidance behaviours.

Overgeneralisation of the learnt link between the unconditioned stimulus and conditioned response (in the case of PTSD a fear response) is the second stage in learning models of PTSD. Conditioned responses have long been understood to transfer or generalise (Pavlov, 1927). The way in which traumatic memories attain primacy over other mental events in PTSD can be understood as an overgeneralisation or exaggeration of an adaptive human response. It is beneficial and highly adaptive to remember as much as possible about dangerous situations, such that similar encounters can be avoided in the future (Friedman, 2011). However, generalising a fear response to safe situations is typically not adaptive and forms part of the PTSD pathology.

1.3.2 Neurobiological Model

Early observations of hypervigilance and elevated physiological responses in combat veterans from the Vietnam War suggested to neurobiological researchers that PTSD was a disorder involving permanent neuronal changes that impacted and compromised learning, habituation and stimulus discrimination (Kolb, 1987). While several neurobiological alterations have been observed in people with PTSD, thus far none have been demonstrated to be characteristic of the disorder across all individuals and populations (Shalev, Gilboa, & Rasmusson, 2011). This is a growing research area that is expanding exponentially as we garner greater understanding of neurobiology, neuropsychology and the brain. Current research suggests that the pathophysiology of PTSD involves dysregulation of the opioid, glutamatergic, noradrenergic, serotonergic, and neuroendocrine pathways (Friedman, 2015; Hageman, Anderson, & Jorgensen, 2001; Lissek & van Meurs, 2014).

Some neurobiological models are closely linked to learning models. From a neurological perspective, exposure to a conditioned stimulus may produce the conditioned response of activation of a defence or fear response. As outlined by Shalev and colleagues (2011), a previously neutral stimuli paired with a threat stimuli will pass through the thalamus to create a neural cascade involving both the sympathetic and parasympathetic nervous systems including cardiovascular and respiratory reactions, activation of the hypothalamic-pituitary-adrenal (HPA) axis and alterations to memory and information processing. This cascade may create an association between the unconditioned stimulus (a previously neutral stimuli) and conditioned response, resulting in this cascade and the associated fear response being triggered more easily.

The kindling model of PTSD has been applied to cases of chronic and repeated PTE exposure (e.g., ongoing child abuse) or the distress following intrusive re-experiencing of a PTE which may “kindle” limbic nuclei leading to behavioural change (Hageman et al., 2001). This theory posits that repeated stress or re-experiencing may trigger a defensive neurological cascade, or fear response (as outlined above), whereby repeated triggering appears to strengthen these neurological pathways, as neurons that “wire together, fire together” (Keysers & Perret, 2004). Advances in neuroscience have also confirmed that “neurons that fire apart, wire apart” (Bao, Chang, Woods, & Merzenich, 2004), a sentiment that provides an alternative, neurobiological perspective of how prolonged exposure therapy (Foa et al., 2009) works in the treatment of PTSD by extinguishing old fear based patterns of firing and strengthening new neural networks and coping patterns.

Neurobiological models do not appear to account for neural risk and protective factors other than genetic resilience or vulnerability and to-date have shown little predictive power in projecting who may (or may not) develop PTSD following PTE exposure (Shalev et al., 2011). Preliminary research is indicative of the hormones cortisol, pregnanolone and dehydroepiandrosterone (DHEA) playing key roles in the pathophysiology of PTSD, but results vary across individuals and appear to be linked to genetics and genomics (Gill, Vythilingam, & Page, 2008; Uddin, Amstadter, Nugent, & Koenen, 2012). Future research may expand past an explanatory model to include evidence-based neuropsychological treatments.

1.3.3 Cognitive Model

The cognitive model of PTSD posits that persistent PTSD may develop if an individual processes the traumatic event and/or its sequelae in a way that produces a sense of a serious current threat. It has been theorised that people who have experienced PTEs, who do not recover, may learn more intense or less readily extinguished fear responses to PTE-associated stimuli or demonstrate problems in processing PTE-related information (Feldner et al., 2007). Once activated, the perception of current threat is accompanied by intrusions and other re-experiencing symptoms, symptoms of arousal, anxiety and other emotional responses. Fear based responses are theorised to become associated with traumatic event-related cues (Feldner et al., 2007); this has been described as a “fear network”. Foa, Steketee, and Rothbaum (1989) posited that this fear network is generalised and easily accessed in people with PTSD.

The perceived threat or fear network motivates a series of behavioural and cognitive responses that are intended to reduce distress in the short term, but have the consequence of preventing cognitive change and therefore maintaining the disorder (Ehlers & Clark, 2000). These fear networks become pathological, as in PTSD, when there are excessive response elements that are resistant to change and persist in the presence of relatively non-dangerous cues (Feldner et al., 2007). It is thought that the activation of this fear network triggers avoidant responses, additionally contributing to PTSD symptomatology. As memories, thoughts and experiences are avoided, they are not fully processed cognitively. Research shows that avoidance of a thought reliably increases the incidence of the avoided thought (Marx & Sloan, 2005), which can lead to re-experiencing symptoms of PTSD.

In terms of information processing, it has been argued that there is a “completion tendency”, whereby people exposed to a PTE wish to integrate new information into their existing beliefs about themselves and the world. When this information is not incorporated, it is thought to remain in “active memory” and manifest in PTSD symptoms (Feldner et al., 2007; M. J. Horowitz, 1986; Janoff-Bulman, 2004). Ehlers and Clark (2000) present a cognitive model incorporating problematic processing of PTE-related information, with an emphasis on problematic appraisals that individuals with PTSD make about events and their own PTSD symptoms. Maladaptive appraisals may include maladaptive beliefs about self (e.g., “If I were stronger/better/more competent this would not have happened to me”),

about post-trauma symptoms that fall within the normal range (e.g., “I’m going crazy” or “It is not normal to be thinking/dreaming about this event so much”) and how they should best respond (e.g., “I cannot let anyone know I’m going crazy” and “I am completely out of control/there is nothing I can do about this”). As discussed below, many risk factors tend to interact with event appraisal, which can lead to the initiation and maintenance of PTSD symptoms.

1.3.4 Summary

The learning, neurobiological and cognitive models of PTSD have significant overlap in terms of the aetiology of the disorder; all of these models are able to account for alterations in memory functioning, re-experiencing and other intrusions, hyper-arousal and numbing (the key symptom clusters of PTSD). There is a common notion that processing of the PTE becomes “stuck”, preventing the individual from integrating the memory, but the mechanism for this is explained in different ways by the alternative models, with cognitive models placing more emphasis on the way in which an event is perceived and processed during the trauma (Ehlers & Clark, 2000). The recommended treatment pathways for all three models are also similar, with each outlining the benefits of reliving the event via exposure, although each offer alternate explanations for why this is helpful. For example, the process of exposure can be explained as helpful by enabling reintegration of the traumatic memory with the rest of the memory network (Foa et al., 1989), or by reprogramming neural pathways (Bao et al., 2004) or because contextualisation of trauma-related information can inhibit retrieval of sensory details and physiological responses (Ehlers & Clark, 2000). Greater understanding of the way in which traumatic memories are encoded and the connections between appraisal and emotional responses would progress the evidence-base that could differentiate between these alternative models.

1.4 Resilience

There are a wide range of possible outcomes following a traumatic event. As mentioned above, it is expected that 50-65% of Australians will be exposed to at least one PTE in their lifetime (ACPMH, 2013). In contrast, however, the incidence of post-trauma pathology, such as PTSD, is relatively low. This leads to a conclusion that most people are inherently resilient. Resilience is the ability to maintain a stable equilibrium in the face of adversity and to show healthy functioning across time (Bonanno, 2004), and the current understanding is that resilience is enabled through

ordinary processes, many of which are teachable (Reivich & Gillham, 2010). This observation led researchers to explore what it is that allows some individuals to experience significant trauma with no (or minimal) disruption to psychological functioning, while others may develop severe or debilitating pathology (Steinhardt & Dolbier, 2008).

When faced with adversity, people with limited resilience are at risk of depression, stress, anxiety and interpersonal difficulties. They may adopt health compromising behaviours and experience somatic complaints and poor physical health (Burton et al, 2010). Some individuals are more likely to be diagnosed with PTSD or develop some other form of psychopathology (e.g., depression, substance abuse disorders, and other anxiety disorders) following a traumatic event.

Robust individuals have competence in areas of psychological functioning such as positive beliefs about self, task performance, mastery and ability to cope with traumatic stressors (Agaibi & Wilson, 2005). Psychological training targeting environmental mastery, personal growth, purpose in life, autonomy, self-acceptance and positive relations with others has been shown to decrease vulnerability to depression and anxiety in high risk populations (Fava & Tomba, 2009).

Schiraldi and colleagues (Schiraldi, Brown, et al., 2010) note that from a practical viewpoint, many of the same skills that facilitate prevention are generally thought to promote optimal performance, adaptation, rebounding and growth both under stress and across the lifespan. Theoretically, increasing protective factors would be expected to result in increases in resilience and other indicators of adaptation and mental well-being (self-esteem, optimism, happiness and curiosity), while decreasing symptoms of mental distress (depression, anxiety and anger) as measured by standardised scales.

1.5 Risk and Protective Factors for PTSD

Given that over half of people in Australia will be exposed to a PTE, and the lifetime prevalence of PTSD is 5-10% (ACPMH, 2013), it seems that exposure alone is insufficient to cause PTSD in a substantial majority of cases (Deville et al., 2006). Risk and protective factors for PTSD may include exposure to trauma, profession, gender, personality, coping style and social support. The presence of risk factors indicates that a person may be more likely than others to develop a specific

difficulty, while the presence of protective factors may buffer a person against the impact of stress and PTE exposure (Tusaie & Dyer, 2004).

How people manage and cope with the emotional, behavioural and relationship sequelae of PTE exposure greatly influences the risk for PTSD and other problems implicated by trauma. Individuals who are particularly avoidant, who utilise maladaptive coping strategies (e.g., using alcohol to self-medicate), who are isolated with few resources or whose recovery environment is particularly harsh and rejecting are less likely to recover adaptively (Steenkamp, McLean, Arditte, & Litz, 2010).

It is important to note the difference between fixed factors and moveable factors in terms of risk and protection against mental health issues following PTE exposure. Some factors, such as genetic predisposition (Goenjian et al., 2015), prior trauma exposure (Violanti, 2006) and personal history (Rossouw, 2012) are fixed. However, there is increasing evidence via the testing of resilience training programs that there are aspects of resilience, such as appraisal or coping strategies, that are both malleable and teachable (Beasley et al., 2003; Leppin et al., 2014).

Across the resilience literature, there appears to be agreement that a Person x Situation interactional model of resilience is conceptually critical (Agaibi & Wilson, 2005). That is, both personal factors (such as hardiness, self-esteem, coping strategies etc.) and situational factors (such as the nature and severity of traumatic event) will impact interactively on the psychological outcome for the individual (Steinhardt & Dolbier, 2008). Appraisal of the PTE and of individual reactions following PTE exposure is key in the development of PTSD, according to the cognitive model outlined above (Ehlers & Clark, 2000). As PTE exposure cannot be avoided, prevention efforts would best be targeted at skill building around factors that impact appraisal, to reduce threat perception and/or increase confidence in the ability to adaptively respond to a PTE.

1.4.1 Trauma Exposure

Exposure to trauma, including number of PTEs and type of PTEs that an individual is exposed to, is a critical risk factor for PTSD (Violanti, 2006). Research shows that a history of trauma will leave an individual at higher risk of developing PTSD following any subsequent PTEs (Maguen et al., 2008; McCloskey & Walker, 2000; Ozer, Best, Lipsey, & Weiss, 2003; Stephens & Miller, 1998), although emerging research indicates that prior PTE exposure in police officers may facilitate

Post-traumatic Growth (PTG) following work related PTEs by facilitating positive emotional outcomes to subsequent professional PTE exposures (Burke & Shakespeare-Finch, 2011). Some investigations have found that for children who experienced trauma before age 11 there was up to a three-fold increased risk for the development of PTSD; this finding has been linked to disruption of the essential childhood developmental tasks of safety, security and positive self-image (Davidson & Smith, 1990). Additionally, protective factors seem to have a reduced protective function for individuals who are exposed to extreme levels of trauma (King, King, Fairbank, Keane, & Adams, 1998; Renshaw, 2011; Zeiss & Dickman, 1989).

A childhood history of domestic violence or high parental conflict leads to a greater risk for developing PTSD symptoms following subsequent trauma exposure (Hodgins, Creamer, & Bell, 2001; McCloskey & Walker, 2000). Kruczek and colleagues (Kruczek & Vitanza, 2015) suggest that the impact of age of exposure may be moderated by appraisal of an event, for example, whether a child has cognitive understanding of a threat, whether a child perceives that there is a threat to their safety and whether the child perceives a threat to the safety of their primary caregiver. Empirical evidence indicates that in children and adolescents, the individual's cognitive appraisal of an event leads to either a maladaptive or adjusted response to the event (Silverman & La Greca, 2002; Tolin & Foa, 2002).

1.4.2 Gender

Researchers have consistently demonstrated that women are more likely to be exposed to PTEs (Feldner et al., 2007) and display greater symptoms of anxiety, depression and distress after experiencing a trauma than men (Foa, Keane, & Friedman, 2000; Nasky, Hines, & Simmer, 2009; Silverman & La Greca, 2002). Tolin and Foa (2002) attribute these gender differences to a number of factors, including type of trauma and appraisal of trauma. Females are more likely to experience sexual assault while males are more likely to experience physical assault, and sexual assault has been identified as a PTE associated with a higher risk of post-trauma pathology, regardless of gender (ACPMH, 2013). Female victims are more likely than males to assign self-blame following trauma exposure and to subsequently evaluate the world as a more negative or dangerous place, thus increasing negative appraisals (Kruczek & Vitanza, 2015).

1.4.3 Personality Factors

Kobasa (1979) theorised that people who experience high degrees of stress without falling ill have a personality structure differentiating them from people who become sick under stress. This quality was described as “hardiness” and included the belief that they can control or influence the events of their experience (internal locus of control), an ability to feel deeply involved or committed to the activities of their lives and the anticipation of change as an exciting challenge to further development (appraisal). Internal locus of control has been identified as a protective factor by others (Silverman & La Greca, 2002).

A range of personality or disposition factors, such as optimism, hardiness, locus of control, self-esteem and propensity for worry have been linked with resilience (Tusaie & Dyer, 2004). The relationship between personality factors and resilience (or incidence of pathology) may be attributed to the way in which personality factors can colour appraisal of events. Image control, or the capacity to volitionally control imagery, is linked to cognitive, affective and physiological responses when under stress. Image control is correlated with PTSD predisposing traits such as neuroticism and anxiety, and low image control has also been linked as a physiological sensitiser to PTSD (Laor et al., 1998).

Research has shown that optimism is associated with and leads to securing positive outcomes, where optimism is defined as generalised positive expectancies (Chang, 1998). An exploration of this link by Chang (1998) indicated that optimism impacted on appraisals of a stressor, and thus impacted on coping. For example, an individual with high optimism might be expected to appraise PTEs and their personal coping resources positively. This decreases the likelihood of initiating avoidance cycles to avoid negative personal experiences and increases the likelihood of coping.

How an individual perceives and evaluates self is crucial to mental and social well-being; high self-esteem has been identified as a protective factor and a non-specific risk factor in physical and mental health, and low self-esteem plays a significant role in the development of emotional disorders (Fava & Tomba, 2009; Mann, Hosmann, Schaalma, & de Vries, 2004; Silverman & La Greca, 2002). An unstable self-concept and poor self-esteem can play a critical role in the development of an array of emotional disorders and social problems (Mann et al., 2004). The protective nature of self-esteem is particularly evident in studies examining stress and/or physical disease in which self-esteem is shown to safeguard the individual

from fear and uncertainty (Mann, 2004). Positive self-esteem means that an individual is more likely to appraise their own coping resources as adequate following a PTE. Mann et al (2004) also note that self-esteem has been shown to buffer anxiety, a significant component of PTSD.

Self-efficacy, a construct similar to self-esteem and self-evaluation, refers to the beliefs people have about their own ability to take action and accomplish explicit goals (Bandura, 1991). In a study focussed on survivors of Hurricane Katrina on the Mississippi Gulf Coast, Hirschel and Schulenberg (2009) found that self-efficacy was inversely correlated with PTSD prevalence and severity. Self-efficacy may interact with appraisal, as an individual with a strong self-efficacy is likely to feel less overwhelmed by a PTE than an individual with low self-efficacy.

Individuals with a propensity for worry may be at greater risk of developing PTSD as their worry cycle may induce intrusive thoughts; research has shown that inducing worry results in more negative thought intrusions (Wells, 1999; York, Borkovec, Vasey, & Stern, 1987); intrusions are a trademark symptom of PTSD. It has been suggested that worry is similar to fear processes in that brief exposure to worry or a fear inducing stimulus can increase fear or anxiety, whilst longer exposure leads to fear extinction (Wells, 1999). Individuals with high anxiety sensitivity may experience greater peri-traumatic arousal during a PTE (Feldner et al., 2007); as outlined above, peri-traumatic arousal has been identified as a risk factor for PTSD.

1.4.4 Personal Trauma History

A history of trauma is a risk factor for PTSD following any subsequent PTEs (Maguen et al., 2008; Maguen et al., 2011; McCloskey & Walker, 2000; Ozer et al., 2003; Stephens & Miller, 1998). Other personal history factors can also increase risk of PTSD. One obvious predictor of experiencing PTSD symptoms is having met the criteria for Acute Stress Disorder during the month following a PTE (Ozer et al., 2003). Links have also been found between psychological problems prior to a PTE and a family history of psychopathology and subsequent development of PTSD (Gidron et al., 2001; Ozer et al., 2003).

Personal factors such as general life stress have also been linked to PTSD. Maguen and colleagues (2008) found that if military medical personnel are worried about personal stressors, then it becomes increasingly more complicated for them to remain focussed on their military duties during deployment; as such, stress and worry were identified as risk factors for developing PTSD post-deployment. Additionally,

navy personnel who began a voyage with high stress scores were reported to suffer more physical illness episodes during the months at sea than sailors who start out with low stress scores (Rahe, 1974). Pre-deployment or other personal stress may create a background of tension and elevated physiological arousal, resulting in a ripple effect of stress and elevated peri-traumatic arousal during PTE exposure, resulting in increased risk for PTSD (Maguen et al., 2008).

1.4.5 Profession

Some professions, by their nature, will be repeatedly exposed to trauma. Populations that are at increased risk for trauma exposure and PTSD include police officers, fire and emergency service workers and soldiers (ACPMH, 2013; Cook & Mitchell, 2013; Schiraldi, Brown, et al., 2010). For example, research shows that most US Army service members have personally experienced traumatic incidents, such as taking a life, being shot at, seeing or handling human remains and being physically or emotionally close to colleagues that were killed or wounded (Cornum et al., 2011). Additionally, researchers have found an increase in mental health problems as a result of military-related traumatic events (Adler, Bliese, McGurk, Hoge, & Castro, 2009; Bowles & Bates, 2010). Dohrenwend and colleagues (Dohrenwend et al., 2006) stated that 20% to 30% of US military personnel have reported significant psychological symptoms in the first three to six months following operational deployment. Incidence of significant psychological symptoms prior to deployment or in a non-deployed sample were not provided.

Different occupations may have unique risk factors for stress and as such, risk and protective factors will depend on role and organisational characteristics (Bakker & Demerouti, 2007). Fire and emergency service workers are, by nature of their jobs, exposed to extreme conditions impacting physical, psychological and emotional stress; they are required to respond to a range of emergency situations, such as residential and commercial fires, medical crises, hazardous material spills, explosions, motor vehicle, train and aeroplane accidents, search and rescue, and large scale community disasters (Bryant & Harvey, 1996). It is likely that emergency service personnel will confront situations that involve human suffering, danger and death more often than the general population and fire fighters are at elevated risk of PTSD and other mental health issues (such as depression), when compared to the general population, as a result of duty-related exposures.

In high risk occupations, such as fire and emergency services, PTE exposure is unique in that it is likely to be secondary rather than primary and personnel are trained in how to respond to the threats or dangers that are inherent in their occupational role (McFarlane & Bryant, 2007). Thus, there is an opportunity to mentally prepare in anticipation of most PTEs and repeated exposure is expected. Specific training in an occupational setting may act as a protective factor, as wearing the uniform, a sense of competence, task focus and camaraderie can promote clear boundaries, provide the role of being an active participants and can later support meaning making and help to buffer stress reactions (Hayward & Tuckey, 2011; Tuckey & Hayward, 2011). Occupational and organisational or cultural factors may also act as risk factors; for example, cultural or organisational pressure to appear mentally tough may inhibit help-seeking and promote avoidance, contributing to the accumulation of stress over time (Watsell, 2002).

1.4.6 Peri-Traumatic Arousal

Peri-traumatic arousal is the arousal experienced during a PTE and has been widely recognised as being involved in difficulty recovering from exposure to a PTE (Ehlers & Clark, 2000; Gidron et al., 2001). It has been suggested that the presence or absence of arousal may be a key phenomenon that has implications for risk of developing PTSD, how PTSD symptoms present and whether an event is deemed “traumatic” (Ozer et al., 2003). Research suggests that a traumatic event that elicits a highly arousing emotional response is more likely to result in learned fear of cues present during the event than an event that elicits less emotional arousal (Feldner et al., 2007). Strong emotional responses (e.g., fear, helplessness, horror, anger) and perceived life threat during a PTE are related to an increased likelihood of PTSD (Ozer et al., 2003).

1.4.7 Appraisal

Cognitive models of trauma response propose that an individual’s appraisal of a traumatic event and capacity to respond to the experience is pivotal in how that individual adapts to the experience (Ehlers & Clark, 2000). Catastrophic perceptions about self, others and the world may lead to exaggerated estimates of likely harm and negative outcomes in the future (Bryant & Guthrie, 2005), thus impacting peri-traumatic arousal and recovery.

A growing body of research suggests that perceptions of threat partially or fully mediate the association between combat severity and PTSD (King et al., 1998; Renshaw, 2011). In military samples, pre-deployment preparation and training is cited as a potential buffer against PTSD as it is designed to prepare soldiers for the types of events they may experience, with a specific focus on combat. The rationale, supported by cross-sectional data, is that soldiers who feel better prepared for deployment may be less susceptible to perceptions of overwhelming threat and/or development of PTSD symptoms after deployment (Renshaw, 2011).

In Ehlers and Clark's (2000) model, people who have a tendency to engage in maladaptive appraisals are more likely to respond to a traumatic event with heightened stress reactions than people who make adaptive appraisals. Bryant and Guthrie (2005) supported this model, as they found that the major predictor of PTSD symptoms in a group of trainee fire fighters was the extent to which the fire fighters engaged in catastrophic thinking (specifically, maladaptive appraisals about themselves) prior to trauma exposure. Maladaptive appraisals that have been linked to PTSD may be about self or a general negative view of self (e.g., "I am inadequate"), emotional reactions (e.g., "My reactions since the PTE mean that I am going crazy") or the world (e.g., "The world is dangerous" or "You never know when something might happen that will harm you" (Bryant & Guthrie, 2005).

As outlined above, both age and peri-traumatic arousal have been linked to appraisal of an event. Events that are perceived to be unpredictable and/or uncontrollable elicit greater fearful responding than predictable and/or controllable events (Feldner et al., 2007). The extent to which an event may elicit distress can also be influenced by self-efficacy, how capably an individual believes they can manage a stressful event and how well they believe they are coping (A. D. Brown, Buckner, & Hirst, 2011).

1.4.8 Coping Strategies

Past research has shown clear links between coping strategies and psychological functioning under pressure (Lazarus, 1999). Lazarus and Folkman (1984) highlighted the link between mental health outcomes and coping strategies. They indicated that coping strategies may influence how a stressful or traumatic event is perceived and managed. Approach-oriented coping (i.e., coping strategies incorporating active attempts to deal with stress) has been identified as a protective factor while avoidance-oriented coping such as escapism (creating a mental

diversion), rumination (compulsively focussing on distress or negative events) or emotion focus (trying to reduce negative affect), has been linked to low resilience (Beasley et al., 2003; Marchand, Nadeau, Beaulieu-Prevost, Boyer, & Martin, 2015; Silverman & La Greca, 2002). Beasley (2003) directly tested the role of coping strategies in buffering individuals against negative life events and found that emotion-focused coping and negative life events have a direct impact on measures of psychological and somatic distress. Negative life events consistently increased distress, while emotion-focused coping was associated with fewer symptoms of psychopathology (Beasley et al., 2003).

In a study of Vietnam veterans, calmness under pressure, acceptance of fear (in self and others) and humour were linked with resilience (Hendin & Haas, 1984). A study involving trainees at the Australian Army Recruit Training Centre demonstrated a link between coping strategies use and levels of emotional distress (Dawson, 2000). Specifically, avoidant coping strategies (i.e., self-blame, denial, rumination and venting) were predictive of poorer psychological adjustment, while recruits who engaged in problem-focussed strategies (i.e., planning and problem solving) reported less emotional distress and were more likely to complete training (Cohn, 2010). Cognitive avoidance (e.g., thought suppression) has typically been considered a mechanism underlying the intrusive thoughts inherent to PTSD (Feldner et al., 2007).

It has been argued that repeatedly applying avoidant coping strategies reinforces avoidant behaviours and can precipitate and perpetuate PTSD symptoms. Maladaptive coping strategies have been linked with experiential avoidance, which is itself a risk factor for developing PTSD (Fledderus et al., 2010). High levels of cognitive avoidance have been shown to predict greater post-PTE symptom severity among persons with a history of traumatic exposure (Marx & Sloan, 2005). Efforts to suppress PTE-related thoughts appear to increase the frequency of the suppressed thought (Davies & Clark, 1998) and may maintain PTSD symptoms. Some models posit that cognitive processing of an event will only take place effectively when avoidance is low enough to allow activation of the fear network (Creamer, Burgess, & Pattison, 1990).

1.4.9 Social support

Social skills have been linked with resilience (Tusaie & Dyer, 2004) and the association between social support and the prevention and/or reduction of both

physical and psychological disorders relating to stressful life events have been found in a number of studies (Brancu et al., 2014; Lepore, Ragan, & Jones, 2000; Ozer et al., 2003; Pengilly & Dowd, 2000). The severity of secondary traumatic stress symptoms may be mitigated by the perceived availability of and satisfaction with social support (Hyman, 2004). Social support has been recognised as moderating the relationship between stress and mental health outcomes; however Pengilly and Dowd's (2000) investigation of the impact of hardiness and social support on stress found that the relationship between social support, stress and negative outcomes is complex, with components of hardiness (challenge, commitment and control) and social support moderating the impact of stress on mental health with increased hardiness associated with better fewer mental health problems.

1.4.10 Summary

The above research highlights the links between trauma exposure, profession, personal history, appraisal, gender, personality factors and social supports and susceptibility to developing a post-trauma pathology, such as PTSD. An individual's response to a PTE exposure appears to be moderated by their appraisal of the event and their own coping resources; appraisals have been found to account for a significant amount of the variance in psychological and physical adjustment following stress (Chang, 1998). Given these risk and protective factors, any intervention aimed at mitigating or preventing PTSD symptomatology may choose to decrease risk factors, aim to build protective factors, or a mix of both, with a focus on appraisal. Risk factors can also be used to identify people that may reap most benefit from a PTSD prevention intervention.

1.6 Current PTSD prevention interventions

Prevention interventions can be classified as universal, selective or indicated. A universal intervention is applied to all members of a population, regardless of their risk for developing a disorder. A selective intervention targets only persons at risk for developing, but showing no signs of, a disorder. An indicated intervention is aimed at individuals demonstrating aspects of a disorder but who are sub-syndromal or subclinical in terms of diagnosis (Feldner et al., 2007). Many current PTSD prevention interventions are selective or indicated, in that they target people who are at increased risk of PTSD due to their exposure to an event or current symptomatology. Selective and indicated interventions are touted as being resource-efficient; however, there is a risk that individuals may be stigmatised (J. L. Horowitz

& Garber, 2006). Alternately, resilience interventions are often universal, in that they are applied to entire populations.

The vast majority of research on PTSD prevention, consisting primarily of tests of psychological debriefing, has yielded relatively little efficacy in preventing PTSD (Feldner et al., 2007) and there is little research on factors other than post-trauma social support that might buffer against either perceptions of threat or the development of PTSD (Renshaw, 2011). Current intervention strategies include secondary or early intervention (aimed at those who have been deemed to be high risk due to their recent involvement in a PTE or critical incident) and tertiary intervention in the form of ASD treatments (aimed at those who have been deemed to be high risk due to their current symptoms of pathology). Some research has also been conducted on the efficacy of other interventions, such as residential treatment (Fay, Kamena, Benner, & Buscho, 2006). There is currently little research on the primary prevention of PTSD. The primary prevention of PTSD would be valuable in sparing individuals, families and organisations the financial, personal and social costs of this serious disorder. PTSD is associated with increased physical health problems, suicidality, anger management issues, problematic alcohol use and relationship breakdown (Chopko, Palmieri, & Adams, 2013; Cornelius et al., 2012; Friedman & Schnurr, 1995; James, Wilson, & McMains, 2007).

1.5.1 Psycho-pharmacology/ Chemoprophylaxis

There has been discussion within the psychiatric and medical models of the primary chemoprophylaxis of PTSD, arguing that in the future PTSD will be understood as a psychobiological abnormality for which different medications may be used to treat different stages of the disorder, including an emphasis on the prevention phase (Friedman, 2002). The medical model conceptualises PTSD as a dysregulation of the hypothalamic-pituitary-adrenocortical (HPA) and locus coeruleus/norepinephrine-sympathetic (LC/NE) systems and related immune mechanisms including involvement of neurotransmitter, neurohormonal, and metabolic mechanisms including adrenergic, serotonergic, opioid, glutamatergic, gaberic, cholinergic and cytokine systems (McEwen, 1998). Pharmacological strategies to prevent PTSD might be aimed at bolstering the stress system and altering allostatic load (Friedman, 2002). Suggested primary prevention approaches in emerging research include glucocorticoid receptor (GR) agonists and antagonists as well as corticotropin-releasing hormone receptor 1 (CRF1) and cholecystokinin B

receptor (CCK2) antagonists (Griffin, Charron, & Al-Daccak, 2014; Steckler & Risbrough, 2012) and escitalopram (Suliman et al., 2015). Preliminary research to gather further evidence for the secondary prevention efficacy of corticosteroids and β -blockers is growing, however there is not sufficient research in this field to-date to support implementation of pharmacological prophylaxis of PTSD in generalised practice (Searcy, Bobadilla, Gordon, Jacques, & Elliot, 2012). While it is important to acknowledge work towards PTSD prevention within medicine and pharmacology, an in-depth review of this literature is outside the scope of this psychologically grounded dissertation.

1.5.2 Early Intervention

Current popular interventions aimed at preventing or limiting symptoms of PTSD are delivered post-trauma; these interventions target people who are at risk for developing PTSD given their exposure to a PTE, regardless of early symptom levels (Feldner et al., 2007). Secondary prevention often emphasises acute crisis intervention via psycho-educational groups identifying normal emotional reactions of trauma and effective coping strategies (Kruczek & Vitanza, 2015). Early interventions can include psychological debriefing (such as Critical Incident Stress Debriefing (CISD) or Critical Incident Stress Management (CISM)), psycho-education (Krupnick & Green, 2008) and psychological first aid (Reyes & Elhai, 2004). It is expected that all individuals will experience distress following PTE exposure, and thus will benefit from assistance and support (Litz, Gray, Bryant, & Adler, 2002). Providing widespread assistance via debriefing or psychological first aid is argued to be a direct pathway to providing support for groups of people following PTE exposure.

Psychological debriefing is a brief, short-term intervention aimed at mitigating long-term distress and preventing the emergence of posttraumatic stress, relying predominantly on ventilation/catharsis, normalisation of distress and psycho-education regarding presumed symptoms (Deville et al., 2006). A version of psychological debriefing, called Battlemind Debriefing, has been reported to be in use in the US Army. This intervention varies from traditional debriefing models in that it specifically minimises the degree to which events are recounted in an effort to avoid re-traumatising (Adler et al., 2009). Adler and colleagues have found that recipients of Battlemind Debriefing report fewer PTSD symptoms, depressive symptoms and sleep problems than individuals in a stress-education group.

Deville and colleagues (2006) outline the controversy surrounding psychological debriefing, which will not be reiterated in detail here. It has been argued that some forms of Psychological Debriefing may interfere with natural recovery from a PTE and exacerbate or maintain post-traumatic stress symptoms, although methodological and conceptual shortcomings have plagued research in this area (Feldner et al., 2007; Gidron et al., 2001; Rose et al., 2002; Tuckey, 2007). Some studies evaluating debriefing have been criticised for applying the intervention in a “watered down” fashion (e.g., in a shorter timeframe than would typically be expected) or applying the intervention too soon following PTE exposure, thus interfering with normal psychological processes and increasing the likelihood of PTSD. Following passive exposure to an unexpected event, psychological debriefing has been found to be most effective when delivered by experienced debriefers, with participants who are active in incident management, such as fire and emergency workers, rather than civilians (Tuckey & Scott, 2013). In summary, there is conflicting evidence for the effectiveness of this kind of intervention, with evidence that some forms of Psychological Debriefing (e.g., *critical incident stress debriefing*) may be harmful and increase the risk of PTSD symptomatology.

1.5.3 ASD Treatments

Targeted or indicated prevention programs have also been designed to target the reduction of symptoms in individuals with ASD, with the aim of preventing the occurrence of PTSD. Commonly this kind of prevention intervention will comprise a cognitive-behavioural approach, including psycho-education, anxiety management training, cognitive restructuring and exposure (Bryant & Guthrie, 2005). Cognitive-behavioural therapy for ASD has been shown to significantly decrease the incidence of PTSD at 6-month and 4-year follow ups (Bryant, Moulds, & Nixon, 2003).

1.5.4 Pre-trauma Interventions

Primary prevention differs from secondary and tertiary interventions (such as debriefing and ASD treatment) in that the intervention is provided prior to PTE exposure. Cohn and Pakenham (2008) explored the efficacy of a brief cognitive-behavioural program in modifying causal attributions, expectancy of control, coping strategies and psychological adjustment in a sample of Australian Army soldiers undergoing a 45-day recruit training program. Data were collected pre-intervention and 23 days post-intervention in a single group pre-post design. Those that received the intervention reported more temporary and specific attributions, less reliance on

self-blame coping, positive states of mind and lower psychological distress post-intervention. This study was designed to improve “psychological adjustment”, not to prevent pathology, as such, longer term follow up measures, such as measures of psychological adjustment post-deployment, were not included. It is also difficult to attribute measured changes solely to the cognitive-behavioural program, as recruit training can be a time of significant change for recruits.

In a resilience training program for police, rookie police officers in the Swedish Police Force participated in a randomised control trial of a ten-week imagery and skills training program (Arnetz, Nevedal, Lumley, Backman, & Lublin, 2009). One year later, psychophysiological stress and police work performance were assessed during a live critical incident simulation. Arnetz and colleagues (2009) found that officers who had participated in resilience training were measured to have significantly less negative mood, lower heart rate activity and better police performance, compared to controls. Relaxation skills were given to assist officers in calm responding and self-soothing during and following a traumatic event. Additionally, imagery work focussed on common scenarios likely to mentally prepare officers for PTEs and alter their appraisal of these events when they are encountered. This study showed the longevity of resilience training, as effects of one resilience training program were found 12 months post-completion of the training with no maintenance programs.

“BattleSMART” (Self-Management and Resilience Training) is a cognitive-behavioural based program that aims to develop both arousal reduction techniques and adaptive cognitive coping strategies in soldiers within the Australian Defence Force (ADF; Cohn, 2010). The training identifies four key response areas (physical, thoughts, emotions and behaviours) that may indicate and promote poor or optimal performance in a stressful situation. The program teaches personnel to test whether their initial response to a situation is the best response, and then identifies a series of ways to change or adjust the response if required (Cohn, 2010). There has been some evaluation of individual modules of the BattleSMART training program, however evaluations have focussed on participant satisfaction, knowledge of the course, psychological literacy and confidence in assisting others, rather than on the preventive goals of the program (Moss, 2012). Currently there are no published studies outlining the effectiveness of BattleSMART in promoting protective factors

and preventing PTSD following exposure to a PTE, although authors in the area have indicated that rigorous evaluation is in progress (Cohn, Crane, & Hodson, 2011).

Please refer to Chapter 2 for a more detailed systematic review of pre-trauma prevention interventions.

1.7 Building resilience and preventing pathology

There is a growing research base of resilience training programs that, while not targeting prevention of pathology, have been demonstrated to effectively increase resilience and protective factors in individuals. Many resilience training and pathology prevention programs have been targeted at children and adolescents and, consequently, less is known about developing resilience across the lifespan (Schiraldi, Brown, et al., 2010). Preliminary research has shown that cognitive behavioural skills training may effectively decrease the incidence of depression in children, adolescents, women in rural settings and in high risk occupations (Day et al., 2003; Mealer et al., 2014; Piek et al., 2010; Varker & Devilly, 2012).

Steinhardt and Dolbier (2008) designed a 4-week resilience intervention for college students which aimed to enhance resilience, coping strategies and protective factors to reduce the likelihood of negative mental health outcomes, as well as decrease symptomatology during a period of increased academic stress. The intervention focussed on three techniques: cognitive-behavioural therapy, social support and psycho-education. Steinhardt and Dolbier rationalised that cognitive-behavioural strategies can focus on identifying and changing maladaptive thinking and behaviour that can create and exacerbate stress and that psycho-education can increase personal knowledge about the causes and contributors to stress. The social support component was argued to provide an empathic, safe environment where individuals are encouraged to share experiences, thoughts and feelings, and which may buffer against stress. The intention of this research was to intervene earlier in the cascade leading from stressful situations to illness by focusing on thoughts and behaviours that can exacerbate stress, as well as building personalised knowledge to allow each individual to refine their own stress management practices.

Using a randomised design with a wait-list control group Steinhardt and Dolbier (2008) found that the experimental group showed greater resilience and more effective coping strategies post-intervention than the wait-list control group. An increase in positive affect, self-esteem and self-leadership was evident; however, there appeared to be no significant change in optimism. This study confirms that

further research is needed to explore the impact of relatively brief resilience training on protective factors, such as positive affect and self-esteem. While the groups involved in this research were under significant stress at the time of the study, the incidence of PTEs was not recorded and it is unclear whether these improvements in resilience could act as protectors against pathology following a PTE.

In a pilot intervention, Schiraldi, Brown, et al. (2010) identified 14 strengths comprising resilience and delivered resilience training sessions for a non-clinical sample of college students in 75-minute bi-weekly sessions over 15 weeks. These 30 sessions covered theory and key studies, rational thinking principles and skills, solidifying of self-esteem, development of emotional intelligence, mindfulness training, realistic optimism and analysis of books on resilient survivors such as Viktor Frankl (Frankl, 1952).

Thirty-seven college students participated in Schiraldi et al.'s study, and post-intervention significant changes were observed in resilience, optimism, happiness, self-esteem, anxiety depression, anger and curiosity. Schiraldi et al. (2010) posited that small group size, repeated practice of coping skills and development of a broader and deeper coping repertoire were important factors in facilitating change in resilience. These findings should be interpreted as preliminary as this was a pilot study with a relatively small self-selected sample size, no randomisation and no control group for ensuring internal validity. As a preliminary study Schiraldi and colleague's (2010) findings suggest that resilience and protective factors could be influenced via intervention, although controlled research with a large sample would improve confidence in these findings.

Burton, Pakenham, and Brown (2010) assessed the effectiveness of a resilience training program for adults in a work environment. Their READY program targeted five protective factors (positive emotions, cognitive flexibility, social support, life meaning and active coping) to promote resilience and psycho-social wellbeing. Twenty-two hours of READY training was delivered over 13 weeks, with measured improvements in environmental mastery, positive emotions, personal growth, mindfulness, acceptance, stress, self-acceptance, valued living and autonomy (Burton et al., 2010). In this study resilience training was shown to improve protective factors in adults. However, there was no long term follow-up with participants and investigation of incidence of pathology and/or exposure to trauma was not measured.

1.7.1 Resilience training and the primary prevention of psychopathology in adults

A number of studies have shown that resilience training can be effective in preventing depression in children, adolescents and adults (Brunwasser, Gillham, & Kim, 2009; Day et al., 2003; Dusek et al., 2009; Fava & Tomba, 2009; Rooney et al., 2006). Previous research has shown that resilience training is effective in improving protective factors in individuals; these studies show that resilience training also has the potential to prevent pathology. While there is some available research indicating efficacy for the primary prevention of depression in children (Rooney et al., 2006), this brief review will focus on interventions and programs involving adults.

Day et al. (2003) explored the efficacy of two depression prevention programs: a standard psycho-educational program focusing on traditional cognitive-behavioural strategies and an experimental program based on prevention strategies derived from the learned helplessness model of depression. Targeting women residing in rural areas, due to their high risk for depression, Day and colleagues found that the experimental program (with a focus on attributional style, mastery experience and uncontrollability) had a significant preventive effect on depressive symptoms, while the psycho-educational program did not.

Seligman and colleagues (Seligman, Schulman, & DeRubeis, 1999) ran a 16-hour depression prevention program for high-risk college students over eight weeks. The workshop focussed on cognitive-behavioural principles including psycho-education around the cognitive theory of change and the identification, disputation or replacement of automatic negative thoughts and irrational beliefs. Skills building included behavioural activation strategies, interpersonal skills and stress management. Over three years, the intervention group reported significantly fewer episodes of general anxiety disorder and had significantly fewer depressive symptoms but no fewer severe depressive episodes than the control group. In a similar study an eight-week preventive workshop for college students with mild to moderate depressive symptoms showed no significant difference in depressive or anxiety symptoms across intervention and control groups at 6-months post-intervention (Seligman, Schulman, & Tryon, 2007), although it is less clear how this study was preventive (rather than a treatment study) as participants had depressive symptoms at baseline.

1.7.2 Summary

Research to-date shows that resilience training interventions can successfully build protective factors and limit risk factors for mental health issues. Interventions have ranged from four weekly training sessions to over 30 bi-weekly sessions. Most interventions have used a cognitive framework and cognitive-behavioural approaches, with a common focus on positive emotions, cognitive flexibility, coping strategies, self-esteem and social support. There is currently limited research on the effectiveness of resilience training in preventing pathology, although research indicates that coping skills and resilience training could be helpful for primary prevention of mental health problems in high-risk populations (Heinrichs et al., 2005).

1.8 Future directions

Given this backdrop of research in resilience building and PTSD prevention, future research is needed to explore whether a resilience training intervention can prevent or reduce PTSD and other post-trauma pathology following PTE exposure. Research has confirmed the effectiveness of resilience training in increasing protective factors in individuals in university (Steinhardt & Dolbier, 2008) and work (Burton et al, 2010) settings. There are also research claims that resilience training programs have decreased the incidence of pathology in a military setting (Cornum et al., 2011) and improved adjustment in military (Cohn & Pakenham, 2008) and police (Arnetz et al., 2009) settings. There is not currently sufficient evidence to support a claim that resilience training can be effective in the primary prevention of PTSD and this review of the research has identified a lack of experimental tests of theory-based, targeted, primary prevention interventions for PTSD.

Chapter 2: Plan for Program Development and Evaluation

2.1 Overview

This PhD program of research was aimed at the development and evaluation of an evidence-based and theory driven program for the primary prevention of PTSD, resulting in the development of the Mental Agility and Psychological Strength (MAPS) training program. The development of the MAPS training program involved six steps and was synthesised from relevant literature on program and intervention development (Bartholomew, Parcel, & Kok, 1998; Fawcett et al., 1994; Koekkoek, van Meijel, Schene, & Hutschemaekers, 2010; Michie, Johnston, Francis, Hardeman, & Eccles, 2008; Thomas & Rothman, 1994).

2.2 Step One: Systematic Literature Review (November 2011)

The aim of step one was to identify interventions that had been developed and tested, to-date, for the primary prevention of PTSD. It was originally intended that this step would review only high risk professions, however a dearth of literature in the area meant that this review included primary prevention programs that were evaluated in both high risk and civilian populations. A full outline of Step one is provided in Chapter Three. The information gathered during the systematic literature review was synthesised in table format (see Table 3-2) and informed the initial outline of the MAPS program.

2.3 Step Two: Needs Analysis (January-May 2012)

The aim of step two was to ensure that the Department of Fire and Emergency Services (DFES) was an appropriate target organisation for the program of research. Once developed, it was intended that the MAPS training would be delivered in a targeted approach to individuals who were at increased risk of developing PTSD due to work-related PTE exposure (Kleim & Westphal, 2011). While published literature indicated that fire and emergency service workers typically experience elevated rates of PTSD and other mental health issues (Barnes, 2000; Cook & Mitchell, 2013), there is little current agreement on prevalence rates of psychopathology within high risk professions (Armstrong, Shakespeare-Finch, & Shochet, 2014) and thus the mental health profile of DFES career members needed to be confirmed. Step two assessed the frequency and intensity of PTE exposure and

current mental health symptoms in a cross-sectional survey of DFES career members, as outlined in Chapter Four.

A secondary aim of Step Two was to provide additional information that may inform the development of the MAPS program. In addition to PTE exposure and mental health symptoms, this cross-sectional survey also included measures of perceived social support and coping strategies. Investigating the relationship between coping strategies, social support and mental health symptoms in DFES career members provided an opportunity for the first step in tailoring the MAPS program to this organisation.

2.4 Step Three: Initial Program Development (January 2013)

The aim of Step Three was to develop an initial program outline for the MAPS program (see Chapter Five and Appendix B : MAPS Facilitator Manual). At this stage, the program content was primarily informed by the systematic review (Step One), including consideration of current knowledge concerning the primary prevention of PTSD. On the basis of this information an initial program outline was produced. By critically reviewing and collating information gathered from past research, an evidence and research based framework for the intervention was developed. As more information became available, consideration was also given to the current needs of DFES as an organisation and clinical opinions from experts in the field.

2.5 Step Four: Consultation and Feedback (January-June 2013)

The final step of the program development phase was consultation with key experts and stakeholders and integration of their feedback (Chapter Five). After initial formulation of the MAPS program by the PhD candidate (Skeffington) it was reviewed by three other psychologists: the primary supervisor (Rees, an academic and registered clinical psychologist), a clinical psychologist experienced in and currently working with high risk populations (returned Veterans and their families), and a psychologist currently working with the Australian Defence Force (ADF). Reviewer feedback was discussed in person with each reviewer and suggested alterations were integrated into the program. The program was then further reviewed with key stakeholders from DFES in a community-based participatory research approach, as detailed in Chapter Five (Ahmed, Ann-Gel, & Palermo, 2010)

2.6 Step Five: Implementation and Evaluation (September 2012-January 2015)

The final stage of this program of research was the implementation and evaluation of the MAPS program (Chapter Six). MAPS was evaluated in a RCT with Trainee Fire Fighters (TFFs) at the DFES Recruit School. The evaluation explored the efficacy of the MAPS program as a primary prevention program for PTSD, depression and anxiety in TFFs and evaluated the impact of MAPS instruction on MAPS knowledge, perceived social support and coping strategies. TFFs were followed up at 6-months and 12-months post-graduation from the recruit school.

Chapter 3: Systematic Literature Review

3.1 Publication and copyright

Significant portions of this chapter have been published.

Skeffington, P., Rees, C., & Kane, R. T. (2013). The primary prevention of PTSD: A systematic review. *Journal of Trauma and Dissociation*, *14*, 404-422. doi:10.1080/15299732.2012.753653.

Additionally, the results were presented at the 2012 Australian Psychological Society (APS) National Conference and 2012 Critical Intervention Management Australasia (CIMA) Conference.

3.2 Overview

There has been abundant research focussing on the secondary and tertiary prevention and treatment of PTSD, including different forms of debriefing, treatments for Acute Stress Disorder and targeted intervention strategies (Feldner, Monson, & Friedman, 2007). However, there remains a scarcity of research pertaining to the primary, pre-trauma prevention of this disorder. In order to construct an evidence-based and research informed primary PTSD prevention program, a systematic and thorough review of relevant research to date, must be conducted.

This chapter will review interventions designed specifically for the primary prevention of post-trauma pathology. The information gathered from this systematic literature review will be synthesised and combined with information gathered during the needs analysis (see Chapter 4) to inform the design of a theory driven and evidence based targeted intervention for the primary prevention of PTSD (see Chapter 5). Systematic reviews differ from traditional narrative reviews by adopting a replicable, scientific and transparent process (Tranfield, Denyer, & Smart, 2003). The methodology for this systematic literature review was based on published recommendations (Armitage & Keeble-Allen, 2008; The Cochrane Collaboration, 2011; Tranfield et al., 2003) and developed with the support of an academic expert in research methods (Associate Supervisor Kane). The search strategy was developed with the support of a research librarian.

3.3 Methodology

3.3.1 Aim

The aim of this systematic literature review was to identify and compare primary prevention and resilience building interventions delivered to populations in any country, in any year and of any age, who were subsequently exposed to a Potentially Traumatic Event (PTE), with information on a measure of psychological well-being collected. Articles were not excluded by language.

3.3.2 Search Strategy

The strategy for this literature review was to conduct a comprehensive search. As such, broad search terms were chosen to capture as many citations as possible. The first step in the procedure was to use the key concepts to generate a list of keywords, which would be used to search the literature. The selected databases (outlined below) were searched for published and unpublished papers matching the concepts of stress inoculation, resilience building, PTSD prevention and early intervention. Where available, the database search engine was allowed to extrapolate these terms to include variations and related concepts. Papers from all years, in all languages, published and unpublished were included.

On 25 November 2011, the final searches were conducted with the following search terms located in the abstract or keywords:

- trauma* or PTSD or post-traumatic stress disorder or posttraumatic stress disorder or post traumatic stress disorder
- AND
- resilien* or prevent* or stress* or inoculation* or hardiness or protect*
- AND
- interven* or training

3.3.3 Eligibility Criteria

Upon acquisition of search results each publication returned was recorded and coded electronically using a Microsoft Excel spread sheet. To be included in the review, the research described in the publication needed to meet the following criteria:

1. Participants received a primary prevention or resilience building intervention.

2. Participants were subsequently exposed to a potentially traumatic event meeting Criteria A-1 for PTSD as outlined in the DSM-IV (APA, 2000).
3. Data was collected regarding psychological well-being.

Research articles regarding treatment of PTSD or conducted on samples with current PTSD symptomatology were excluded.

3.3.3.1 Participants received a resilience building intervention. For the purposes of this review, a resilience building intervention was defined as any kind of structured psychological skills training delivered to an individual or group of people with the aim of improving psychological functioning and well-being. These interventions may be reported under various titles, such as resilience building, resilience training, *stress inoculation training* (SIT), stress management, coping skills training, hardiness training or cognitive-behavioural interventions. Where the researcher was unclear whether a described intervention constituted a resilience building intervention, an experienced academic clinical psychologist was consulted.

3.3.3.2 Participants were subsequently exposed to a traumatic event meeting Criteria A for PTSD as outlined in the DSM-IV. Criteria A-1 for PTSD, as outlined in the DSM-IV (APA, 2000) states that:

The person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others (p. 467)

Criteria A-2 (“The person’s response involved intense fear, helplessness, or horror”) was not used in assessing eligibility, due to its subjective nature. It was decided that assessing the presence of an objective threat (as outlined in criteria A-1) would represent a more reliable assessment of the presence of a PTE than assessing the potential subjective response of participants. As the systematic review progressed with few eligible articles, it was decided that exposure to a simulated traumatic event or stressor would also be eligible. Where the researcher was unclear whether a described event constituted a PTE, an experienced academic clinical psychologist (Primary Supervisor Rees) was consulted.

3.3.3.3 Data was collected regarding psychological well-being. The final eligibility criteria specifies that data must have been gathered regarding psychological well-being, where psychological well-being is defined as any objective measure of psychological health or ill-health. The aim of this systematic literature review is to inform a PTSD prevention strategy, however due to a shortage of research regarding primary PTSD prevention, a decision was made to use the broader construct of “psychological well-being”. Where the researcher was unclear whether a measure constituted a measure of psychological well-being, an experienced academic clinical psychologist was consulted.

Due to the scarcity of publications meeting the above criteria, quality of research methodology was not used as part of the inclusion criteria. Methodological issues were later taken into account as each publication was subjected to qualitative review. Each publication that met eligibility criteria was coded by author, date, intervention details, population, research design and outcomes.

3.4 Results

The above search strategy yielded 15014 results in four languages, published between 1915 and 2012. A first pass of the article titles was made, with 13746 articles identified as irrelevant because they did not meet the inclusion criteria. Abstracts were reviewed for the remaining 1268 articles, of which 1217 were identified as irrelevant because they did not meet the inclusion criteria. A thorough review of the final 51 articles identified 5 articles meeting the inclusion criteria. A review of the reference lists of all 51 articles, including review articles, identified 2 further studies meeting the inclusion criteria, for a final list of 7 studies (Table 3-1). Three additional articles in the third round list were unable to be obtained for further scrutiny regarding eligibility.

Due to the low number of research articles matching the eligibility criteria, the “third round” list of 51 articles was reconsidered and any recommended interventions were included, in order to better inform the review. Twelve articles were included again as a result of this process. No existing review articles concerning the primary, pre-trauma prevention of PTSD were identified. For a summary of the included articles please see Table 3-2.

Table 3-1

Summary of Results Following Final Search on 25 November 2011

Database	Number of Results
PsycInfo	3,752
Science Direct	678
ProQuest	6,365
Web of Knowledge	11,803
TOTAL (following removal of duplicates)	15,014

Exclusions	Articles remaining
First Pass- exclude by title	1,268
Second Pass- exclude by abstract	51
Final pass- exclude by entire article	6
Re-inclusions	12
Final Total	18

Table 3-2
Summary of Included Articles

<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Psychoeducational Interventions					
Benedek & Ritchie (2006)	“Just-in-time” Mental Health Training 90 minutes of psychoeducation with an emphasis on effects of trauma on first responders and volunteers, including information relating to tsunami; training delivered to all personnel on USS Mercy prior to Project HOPE Mission.	50 volunteers from USS Mercy/ Project HOPE mission	Single group pre-post design.	Custom designed measures: - previous deployments, - perception of preparedness, - previous exposure to psychological stressors, - mental health screening, - actual exposure during HOPE mission, and -satisfaction	Changes in overall health status or rates of mental health disorders were not observed. <i>Limitations-</i> No baseline data was collected, so no conclusions regarding the efficacy of this intervention can be drawn. The “custom designed” measures have not been used in previous research; the psychometric properties of these measures are unknown and make results difficult to compare to other research in this field.
Castro & Hoge (2006)	Psychological Readiness in a Deployed Environment	Military	n/a	n/a	n/a
Orsinger et al. (2008)	PRIDE: for leaders and soldiers, presents psychoeducational material about fear, scenarios which may occur in theatre and the reality of combat. In pre-deployment training, soldiers are prepared for a wide range of sensory, psychological and emotional stimuli associated with military deployments.				

Table 3-2 (cont.)

<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Sharpley et al (2009)	Pre-deployment stress debriefing: a debriefing of unknown length, comprising the role of the mental health team, outline of mental health facilities, definitions of and types of stress, advice on handling human remains, managing stressful thinking, simple advice on reducing stress, importance of morale, when/where to seek support.	Military personnel deployed during the first phase of the Iraq War. 279 intervention group participants and 456 control participants.	Two-group controlled post-only design	Post-deployment measures included: - demographic data, - role in theatre (combat or non-combat), - traumatic event exposure (number of PTEs in theatre), - physical & mental health (reporting sick & time spent in medical care during the Iraq war, being aero-medically evacuated, general health status; 12 item General Health Questionnaire. PTSD Checklist- PCL-C) -alcohol use, (Alcohol Use Disorders Identification Test- AUDIT) -cohesion, (Custom 4-item scale) -personal stressors, and marital satisfaction. (self-report)	Results provided no evidence that a pre-deployment stress briefing reduced subsequent medium-term psychological distress. <i>Limitations-</i> No baseline data was collected, so no conclusions regarding the efficacy of this intervention can be drawn.

Table 3-2 (cont.)

Psychoeducation + skills building/SIT interventions					
<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Armfield (1994)	Stress Inoculation Training (SIT) + Social Support Emphasis on social support, unit cohesion and sense of belonging, stating that these factors improve unit effectiveness.	Military	n/a	n/a	n/a
Bakers & Armfield (1996)	Focus on unit cohesion, internal social support and stress-reduction techniques.				
Berceli & Napoli (2006)	Mindfulness-Based Trauma Prevention Program Three core exercises, to be practiced in sequential order: a) Mindful breathing and body scan b) Trauma-releasing exercises Repetition of mindful breath/body scan	Social Workers	n/a	n/a	n/a
Boozer (1998)	Managing psycho-trauma in the fire service, with emphasis on appraisal, social support and coping skills. Recommends that new recruits are given formalised training regarding unique job stressors, resources available for stress intervention and methods of personal stress management. Aim to develop social supports/promote recognition and use of effective coping skills.	Fire Service	n/a	n/a	n/a

Table 3-2 (cont.)

<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Cornum et al. (2011)	Comprehensive Soldier Fitness (CSF) Universal program, providing soldiers with the skills needed to be more resilient in the face of adversity and increase the number of soldiers who derive meaning and growth from their combat experience.	U.S. Military	n/a	n/a	n/a
Seligman (2011)					
Seligman & Fowler (2011)	Comprises a test for psychological fitness, self-improvement courses (in the areas of emotional fitness, family fitness, social fitness, spiritual fitness and posttraumatic growth) and master resilience training for drill sergeants.				
Davis (2005)	Educational Stress Management Program An 8-hour seminar in which fire fighters are taught about stress reactions, positive coping skills, negative coping mechanisms, PTSD and therapy. Program was designed as a tool to prevent significant stress reactions and aims to teach participants about stress and teach adaptive coping skills.	Fire Fighters	n/a	n/a	n/a

Table 3-2 (Cont.)

<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Deahl et al (2000)	Operational Stress Training Package (OSTP) Duration: half day Key Components: relaxation techniques	106 male British regular soldiers preparing for 6-month tour of Bosnia. All received pre-deployment OSTP.	Single group post-test only design.	Post deployment measures: - Demographic information (custom questionnaire) - Preparedness (custom questionnaire) - Perception of support, (custom questionnaire) - mental health (Hospital Anxiety & Depression Scale- HADS; Impact of Events Scale- IES; Symptom Checklist - SCL-90) -alcohol misuse (CAGE questionnaire) -Clinician Administered Post-traumatic Stress Scale (CAPS).	Overall scores on all measures were “very low” with only 3 participants recording clinically significant PTSD. <i>Limitations-</i> No baseline data was collected, so no conclusions regarding the efficacy of this intervention can be drawn.
Sijaric-Voloder & Capin (2008)	Cognitive-behavioural stress management. Duration: Four weekly sessions of unknown length Key Components: stress and trauma education, relaxation techniques, problem-solving and communication skills.	20 Police Officers (10 intervention, 10 control) serving with the Interior Ministry of the Sarajevo Canton	Controlled two-group pre and post-test design with 3-month follow up	- Anxiety, (Beck Anxiety Inventory- BAI; Anxiety Stress Inventory-ASI) - coping strategy, (measure unknown) -stress, (measure unknown) -performance, and (measure unknown) - assistance seeking. (measure unknown)	Results showed significant reductions in anxiety, developed more active and planned coping strategies for stressful situations, less somatic reactions to stress and improved performance in the intervention group. <i>Limitations-</i> The small sample size reduces confidence in the observed differences between the control and intervention groups. No measures of PTSD symptomatology or PTE exposure limit the conclusions that may be drawn regarding the impact of this program on PTSD.

Table 3-2 (cont.)

<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Wolmer et al (2011)	<p>Teacher-based preventive intervention.</p> <p>Duration: Fourteen 45 minute, weekly modules</p> <p>Key components: psychoeducation, identifying emotions, positive and negative experiences, identifying and balancing body tension, internal and external coping, identifying negative thoughts, the power of positive experiences, humour and coping, attentional control, communication, emotional processing and regulation and creating a vision for the future.</p>	<p>1488 Israeli school children, all exposed (post-intervention) to continuous rocket attacks during Operation Cast Lead. 748 intervention group; 740 exposed control group</p>	<p>Two-group controlled post-only design</p>	<p>Post-exposure measures:</p> <ul style="list-style-type: none"> - Demographics (custom questionnaire) - PTSD symptomatology, (UCLA PTSD Reaction Index) - stress and mood (Stress/Mood Scale) 	<p>Results showed significantly lower symptoms of PTSD and stress among the intervention group.</p> <p><i>Limitations-</i> No baseline data was collected, so no conclusions regarding the efficacy of this intervention can be drawn.</p>
Pre-Simulation Interventions					
Sarason et al (1979)	<p>Stress management training.</p> <p>Duration: Six 2-hour sessions</p> <p>Key components: self-monitoring in stressful situations, muscular relaxation and development of adaptive self-statements.</p>	<p>18 Police Academy trainees at the Seattle Police Academy program during Spring 1977 (9 intervention/ 9 control)</p>	<p>Pre/post control group design</p>	<p>Pre and Post Training measures:</p> <ul style="list-style-type: none"> - Anxiety, (State-Trait Anxiety Inventory; Test Anxiety Scale; Ender-Hunt S-R Inventory of Hostility) -heart rate, -blood pressure <p>Simulation performance-measured once at post-intervention</p>	<p>The performance of the intervention group was rated as significantly better across a range of simulated situations, as compared to the control group; this effect was most pronounced for simulated situations that were trained for during the intervention. In self-ratings, the intervention group often rated their performance, anxiety and confidence lower than controls.</p> <p>No differences in physiological measures were found.</p> <p><i>Limitations-</i> The small sample size and uncertainty regarding rater bias reduce confidence in results. No measures of PTSD symptomatology or PTE exposure limit the conclusions that may be drawn regarding the impact of this program on PTSD</p>

Table 3-2 (cont.)

<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Arnetz et al (2009)	Trauma resilience training for Police Duration: Weekly two hour sessions for 10 weeks. Key components: relaxation and imagery with mental skill rehearsal.	18 Swedish Rookie Police Officers	Controlled trial with 12 month follow up (intervention vs. training as usual)	12 months post-training measures (during critical incident simulation): -stress biomarkers, (antithrombin, cortisol) - heart rate, -performance, (rated by blind observer) - mood and (Profile of mood states-POMS) - stress (100mm visual analogue scale –VAS- of perceived stress)	<i>Mood/Performance:</i> Intervention group reported significantly less negative mood, less stress and better performance (as rated by blind observer) than control group. Positive mood did not differ between groups. <i>Biomarkers:</i> Intervention group showed significantly less increase in heart rate and biomarkers of stress during simulation. <i>Limitations-</i> No baseline data was collected, so no conclusions regarding the efficacy of this intervention can be drawn. No measures of PTSD symptomatology or PTE exposure limit the conclusions that may be drawn regarding the impact of this program on PTSD.
Hourani et al (2011)	Predeployment Stress Inoculation Training (PRESIT) vs. Combat and Operational Stress Control (COSC) PRESIT Comprises biofeedback facilitated breathing retraining and attentional control. COSC is skill based training to prepare soldiers and marines for combat missions. Both programs are of unknown duration. Practice and assessment via a multimedia stressor environment (MSE).	77 Marines (43 intervention and 34 control/COSC)	Uncontrolled two group pre-post design	Pre-deployment baseline survey measures: - PTSD symptomatology, (PCL-C) - mental health, (Patient Health Questionnaire-Anxiety Subscale; Centre for Epidemiological Studies Depression Scale) - general health, (two-item conjoint screening) and - previous combat exposure. (Combat Exposure Scale)	Improved relaxation during MSE only for intervention group with deployment history.

Table 3-2 (cont.)

<i>Citation</i>	<i>Intervention</i>	<i>Population</i>	<i>Design</i>	<i>Measures</i>	<i>Results</i>
Stetz et al (2006)	Stress Inoculation Training (SIT) + Virtual Reality Exposure	Military	n/a	n/a	n/a
Wiederhold & Wiederhold (2006)	SIT attempts to immunise individuals from reacting negatively to stress exposure. Gradual and repeated exposures desensitise people; Virtual Reality Exposure can be used to increase psychophysiological arousal allowing for desensitisation.				

This systematic literature review yielded no trials that meet stringent Cochrane standards or well controlled randomised trials exploring the impact of primary pre-trauma interventions on post-trauma PTSD development. Interventions appeared to fall into three categories: psycho-educational interventions, psycho-education with skills building/SIT and interventions that were delivered prior to a stressful simulation rather than a true PTE.

3.4.1 Psycho-educational interventions.

Psycho-educational interventions comprised the delivery of psycho-educational and practical information with the aim of preparing participants for their deployment or trauma exposure. There appears to be limited support for the efficacy of psycho-education alone in preparing individuals for trauma exposure and/or building resilience.

Two examples of psycho-educational interventions are the military and BattleMIND and PRIDE. BattleMIND enhances a soldier's inner strength to face adversity, fear and hardship during combat with confidence and resolution (Castro & Hoge, 2005; Orsinger, Lopez, & Rinehart, 2008) and PRIDE training modules have been designed specifically for soldiers, leaders, spouses and reservists as part of the pre-combat BattleMIND training package. Leader and soldier training modules consisted of a number of "tough facts" that leaders and soldiers will face and what actions they can take to address each fact, covering the reality of fear in combat, the likelihood of death or injury to unit members and the various impacts of strain while deployed (Castro & Hoge, 2005). It appears as though the PRIDE training modules are largely psychoeducational and it is not clear from the literature whether there is any interaction or skills building component to this training. The BattleMIND training package is recognised as being in its infancy (Orsinger et al., 2008) and no published outcomes or intervention studies for PRIDE had been identified at the time of this review.

Benedek and Ritchie (2006) delivered "Just in time" Mental Health Training to 50 volunteers aboard the USS Mercy for the Project HOPE Mission to Southeast Asia following a tsunami in December 2004. Volunteers received all day training regarding a range of issues relating to their deployment, including safety and security briefings, shipboard procedures and the mitigation of psychological reactions to

disasters. The training emphasised information about the effects of trauma on first responders and specific psychological exposures that were likely to occur, including exposure to human remains and orphaned or abused children. The training additionally included a period of introduction of team members. A pre-deployment/post-deployment survey was developed to gather data relating to previous deployments, perception of preparedness, previous exposure to psychological stressors, mental health screening, actual exposure to PTEs during the HOPE mission and satisfaction; this survey was first administered directly following the pre-deployment briefing. All measures were additionally administered to volunteers aboard the SS Comfort (also deploying for the Project HOPE Mission), who had not received a pre-deployment briefing. At post-deployment, changes in overall health and mental health were not observed, although the authors note that rates of depression, anxiety disorders and risk behaviours were below baseline population rates across both intervention and control groups at both pre and post-deployment. Responses relating to satisfaction and utility of the pre-deployment briefing were varied. It was noted by the authors that this research was largely observational, as measures were implemented for the purposes of “real-time” health surveillance to assist leadership rather than as a research protocol (Benedek & Ritchie, 2006). As such, this research does not constitute an experimental design and many measures were not meaningfully reported.

Sharpley, Fear, Greenberg, Jones, and Wessely (2008) delivered a pre-deployment stress debriefing to 279 military personnel who were to be deployed during the first phase of the Iraq War. This debriefing comprised information regarding the role of the mental health team, outline of mental health facilities, information regarding types of stress, advice on handling human remains, managing stressful thinking, simple advice on reducing stress, importance of morale, when/where to seek support. Data relating to demographic data, role in theatre, traumatic event exposure, physical and mental health, alcohol use, cohesion, personal stressors and marital satisfaction were collected at post-deployment only and compared to 456 control participants. The authors noted that at 2-3 years post-deployment, there was no significant effect of pre-deployment stress debriefing in terms of psychological health, morale, personal problems and marital satisfaction, however it was noted that members of the intervention group were more likely to

have been exposed to more PTEs than members of the control group, indicating possible benefit of the program.

The evidence-base regarding the efficacy of pre-trauma psycho-educational interventions is weak. All identified studies related to the US Military, none of which were randomised controlled trials. At this time, there does not appear to be any evidence base to support the use of psycho-education as the sole intervention in efforts to prevent PTSD prior to PTE exposure.

3.4.2 Psycho-education with skills building/SIT.

Articles recommending skills building and SIT programs for the prevention of mental health issues have focussed on a range of key issues. Some pre-trauma interventions combined basic psycho-education and practical information with a skills building component. Skills building most often comprised relaxation training, self-regulation skills, thought management and attentional control (Armfield, 1994; Berceci & Napoli, 2006; K. Davis, 2005). Historically, the essential ingredients for stress management have been recommended as appraisal, coping skills and social support (Sarason, Sarason, Shearin, & Pierce, 1987). Several recommended stress management intervention programs have included these components, however few have been rigorously tested (Boozer, 1998).

Armfield (1994) and Baker and Armfield (1996) emphasised the importance of morale and social support in buffering against a stress response. Mental health experts and combat veterans alike emphasised that the sense of belonging to a unit and the support from others who are experiencing the same anxiety can help shield an individual from a severe stress reaction (Armfield, 1994). The recommendations of adequate preparation for combat and strong unit cohesion were supplemented by “psychologist involved” interventions such as equipping soldiers with cognitive-behavioural strategies and coping skills and practising these skills under exposure to stress (Baker & Armfield, 1996).

Research and literature regarding high trauma professions typically has a focus on primary trauma; however, Berceci and Napoli (2006) presented a proposal for the prevention of secondary trauma in social workers, based on the rationale that service providers in high trauma industries should learn effective self-directed techniques to maintain equanimity in the face of danger and human suffering. The Mindfulness-based Trauma Prevention Program (MTPP) contained a set of three simple exercises designed to be practiced in sequential order, as follows: (a) mindful

breathing and body scan, (b) trauma-releasing exercises, and (c) a repetition of mindful breathing and body scan (Berceli & Napoli, 2006). Mindfulness skills were posited to facilitate selective attention and the trauma-releasing exercises were based on neurogenic tremor research, aiming to address physiological and bio-neurological responses to trauma. Berceli and Napoli (2006) noted that neurogenic tremors are commonly reported as pathological or disturbing symptoms in humans (e.g., in panic attacks and other anxiety disorders) and as such they are suppressed while the aetiology and adaptive function of these tremors remains unaddressed. The authors cite some evidence that trauma-releasing exercises have been successfully used to treat hyper-arousal symptoms of PTSD, however it is unclear whether there is substantial evidence for the efficacy of these techniques as a PTSD prevention strategy.

Military organisations are involved in ongoing attempts to improve performance, outcomes and resilience in soldiers. Recent publications provide an overview of the Comprehensive Soldier Fitness (CSF) program, which has now been implemented universally across the U.S. Army. CSF is aimed at holistic soldier fitness across all areas of life, in contrast to a previous focus on physical fitness and combat readiness (Seligman & Fowler, 2011). The program comprises modules targeting physical, emotional, social, family and spiritual fitness (Seligman, 2011b). Cornum and colleagues (2011) have emphasised how a proactive, positive psychology approach to building resilience in individuals can be effective and have an advantage over the traditional “reactive” approach. A significant portion of the CSF program is delivered online. The program includes assessment of emotional, social, family and spiritual fitness, individual learning modules (chosen by the soldier) to increase psychological fitness and formal resilience training. There have been some questions raised regarding conceptual and ethical issues surrounding the CSF program, as some claim it is unorthodox to deliver an intervention to 1.1 million participants without the foundation of pilot studies and randomised controlled trials (Eidelson, Pilisuk, & Soldz, 2011). Cornum et al. (2011) have stated that the CSF program has been shown to increase the number of soldiers who derived meaning and personal growth from combat experience and increase the number of soldiers completing combat tours without pathology, however clear intervention research and outcome data is yet to be published. As CSF has been rolled out universally in the

U.S. Army, it is unclear whether useful, controlled, data will be available given the apparent absence of control groups in a universal intervention.

Deahl et al. (2000) explored the application of a pre-deployment Operational Stress Training Package (OSTP) in conjunction with post-deployment psychological debriefing. The OSTP session ran for half a day and covered the nature of stress and its physical, psychological and behavioural sequelae, along with simple anxiety reducing and relaxation techniques. Personal, domestic and work-related events known to be stressful to servicemen were also outlined, along with techniques to minimise their impact. Finally, participants were briefed on the nature of stressful events they were likely to encounter in theatre, what symptoms they might expect to experience, how to cope with these and where to seek help if required. The OSTP was delivered to 106 male British regular soldiers who were preparing for a 6-month tour of duty in Bosnia; at post-deployment half of this group received debriefing and half did not. The quasi-experimental design of this research and its focus on the impact of post-deployment debriefing made it difficult to discern any potential impact of the pre-deployment OSTP. No baseline data was gathered, with measures administered at post-deployment (prior to debriefing) and at 3, 6 and 12 months post debriefing. The authors noted that overall scores on all measures were very low, with only 3 participants registering clinically significant PTSD; this is cited as being approximately 10 times less than figures reported from other military samples and it is noted that this sample is distinguished from earlier studies by the application of pre-deployment OSTP (Deahl et al., 2000). Both groups recorded an increase in alcohol misuse. This research indicates a possible benefit of pre-deployment stress debriefing, however the absence of baseline measures and a quasi-experimental design prevent any clear conclusions about the potential effectiveness of the pre-deployment training delivered.

Sijaric-Voloder and Capin (2008) developed a cognitive-behavioural stress management intervention for police officers serving with the Interior Ministry of the Sarajevo Canton. Over four weekly sessions, 10 police officers were taught about the concept of stress, coping strategies, normal and pathological reactions to stress, consequences of stressful events and trauma, relaxation techniques, problem-solving and communication skills (Sijaric-Voloder & Capin, 2008). When compared to 10 control police officers it was found that subjects in the intervention group recorded significant reductions in anxiety, developed more active and planned coping

strategies for stressful situations, had less somatic reactions to stress and achieved improved work performance. The intervention group were also found to be more likely to request medical advice; the authors noted that police officers have been reported to request medical assistance only at the point when stress at work had already caused long-term consequences on their health and professional efficiency (Sijaric-Voloder & Capin, 2008). It is assumed that as police officers, there was an elevated likelihood of exposure to stressful or potentially traumatic events during the 3-month follow-up period, however this was not measured and is not certain. The general measures of anxiety did not include screening for PTSD symptomatology, so it is also unclear whether this intervention had any impact on the prevalence or severity of PTSD.

Wolmer, Hamiel, and Laor (2011) delivered a pre-trauma, teacher-based resilience program to fourth and fifth year students in Israel, 9 months prior to a series of rocket attacks that occurred as part of Operation Cast Lead. The fourteen session, weekly program covered a wide range of topics, including psycho-education, identifying emotions, working through positive and negative experiences, identifying and balancing body tension, when and how to act inside (internal coping) or outside (external coping), identifying and balancing negative thoughts, the power of positive experiences, humour and coping, attentional control, empathic and assertive communication, emotional processing and regulation and creating a vision for the future. The authors described the program as salutogenic rather than targeting a reduction in pathology; modules had an interactive and imaginal component and were presented via letters from a fictional student who had been through stressful experiences (Wolmer et al., 2011). Israeli students received the pre-trauma intervention (n = 478), with 740 children who had been exposed to the rocket attacks but had not received any intervention acting as a control group. Results revealed significantly lower symptoms of PTSD and stress in the intervention group at 3-months post-exposure. The authors outline this as the first study to investigate the implementation of a teacher-based intervention as a preventive strategy before actual exposure (Wolmer et al., 2011) and the results of this systematic review appear to support this. However, the absence of any baseline measures mean that clear conclusions regarding the efficacy of this intervention cannot be drawn.

Pre-trauma interventions that appear to demonstrate possible efficacy have included a psycho-educational and a skills building component. Published studies

have included interventions ranging from half-a-day to fourteen weeks. All studies included a psycho-educational component, covering the nature of stress, possible impending stressors and common reactions. Depending on the length of the intervention, skills building components included relaxation skills, self-regulation skills (such as coping strategies and responding to uncomfortable thoughts and feelings) and communication skills. While all studies included some measure of anxiety, each used different tools and measures, making it difficult to compare results across studies.

3.4.3 Pre-simulation interventions.

The pre-simulation interventions worked on the premise that increased peri-traumatic physiological arousal is linked to increased PTSD symptomatology (M. Davis, 1992; Yehuda, 2002), therefore the reduction of physiological arousal during and/or shortly after trauma exposure may prevent or reduce the likelihood of development of psychological distress, including PTSD symptomatology (Arnetz et al., 2009; Hourani, 2011).

SIT attempts to immunise an individual from reacting negatively in stressful situations, by equipping the individual with some form of stress management skill and applying pressure to allow practice and inoculation; it is thought that this will result in superior performance and stress management during “real life” stressful or traumatic situations. That is, through successive approximations of a stressful environment, individuals build a sense of expectancy that is integrated into positive cognitive appraisal, providing a greater sense of mastery and confidence or “self-efficacy” (Stetz, Wildzunas, Wiederhold, Stetz, & Hunt, 2006). There is evidence that SIT can successfully reduce performance anxiety and state anxiety, while simultaneously improving performance (Saunders, Driskell, Johnston, & Salas, 1996) and this has led to pilot studies exploring the efficacy of SIT for military personnel (Stetz et al., 2006; Wiederhold & Wiederhold, 2006). As it is impractical to measure psychophysiological peri-traumatic arousal in theatre or on deployment, Virtual Reality (VR) exposure has been suggested as an acceptable alternative. Current review articles (Stetz et al., 2006; Wiederhold & Wiederhold, 2006) cite Deahl et al. (2000) as having provided some evidence that SIT can reduce PTSD. As outlined above, the research reported by Deahl et al. (2000) does not provide conclusive evidence of PTSD prevention.

Sarason, Johnson, Berberich, and Siegl (1979) provided stress management training for eight Police Academy trainees enrolled in the Seattle Police Academy program during the Spring of 1977. The intervention was aimed at improving awareness of cognitive and physiological responses to threatening situations, as well as the ways in which these responses may interfere with performance. This was achieved through six 2-hour sessions, which included instruction and practice in self-monitoring of reactions to stressful situations, muscular relaxation and development of adaptive self-statements. An additional eight trainees completed training-as-usual and acted as control subjects. Self-reported measures of anxiety and stress and measures of heart rate and blood pressure were collected pre- and post-intervention. Independent observer and self-rating of performance were also collected during a range of stressful simulations.

The performance of the intervention group was objectively rated as significantly better across a range of simulated situations, as compared to the control group; this effect was most pronounced for simulated situations that were trained for during the intervention. In self-ratings, the intervention group often rated their performance, anxiety and confidence lower than controls. No differences in physiological measures were found. This study indicated that stress management training can improve performance in police trainees, however as there were no baseline measures of performance, group equivalence on this measure is not certain. Results indicated that the intervention group self-rated as worse on performance with higher levels of anxiety, as compared to the control group. This may be related to self-awareness and knowledge regarding anxiety; the authors state that the intervention group performed significantly better but did not provide information on whether the intervention group had altered perceptions of anxiety, changed strategies for self-soothing and whether this may be linked to an expected change in incidence of psychopathology following a potentially traumatic event.

Arnetz, Nevedal, Lumley, Backman, and Lublin (2009) conducted a study to test the effects of police trauma resilience training on stress and performance during a critical incident work simulation. The intervention focused on preparing officers to encounter traumatic experiences and to respond optimally, with a design informed by research on preparation for stressful medical procedures, SIT and visual motor behaviour rehearsal used in sports psychology (Arnetz, 2009). Eighteen male police officers with 1 year of experience with the Swedish Police Force completed ten,

weekly, 2-hour small group imagery training sessions. Participants were taught how to induce relaxation regardless of the situation and were able to rehearse appropriate responses to several police specific scenarios. Twelve months after completion on imagery training, it was found that the intervention group reported significantly less negative mood and stress and was observed to experience a smaller increase in peri-simulation heart rate and cortisol. The intervention group was also rated as performing significantly better than the control group, when rated by a blind observer. This study indicates that police-specific imagery training has some merit, and that the impact of this training lasts at least 12 months. However, it is unclear from this research whether imagery and relaxation training will have an impact on the incidence of PTSD or other mental health issues following real-life PTEs.

Hourani and colleagues (2011) compared Pre-deployment Stress Inoculation Training (PRESIT) to the current best practice of Combat and Operational Stress Control (COSC). PRESIT comprised education on combat and operational stress control, attentional retraining and relaxation training, utilising biofeedback facilitated breathing retraining for control of autonomic activity and attentional control for staying fully engaged in the moment at hand while maintaining optimal arousal levels. COSC was a skills-based training to prepare soldiers and marines for combat missions; this was a general label for the “best practice” preparatory training within the military at that time. More information regarding the composition of COSC training in this case was not provided. Practice and assessment was conducted under mild psychophysiological arousal via a multimedia stressor environment (MSE). Seventy-seven Marines (43 intervention and 34 control) participated with data pertaining to PTSD symptomatology, general and mental health and combat exposure both prior to PRESIT training and following Immersion Training (using the MSE). Heart rate and reaction time were also measured before, during and after immersion in the MSE, across two immersions on the same day. Results suggested that participants who had received PRESIT training displayed increased stress during immersion, as compared to the COSC group, indicating that the skills based COSC training lowered in-situ arousal which is a known risk factor for PTSD.

Utilising technology and the safety of simulations has been recognised as a preferred avenue for increasing arousal and achieving stress inoculation. There is evidence that simulated stressors do reliably increase arousal, however it is unlikely that such increased arousal is similar to the arousal experience when exposed to a

real-life PTE. The evidence gathered indicates that pre-simulation training reliably increases performance during simulation, however an absence of follow-up data and genuine PTE exposure means we cannot be sure whether such training programs will have a true resilience building or pathology prevention effect.

3.5 Discussion

This systematic literature review identified only eight research articles outlining pre-trauma prevention programs. This limited number of research articles and the absence of any randomised controlled trials highlights the need for further research in this area, this need was stated by the authors of the identified research articles as well as by seven supporting articles, as outlined above. The identified articles were grouped into three categories: psycho-educational interventions, psycho-educational and skills building interventions, and pre-simulation interventions. All trials identified were group based (rather than individual) programs and most were delivered face-to-face, rather than online or in a self-directed format. The CSF program (Cornum et al., 2011) was notably delivered online, however online modules are supported by the presence of Master Resilience Trainers who engage in ongoing reinforcement of online content (Seligman, 2011).

The results for psycho-educational interventions indicate that there is not a high quality body of evidence to support the provision of pure psycho-education as a prevention measure. Benedek and Ritchie (2006) found no changes in overall health status or rates of mental health disorders across the intervention and control groups, however it is noted that this research was observational and did not have a strong experimental design. Sharpley and colleagues (2009) also reported no evidence to support the use of a pre-deployment stress debriefing, however the absence of baseline measures limits the value of their results.

Several interventions were provided prior to a simulated stressful environment, across military, police and fire services. Authors of these studies posited that exposure to a simulated stressor was an authentic way to test the efficacy of the interventions, as these simulations were often experienced as genuinely stressful and both performance and stress (via psychophysiology) can be objectively measured (Stetz et al., 2009; Wiederhold & Wiederhold, 2006). Across these studies, it was consistently found that intervention groups were rated by blind observers as performing significantly better than control groups (Arnetz et al., 2009; Sarason et

al., 1979). Results regarding psychophysiology and self-reported measures of stress and anxiety were mixed. One study found no difference in psychophysiological measures such as blood pressure and heart rate (Sarason et al., 1979), another found improved relaxation for a subset of the intervention group (Hourani et al., 2011) and another found significantly less increase in psychophysiological markers of stress in the intervention group (Arnetz et al., 2009). Similarly, Arnetz and colleagues (2009) found that the intervention group reported significantly less negative mood and stress, while participants in the research conducted by Sarason and colleagues (1979) self-reported higher levels of anxiety and perceived poorer performance than a control group. All of these articles emphasised the link between peri-traumatic arousal and PTSD, outlining self-regulation, biofeedback and relaxation training as interventions that may reduce peri-traumatic arousal and thus mitigate PTSD. However, none of these samples were measured for incidence of PTSD and/or exposure to any true alarm stressors following the intervention. Long-term follow ups, particularly in these high-stress professions, may shed light on the possible influence of these interventions on the development of PTSD.

The evidence suggests that interventions combining psycho-education with skills building demonstrated some efficacy in the prevention of PTSD, however the limited strength of the research designs in the reported research prevents any strong conclusions. Deahl and colleagues (2000) have been cited as successfully preventing psychopathology with their Operational Stress Training Package due to the low incidence of PTSD in their sample, however their single group post-test only design does not allow this strong interpretation of results. Wolmer and colleagues (2011) also reported significantly lower rates of PTSD symptomatology in their intervention group, with the same downfall of lack of baseline measures preventing a conclusion that their intervention effectively had prevention effect. The strongest research design was presented by Sijaric-Voloder and Capin (2008), with a controlled pre-post design showing significant reductions in anxiety and stress reactions as well as improved active coping and performance in the intervention group. The small sample size (10 intervention and 10 control subjects) was a weakness for this study.

Of the studies that reported possible prevention effects, interventions ranged from four hours or half-a-day (Deahl et al., 2000; Sijaric-Voloder & Capin, 2008) to fourteen 45-minute sessions (Wolmer et al., 2011). All programs included a psycho-educational component relating to stress and normal stress responses. The skills-

based components included anxiety reducing and relaxation techniques (Deahl et al., 2000), coping strategies (Sijaric-Voloder & Capin, 2008) and identifying thoughts, emotions and body tension, choosing how to act, attentional control, emotion processing and regulation (Wolmer et al., 2011). A general focus on coping and stress management, rather than a focus on pathology and symptomatology, was thought to be beneficial (Wolmer et al., 2011). Review papers also recommended an emphasis on social support and appraisal (Armfield, 1994; Baker & Armfield, 1996; Boozer, 1998; Sarason & Sarason, 1989).

3.6 Conclusion

There is little research exploring the efficacy of pre-trauma interventions for the prevention of PTSD. In the limited research available, it appears as though interventions as brief as four hours (Sijaric-Voloder & Capin, 2008) may be sufficient to observe a prevention effect, although there is no robust evidence of this to-date. A foundation of a psycho-educational component, regarding stress and normal stress responses would be complemented by skills building in the areas of relaxation or self-regulation, communication skills and coping strategies. It was also noted that few studies appeared to base their selection of interventions on any particular theory. It is clear that controlled trials informed by relevant psychological theory are required in this area.

Chapter 4: Trauma Exposure and PTSD within Fire and Emergency Services in Western Australia

4.1 Publication and copyright

Significant portions of this chapter are currently under review by *Psychological Trauma: Theory, Research, Practice and Policy*. Additionally, the results of this study were presented at the 2014 Australian Association for Cognitive and Behavioural Therapy (AACBT) National conference in Perth, Australia.

4.2 Overview

Whilst it is widely accepted that fire and emergency work is of high risk for PTE exposure and post-trauma pathology (Armstrong et al., 2014), there has been limited published data regarding Australian fire and emergency service workers, with no published studies, to date, regarding fire and emergency service workers in Western Australia. Australian populations have different patterns of alcohol use and different typical PTE types to international samples (ACPMH, 2013; Prude, Britt, Valenti, & Conigrave, 2006; Resnick, Kilpatrick, Danksy, Saunders, & Best, 1993). Cultural comparisons of PTE exposure and PTSD prevalence across Australia and the US have not been extensively documented. Past research has indicated higher rates of all Axis I DSM-IV disorders, including PTSD, in US samples (Kessler et al., 2005). This has been attributed to higher rates of resilience in Australia (Creamer et al., 2001), but may also be linked to cultural, diagnostic and assessment differences (E.g. increased awareness of pharmaceutical treatment options in the US as compared to Australia, due to differences in advertising legislation). This chapter outlines data collected in 2013 from career Department of Fire and Emergency Services (DFES) personnel regarding PTE exposure, PTSD symptomatology and current symptoms of depression, stress and anxiety, to confirm DFES as an appropriate recipient organisation of the Mental Agility and Psychological Strength (MAPS) training program and to inform the development of the MAPS program.

4.2.1 Post-traumatic Stress Disorder (PTSD)

Fire fighters are, by nature of their jobs, exposed to extreme conditions impacting physical, psychological and emotional stress; they are required to respond to a range of emergency situations, such as residential and commercial fires, medical crises, hazardous material spills, explosions, motor vehicle, train and aeroplane

accidents, search and rescue, and large scale community disasters (Armstrong et al., 2014; Bryant & Harvey, 1996; Corneil et al., 1999; Heinrichs et al., 2005; Nydegger, Nydegger, & Basile, 2011; Regehr, Hill, & Glancy, 2000; Shakespeare-Finch, 2011). It is likely that emergency service personnel will confront situations that involve human suffering, danger and death more often than the general population. Prior evidence has suggested that fire fighters are at elevated risk of PTSD and other mental health issues (such as depression), as a result of duty-related exposures. Fire fighting has in the past been declared as the United States' most hazardous and dangerous occupation by the National Commission on Fire Prevention and Control and in the International Association of Fire Fighters Annual Death and Injury Survey (Fullerton, McCarroll, Ursano, & Wright, 1992; IAFF, 1995).

Risk factors for PTSD associated with emergency work exposures include age, exposure to gruesome injuries and/or death and facing dangerous or unpredictable situations (Beaton, 1998; Cook & Mitchell, 2013). Research suggests that even "routine" emergency work is stressful, and can lead to PTSD (Beaton, 1998; Cook & Mitchell, 2013), with mounting evidence of a cumulative toll of stressful emergency exposures (Bryant & Harvey, 1996; Tuckey & Hayward, 2011). In addition to personal threats to life and wellbeing, fire and emergency service workers attend accidents and observe and/or handle gruesome remains; exposure to grotesque death is associated with PTSD (McCarroll et al., 1995). The toll of cumulative stress and multiple PTE exposures in fire fighter populations is evident in repeated reports of elevated PTSD symptoms within this population, even in the absence of any recent community wide disaster (Corneil et al., 1999). Extreme emotional reactions in high risk professions have been described as normal responses to repeated exposure to potentially traumatic events or critical incidents in the line of duty (Regehr et al., 2000).

The estimated lifetime prevalence of PTSD in fire fighters has varied widely, from 5.0%-22.2%, however it is consistently reported as elevated, as compared to estimates of 3.0%-10.0% in the general population (ACPMH, 2007, 2013; Breslau, Davis, Andreski, & Peterson, 1991; Corneil et al., 1999; de Vries & Olf, 2009; deAngelis, 1995; Del Ben, Scotti, Chen, & Fortson, 2006; Frans, Rimmo, Aberg, & Fredrikson, 2005; Murphy, Beaton, Pike, & Johnson, 1999). It has been estimated that each day in the U.S., nearly 280 fire fighters are injured or killed, while each year over 650 retire due to some form of occupational illness (Fullerton et al., 1992).

Evidence of frequent and repeated PTE exposure has been replicated in Australian fire fighter samples. Repeated exposure to trauma is a known risk factor for PTSD; in a survey of 751 NSW fire fighters, most (56.0%) reported that their safety had been seriously threatened at some time during their career, with 26.0% reporting an incident within the past 12 months. Fifteen per cent said that they had come close to dying in their duty as a fire fighter (Bryant & Harvey, 1996). In this sample, 17.0% reported significant post-traumatic stress reactions in relation to fire and emergency duties (Bryant & Harvey, 1996), as measured by the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979)

A more recent survey of Australian firefighters in New South Wales reported that career firefighters had experienced a career average of more than thirty potentially traumatic events, with motor vehicle accidents, fire and suicide presenting most frequently; all firefighters reported exposure to at least one potentially traumatic event (Bryant & Guthrie, 2005, 2007). This sample also recorded elevated rates of PTSD, with 12.0% meeting the criteria for PTSD as measured by the Clinician Administered PTSD Scale (CAPS; Blake et al., 1995). Other studies consistently report that at least 90.0% of Australian firefighters have been exposed to at least one potentially traumatic event during the previous 12 months, with many exposed to more than one event (Dean, Gow, & Shakespeare-Finch, 2003). This sample also displayed elevated symptoms of PTSD, with 9.3% of career firefighters recording significant post-traumatic stress, as measured by the Impact of Event Scale- Revised (IES-R; Weiss & Marmar, 1997).

The way PTSD is measured by past researchers has been noted as a contributor to varying estimates of PTSD symptoms. Using an incomplete measure of PTSD symptoms and/or failing to assess symptoms of avoidance or hyper-arousal, is likely to lead to an inflated estimate of PTSD prevalence. Accurate measurement of many mental health disorders is difficult, as the “gold standard” options, such as structured clinical interviews, are time consuming and expensive. Screening measures that provide an overall “score” may not account for all PTSD symptom clusters, and thus may provide indications of general distress, general depressive symptoms or generalised anxiety. Within the limits of self-report measures, more accurate estimates of PTSD prevalence are thought to arise when all DSM symptom clusters are accounted for (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Del Ben et al., 2006).

4.2.2 Other Mental Health Symptoms

Repeated PTE exposure is likely to place fire and emergency service workers at increased risk of depression, anxiety and substance abuse; factors that in an environment of elevated stress and ongoing PTE exposure may act as predisposing and risk factors for future mental health problems, including PTSD (Berger et al., 2012; Brewin, 2000). Studies of post-traumatic distress and pathology have shown that while a significant proportion of PTE survivors (up to one third) may experience psychological distress, the majority will not present with PTSD. For example, in a sample of traumatic injury survivors, the most common diagnosis at 12 months post-injury was depression, followed by generalised anxiety and substance abuse (Isaacs et al., 2010). Depression has become a relatively common diagnosis following trauma, with some researchers estimating that greater than half of individuals with PTSD will at some time have comorbid depression; other comorbidities such as additional anxiety disorders or substance abuse issues are also characteristic of PTSD (Cook & Mitchell, 2013; McFarlane & Bryant, 2007). There is an argument being formed within academic literature that depression and PTSD may be parts of a common general traumatic stress construct (Dekel, Solomon, & Ein-Dor, 2014). Exploration of PTSD and depression following trauma exposure is warranted to shed further light on both constructs and how they may co-vary or differ.

Estimates of depression in the general population vary, with data from an Australian national survey estimating major depression to have a 30 day prevalence of 3.2% (Wilhelm, Mitchell, Slade, Brownhill, & Andrews, 2003), while a UK survey of the general population showed that 12.1% of people reported moderate to extremely severe levels of depression over the preceding week (Crawford & Henry, 2003). These estimates are far lower than some reports of depression in fire and emergency services workers, with depression rates of up to 22.0% recorded by past researchers (Fullerton, Ursano, & Wang, 2004). In the United States of America, it has been reported that in populations of professional firefighters, death by suicide occurred more than three times as often as death in the line of duty (Savia, 2008).

There is limited research available concerning prevalence of anxiety symptoms (other than PTSD) in fire and emergency settings. Anxiety stemming from PTE exposure or ongoing stress can manifest in a variety of ways, including acting out or changes in substance use (Barnes, 2000). Following repeated PTE exposures, some emergency response workers become less functional and develop enduring

phobic/avoidance behaviours (Mitchell, 1988) and some symptoms of anxiety, such as hypersensitivity to sounds (e.g., alarms) may be inherent in the nature of fire and emergency work. It is possible (and most likely adaptive) for fire and emergency service workers to become stuck in a cycle of PTE exposure with a swift return to being operationally “ready” (Barnes, 2000); this is a pattern that may look like, heighten, or mask pathological anxiety in the long-term (e.g., heightened reaction to alarm bells, reluctance or inability to entirely relax or wind down), thus complicating detection and diagnosis. Heinrichs and colleagues (2005) measured anxiety as part of a larger study of PTSD in firefighters and found that anxiety progressively increased during the first 24 months in a German fire brigade.

Fire and emergency service workers are not solely vulnerable to acute stress, cumulative stress can also have an impact on psychological wellbeing (Spitzer & Neely, 1992). Frequent exposure to highly stressful events, in conjunction with routine stressors, leaves fire fighters at elevated risk of posttraumatic stress. Fire fighters are particularly vulnerable to occupational stress, resulting in a high incidence of stress related burnout (Boozer, 1998). Symptoms such as fatigue, listlessness, loss of appetite, headaches, detachment, resentment, guilt, discouragement, negativity, memory deficits, poor organisation, boredom, poor concentration, decreased concern for the organisation, procrastination, feelings of failure, rigid thinking, substance use, absenteeism, frequent cold and flu illness, sleep disturbance, reduced productivity and depression are associated with stress and burnout (Beemsterboer & Baum, 1984; Keller, 1990). Australian firefighters perceive their occupation to be more stressful than other occupations, and acknowledge they are at increased risk of being exposed to potentially traumatic or disturbing events (Moran & Colless, 1995).

Following a major disaster, 27.0% of South Australian firefighters displayed significant psychiatric impairment at 11 months post-event, as measured by the General Health Questionnaire (GHQ; McFarlane, 1989), with other researchers reporting severe psychiatric distress in over 12.0% of a convenience sample of Queensland firefighters (Dean et al., 2003). Fire fighters have been shown to have increased rates of depression, binge drinking behaviours and poor mental wellbeing (Carey et al., 2011).

4.2.3 Coping and social support

Lazarus and Folkman (1984) highlighted the link between stress and coping strategies. They outlined links between the appraisal of an event as stressful or challenging (primary appraisal) and the available coping options (secondary appraisal), proposing that coping is a process involving the effort invested in managing a specific situation. Different coping strategies used at different times have long been identified as having different impacts on psychological outcomes following stress (Kirby, Shakespeare-Finch, & Palk, 2011). Approach-oriented coping (i.e., a coping strategies incorporating active attempts to deal with stress) has been identified as a protective factor while avoidance-oriented coping (i.e., escapism, rumination or emotion focus) has been linked to poor outcomes (Beasley et al., 2003; Kirby et al., 2011; Silverman & La Greca, 2002). Beasley (2003) directly tested the role of coping strategies in response to negative life events and found that emotion-focused coping and avoidant coping had a direct impact on measures of psychological and somatic distress.

Among emergency workers there are documented links between coping and binge drinking (Boxer & Wild, 1993; Davey, Obst, & Sheehan, 2000; Del Ben et al., 2006), as is the high comorbidity between PTSD and alcohol use (McFarlane, 1998). However, there is limited published research regarding coping strategies and fire and emergency services workers, or the role of coping in the aetiology of other mental health issues following PTE exposure within this population. Maladaptive coping strategies have been linked with experiential avoidance, which is itself a risk factor for developing PTSD (Fledderus et al., 2010). High levels of cognitive avoidance have been shown to predict greater post-PTE symptom severity among persons with a history of traumatic exposure (Marx & Sloan, 2005).

The benefits of social support in the prevention and/or reduction of psychological disorders relating to stressful life events have been found in a number of studies (Lepore et al., 2000; Ozer et al., 2003; Pengilly & Dowd, 2000; Platt, Keyes, & Koenen, 2014). Social support has been recognised as moderating the relationship between stress and mental health outcomes; however Pengilly and Dowd's (2000) investigation of the impact of hardiness and social support on stress found that the relationship between social support, stress and negative outcomes is complex, with social support often moderating the relationship between stress and mental health outcomes. Following this past research, it is expected that perceived

social support would moderate the relationship between PTE exposure and PTSD, depression and anxiety following a PTE, however this relationship has not been formally explored within fire and emergency professionals.

4.2.4 Summary

Although it is widely accepted that fire fighters are at increased risk of PTSD and other stress related conditions, such as burnout, there has been limited research focussing on Australian Fire and Emergency Service workers. A brief review of the current research shows that elevated trauma exposure within Australian fire fighters is consistent with data collected from international samples. Associated elevated rates of PTSD and mental distress have also been found within Australian samples. The aim of this study is to gather information about the types of PTEs Fire and Emergency Service personnel are exposed to in Western Australia, as well as the associated impact of these exposures on mental health and wellbeing. A detailed understanding of the nature and consequences of PTE exposure and a snapshot of current coping within DFES will confirm the suitability of DFES as a recipient of a primary prevention program and inform the tailoring of a psychological strength training program for DFES trainee fire fighters

The relationship between PTE exposure and mental health outcomes, in particular the significance (if any) of social support and coping strategies will be explored, to inform the design of a primary prevention program for DFES.

4.3 Method

4.3.1 Hypotheses

H1: A greater percentage of DFES members will be exposed to PTEs than the general Australian population (where average civilian exposure to PTEs has been identified by the Australian Centre for Posttraumatic Mental Health).

H2: Members of DFES will report elevated rates of PTSD symptoms as compared to the general Australian population (where Australian general population rates of PTSD have been identified by the Australian Centre for Posttraumatic Mental Health).

H3: Members of DFES will report elevated rates of depression, anxiety and stress as compared to the general Australian population (where the Australian general population rates of depressive symptoms have been identified by Crawford et al., 2011)

H4: Exposure to trauma, level of social support and coping strategies will be significant predictors of PTSD symptoms.

4.3.2 Participants

Participants were 210 DFES career fire fighters in Western Australia. Participation was anonymous and voluntary. There was no minimum length of service required to participate in this survey, as such some respondents had served with DFES for as little as 6 months. At the time of data collection DFES had 963 career fire fighters on staff; this survey represented 21.8% of the career fire fighter population. This is the expected response rate for this population, based on past research using similar methodologies with fire fighters (Bryant & Harvey, 1996; Kaplowitz, Hadlock, & Levine, 2004).

Participants were aged 20 to 50+ years, with the majority of participants aged 31 to 50 (see Table 4-1). A chi-square goodness-of-fit test was conducted to determine whether the participants responding to the study represented the age demographics present at DFES. The chi-square goodness-of-fit test indicated that age was similarly distributed in the participants responding to the study as the DFES career firefighter population ($\chi^2(3) = 6.23, p = 0.101$).

Of the 210 participants, 201 were male and nine were female. A chi-square goodness-of-fit test indicated that gender was similarly distributed in the participants responding to the study as the DFES career firefighter population ($\chi^2(1) = 2.01, p = 0.156$).

Table 4-1
Breakdown of Sample by Age

Age group	N (%)
21-30	19 (9.0%)
31-40	74 (35.2%)
41-50	63 (30.0%)
Over 50	44 (21.0%)
TOTAL	210 (100.0%)

4.3.3 Study design and analytic strategy

This study employed a cross-sectional, correlational design, with a combination of self-selection and random sampling, as outlined below. Rates of PTE exposure, PTSD, depression, anxiety and stress as reported by DFES members were compared to rates measured in the general population using *t*-tests, to test for statistically significant differences in trauma exposure and mental health issues within the DFES population. Bivariate correlations were used to test the predicted relationships between variables; a hierarchical regression was used to examine how much variance in PTSD symptoms measures of trauma exposure, social support and coping strategies could account for. An ordinary least-squares multiple regression was then run using a breakdown of the maladaptive coping subscales on the Brief COPE to examine how much variance in PTSD symptomatology each coping strategy accounted for. Due to inherent problems in coping measurement (Coyne & Gottlieb, 1996) there was a possibility that the data may be confounded if measurement of maladaptive coping strategies or behaviours is additionally a measurement of PTSD symptomatology (e.g., avoidant coping methods may be the same construct as avoidant features of PTSD). Because of this, an exploratory factor analysis was conducted including the maladaptive coping subscales from the Brief COPE and a symptom cluster breakdown of PTSD symptoms from the PCL-C was run to confirm that PTSD symptoms and coping behaviours, as measured here, were two distinct constructs.

Based on an estimated population of 963 career Fire and Emergency Workers in Western Australia, a minimum of 209 participants were required to estimate population responses with a Confidence Interval of 6.0 ($\alpha < 0.05$; (Israel, 2013; Krejcie & Morgan, 1970). The achieved sample of 210 participants provides a Confidence Interval of 5.98 for this population.

4.3.4 Measures

Demographics. A short demographic questionnaire was designed to gather information relating to age, gender, education, and marital status.

PTE exposure. The Traumatic Stress Schedule (Norris & Hamblen, 2004) is a 9-item instrument developed to examine lifetime exposure to nine types of potentially traumatic events and has been shown to have good stability, test-retest validity and symptom reliability (Norris & Hamblen, 2004). The TSS was used in this study to measure lifetime exposure to potentially traumatic events that may have

been encountered in both private and professional experiences. This is an objective measure of PTE exposure and does not account for the subjective experience of any given PTE.

PTSD Symptoms. The PTSD Checklist - Civilian Version (PCL-C; Blanchard et al., 1996) was used to assess PTSD symptom presence and severity. The PCL-C is a 17-item inventory that assesses the specific symptoms of PTSD; it has been tested for internal consistency, test-retest reliability, convergent validity and discriminant validity (Ruggiero, Del Ben, Scotti, & Rabalais, 2003). Cronbach's alpha coefficients (.94, .85, .85, and .87 for the PCL-C total, re-experiencing, avoidance and hyper-arousal scales, respectively) indicate high internal consistency (Ruggiero et al., 2003). The respondent is asked to rate how much the problem described in each statement has bothered him or her over the past month on a 5-point scale ranging from 1 (not at all) to 5 (extremely). The PCL-C takes 5 to 10 minutes to administer; a total score is an indicator of PTSD symptom severity (Orsillo, 2001).

Scores on the PCL-C may be reported as a total, with an overall cut-off warranting further assessment. A more accurate estimate of PTSD symptoms accounts for all DSM-IV symptom clusters, rather than a raw total, thus replicating the clinical presentation of the disorder. As outlined by Blanchard and colleagues (Blanchard et al., 1996) and supported by others (Del Ben et al., 2006; Ruggiero et al., 2003), the diagnostic efficiency of the PCL-C can be improved by individually interpreting items scores and assessing positive endorsement of each symptom cluster rather than a total score. Responses regarding PTE exposure ensured that all participants met Criterion A1 for PTSD. Following the guidelines set out by Blanchard and colleagues (1996), items are considered to endorse a symptom if they are rated at 3 or higher, as outlined in Figure 4-1. This scoring method more accurately reflects the DSM-IV diagnostic criteria. By extending the methodology for deriving a DSM-IV diagnosis from PCL responses, an estimate using the recently introduced DSM-5 criteria can also be calculated. This method is also outlined in Figure 4-1.

PCL-C Item	DSM-IV	DSM-5
1*	Cluster B (More than one symptom required)	Cluster B (More than one symptom required)
2*		
3		
4		
5		
6	Cluster C (More than three symptoms required)	Cluster C (More than one symptom required)
7		
8		Cluster D (More than one symptom required)
9*		
10*		
11		
12*	Cluster D (More than two symptoms required)	Cluster E (More than two symptoms required)
13		
14		
15*		
16		
17		
*This item should be considered endorsed if participant rates it as 4 or above.		

Figure 4-1. Scoring method for PTSD Checklist (as outlined by Blanchard et al, 1996).

Depression, Anxiety and Stress Symptoms. A short, 21-item version of the Depression, Anxiety and Stress Scale (Lovibond & Lovibond, 1995) was administered to measure any current symptoms of depression, anxiety and stress. The DASS is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. The Depression scale assesses dysphoria,

hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Respondents are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state *over the past week*. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items and cut-off scores of 21, 15 and 26 are recommended to indicate severe depression, anxiety and stress, respectively. The DASS-21 has been shown to distinguish well between features of depression, physical arousal and psychological tension and agitation and the internal consistency (Cronbach's alpha = .96, .89 and .93 for depression, anxiety and stress, respectively) and concurrent validity of this measure are in the acceptable to excellent ranges (Antony, Bieling, Cox, Enns, & Swinson, 1998; T. A. Brown, Chorpita, Korotitsch, & Barlow, 1997).

Perceived Social Support. The Social Support Questionnaire - Short Form (Sarason et al., 1987) is used to quantify the availability and satisfaction with social support that an individual has. It is a 27-item self-administered scale that has been shown to have high internal consistency reliability and test-retest reliability. The SSQSR has also been shown to correlate highly with the Social Support Questionnaire (Long Form) and with other personality variables (Sarason et al., 1987). Each item involves two parts: respondents are asked to list the individuals who are available to them for help in specific situational circumstances, and how satisfied they are with the support available. Each situational circumstance allows a participant to list up to nine individuals. A satisfaction rating for each situational circumstance is the same regardless of the situation given. A 6-point rating scale (from "very satisfied" to "very dissatisfied") is used to rate the individual's satisfaction with his or her support available. A support score for each item is calculated by the number of individuals the participant listed (number score). The overall support score (SSQN) is calculated by the mean of this score across the items. The overall satisfaction score is calculated by taking the mean of the satisfaction scores.

Coping strategies. The Brief Coping Orientations to Problems Experienced (Brief COPE) scale is a 28-item scale used to measure a broad range of cognitive and

behavioural coping strategies that individuals typically use in stressful situations (Carver, 1997). It includes 14 subscales: active coping, planning, positive reframing, acceptance, humour, religion, emotional support, instrumental support, self-distraction, denial, venting, substance use, behavioural disengagement and self-blame. Cronbach's alpha-coefficients ranged between .74 and .96. The Brief COPE has been shown to be psychometrically similar to the full COPE inventory, with acceptable test-retest and internal consistency reliability, as well as acceptable external validity (Carver, 1997).

The authors recommend that the Brief COPE be interpreted as the 14 aforementioned subscales, however there is evidence that the scale may also be divided into "adaptive" or "maladaptive" subscales. The adaptive subscale includes the active coping, planning, positive reframing, acceptance, humour, religion, emotional support and instrumental support subscales, with possible scores ranging from 0 to 48. The maladaptive subscale comprises the self-distraction, denial, venting, substance use, behavioural disengagement and self-blame subscales, with possible scores ranging from 0 to 36. These subscales have been similarly categorised as adaptive and maladaptive in other mental health and stress research (Aldao & Nolen-Hoeksema, 2011; Choi et al., 2015; Gilbar, Or-Han, & Plivazky, 2005; Gloria & Steinhardt, 2014; Llewellyn, McGurk, & Weinman, 2005; Mahmoud, Staten, Hall, & Lennie, 2012; Meyer, 2001; Moore, Biegel, & McMahon, 2011; Sirois & Kitner, 2015; Wichianson, Bughi, Unger, Spruijt-Metz, & Nguyen-Rodriguez, 2009; Yi-Frazier et al., 2010).

4.3.5 Procedure

The sample for this study was collected using two procedures. First, an electronic survey invitation was extended to all DFES career fire fighters via an internal newsletter. Clicking on the survey link took participants to an information page where they could choose to consent to participate and commence questionnaire completion.

A second strategy was used to enhance the likelihood of attaining a representative sample and reduce the self-selection bias. Three Fire Stations in the Perth metropolitan area were selected for participation by the DFES Wellness Team. At the consent of the Station Officer all career fire fighters on shift were personally invited to participate by a member of the DFES Wellness Team. After being informed that the study was voluntary and anonymous, surveys and consents forms

were left with fire fighters. All surveys, free of any identifying information, were returned via sealed envelope. All, unmarked envelopes from each station were collected at the same time.

This study was approved by the Human Research Ethics Committee at Curtin University (HR113/2011).

4.4 Results

4.4.1 PTE Exposure

In total, 203 respondents (96.7%) endorsed the personal experience of at least one PTE over the past five years, as measured by the Traumatic Stress Schedule (TSS; (Norris & Hamblen, 2004). Exposure to more than one PTE type was common, with 82.9% ($n = 174$) of the sample reporting exposure to two or more PTE types and nearly half (45.2%; $n = 95$) reporting exposure to four or more PTE types. The mean number of distinct PTE types endorsed by this sample was $M = 3.26$ ($SD = 1.83$). A breakdown of exposure type is presented in Table 4-2.

The most frequently reported PTE type was “Witnessing death or mutilation”, with 81.4% ($n = 171$) of respondents endorsing at least one experience of this PTE. This was followed by grief resulting from accident, suicide or homicide of a close friend or family member (41.9%; $n = 88$) and physical assault (36.2%; $n = 76$). In this sample participants were least likely to endorse personal experience of Combat (5.2%; $n = 11$), and working with victims of violence (11.0%; $n = 23$).

4.4.2 PTSD Symptoms

The PCL-C has a recommended screening clinical cut-off of 44 (Terhakopian, Sinaii, Engel, Schnurr, & Hoge, 2008; Weathers, Litz, Herman, Huska, & Keane, 1993). The mean score for this sample was $M = 27.20$ ($SD = 10.51$). 9.1% of the sample scored over the cut-off of 44.

Using the DSM-IV cluster based breakdown of scores (as outlined above) 21.6% of participants met the diagnostic criteria for at least one symptom cluster, however only 5.0% participants met the threshold for all symptom clusters and were considered (for the purposes of this study) to meet the diagnosis for PTSD.

Table 4-2
Potentially Traumatic Event Frequencies

Potentially Traumatic Event	N (%)
Witnessing death/mutilation	171 (81.4%)
Grief (Accident/Homicide/Suicide)	88 (41.9%)
Physical Assault	76 (36.2%)
Motor Vehicle Accident	53 (25.2%)
Disaster Victim Identification	52 (24.8%)
Armed Robbery	30 (14.3%)
Sexual Assault	27 (12.9%)
Natural Disaster	27 (12.9%)
Fire (personal)	27 (12.9%)
Working with Victims of Violence	23 (11.0%)
Combat	11 (5.2%)

4.4.3 Depression, anxiety and stress symptoms

The comparison data for “other mental health symptoms” in the general Australian adult population has been drawn from Crawford et al. (2011). This study was chosen as a methodologically sound capture of the general population that reported on the same measure (DASS-21) used in the current study. This was thought to make the current comparisons more meaningful than other studies using alternative measures of psychological distress.

In this sample, 14.3% scored over the cut-off for depression (Lovibond & Lovibond, 1995), with 3.8% scoring within the “Severe” or “Extremely Severe” ranges (see Table 4-3). Depression score, as measured by the DASS-21, was significantly higher in this DFES sample than in the Australian general population (as measured by Crawford et al., 2011), $t(209) = 4.86, p < 0.01$.

In the current sample, 10.4% scored over the cut-off for anxiety (Lovibond & Lovibond, 1995), with 2.4% scoring in the “Severe” or “Extremely Severe” ranges (see Table 4-3). Anxiety score, as measured by the DASS-21, was statistically significantly higher in this DFES sample than in the Australian general population (as measured by Crawford et al., 2011), $t(209) = 5.56, p < 0.01$.

In the current sample, 11.5% scored over the cut-off for stress (Lovibond & Lovibond, 1995), with 2.4% scoring in the “Severe” or “Extremely Severe” ranges

(see Table 4-3). Stress score, as measured by the DASS-21, was not statistically significantly different from the Australian population stress score, $t(209) = -1.20$, $p = 0.23$.

4.4.4 Predicting PTSD Symptoms

Bivariate correlations were used to assess the relationship between variables. As seen in Table 4-4, the bivariate correlations demonstrated that PTSD symptoms were positively correlated with age, gender, trauma exposure, adaptive coping and maladaptive coping. PTSD symptoms were negatively correlated with perceived social support.

To test the hypothesis that age, gender, trauma exposure, perceived social support and coping strategies can account for a significant proportion of variance in PTSD symptoms, a hierarchical multiple regression analysis was conducted. Data was first checked to ensure that the assumptions of linearity, independence of errors, homoscedasticity, unusual points and normality of residuals were met. As none of these assumptions were violated, a hierarchical regression was conducted.

Table 4-3

Summary Statistics for Depression, Anxiety and Stress Scale with Comparison to Australian General Population, aged 25-90 (italicised; Crawford et al, 2011)

	Percentage in each DASS category (%)						
	M	SD	Normal	Mild	Moderate	Severe	Extremely Severe
Depression	4.50 <i>2.21</i>	6.85 <i>3.60</i>	80.5	10.0	5.7	1.9	1.9
Anxiety	3.21 <i>1.48</i>	4.50 <i>2.60</i>	86.7	2.9	8.1	0.5	1.9
Stress	6.85 <i>7.48</i>	7.66 <i>9.18</i>	87.1	5.2	4.8	1.4	1.4

Table 4-4
Bi-variate Spearman's Correlations Between Dependent and Predictor Variables

	1.	2.	3.	4.	5.	6.	7.
1. PTSD	1	.37**	.11**	.37**	-.13	.22**	.56**
2. Age		1	.04	.18**	.26**	.08	.17*
3. Gender			1	.12	.06	.08	.16*
4. Trauma Exposure				1	.05	.16*	.22**
5. Social Support					1	.22**	.08
6. Adaptive Coping						1	.56**
7. Maladaptive Coping							1

Note. * $p < .05$. ** $p < .01$.

On step 1 of the hierarchical regression model, age and gender accounted for a significant 15.0% of variance in PCL-C scores, $F(2,195) = 17.42$, $p < .001$. On step 2, trauma exposure was added and accounted for an additional 4.9% of variance in PCL-C scores, $\Delta F(3,197) = 11.92$, $p < .001$. On step 3, perceived social support was added and accounted for a further significant 1.8% of the variance in PCL-C scores, $\Delta F(4,196) = 4.45$, $p < .05$. On step 4 coping strategy was added and accounted for a further significant 17.4% of the variance in PCL-C scores $\Delta R^2 = .17$, $\Delta F(5,195) = 27.58$, $p < .001$. Only maladaptive coping made a significant contribution to the variance in PCL-C scores (see Table 4-5). DFES members who were older, reported more trauma exposure, lower perceived social support and more maladaptive coping strategies reported more PTSD symptoms at the time of data collection. In combination the predictor variables explained 39.1% of the variance in PCL-C scores, $R^2 = .39$, adjusted $R^2 = .37$, $F(2, 196) = 31.55$, $p < .001$.

Using Cohen's (1988) conventions a combined effect of this magnitude can be considered a medium to large effect size ($f^2 = .73$). Unstandardised (B) and standardised (β) regression coefficients and squared semi-partial correlations (sr^2) for each predictor on each step of the hierarchical regression are reported in Table 4-5.

To estimate the proportion of variance in PTSD symptomatology that can be accounted for by the maladaptive coping strategies of self-distraction, denial, venting, substance use, behavioural disengagement and self-blame, a standard multiple regression

analysis was performed. Once again, data was checked to ensure that the assumptions of this analysis were met. As none of the assumptions were violated, a multiple regression analysis was conducted.

In combination, self-distraction, denial, venting, substance use, behavioural disengagement and self-blame accounted for a significant 30.9% of the variability in PTSD symptomatology $R^2 = .31$, $F(6, 195) = 14.62$, $p < .001$. Unstandardised (B) and standardised (β) regression coefficients, and squared semi-partial (or “part”) correlations (sr^2) for each predictor in the regression model are reported in Table 4-6. The maladaptive subscales of self-distraction, substance use, venting and self-blame accounted for a significant proportion of the variance in PCL-C score.

Table 4-5

Unstandardised (B) and Standardised (β) Regression coefficients, and Squared Semi-Partial Correlations (sr^2) For Each Predictor Variable on Each Step of Hierarchical Regression Predicting PCL-C Score (N = 210)

Variable	B	β	sr^2
Step 1			
Age	4.19**	.36	.13
Gender	8.82*	.16	.03
Step 2			
Age	3.78**	.33	.11
Gender	7.45*	.14	.02
Trauma Exposure	1.43**	.24	.05
Step 3			
Age	3.35**	.29	.08
Gender	7.98*	.14	.02
Trauma Exposure	1.50**	.25	.06
Social Support	-.72*	-.15	.08
Step 4			
Age	2.28**	.20	.03
Gender	5.10	.09	.01
Trauma Exposure	1.07**	.18	.03
Social Support	-.82**	-.17	.03
Maladaptive coping	1.04**	.50	.15
Adaptive coping	-.13	-.09	.01

Note. * $p < .05$. ** $p < .01$.

Table 4-6

Unstandardised (B) and Standardised (β) Regression coefficients, and Squared Semi-Partial Correlations (sr^2) For Each Predictor in a Regression Model Predicting PCL-C Score (N = 210)

Variable	B [95% CI]	β	sr^2
Self-distraction	1.30 [0.33-2.27]	.18**	.02
Denial	0.82 [-1.74-3.37]	.04	.00
Substance Use	1.07 [0.16-1.98]	.15*	.02
Behavioural Disengagement	1.13 [-0.79-3.15]	.08	.00
Venting	1.10 [0.15-2.05]	.14*	.02
Self-blame	1.94 [0.82-3.06]	.24**	.04

Note. CI = confidence interval

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

To investigate the underlying factor structure of the maladaptive coping subscales and PTSD symptom clusters, 210 participants were subjected to principal axis factoring with promax rotation. Prior to running the principal axis factoring, examination of the data indicated that not every variable was perfectly normally distributed. Given the robust nature of factor analysis, these deviations were not considered problematic. Furthermore, a linear relationship was identified among the variables.

Two factors (with Eigenvalues exceeding 1) were identified as underlying the maladaptive coping subscales and PTSD symptom clusters (see Table 4-7). In total, these factors accounted for around 44.0% of the variance.

Table 4-7
Promax Rotated Factor Structure of Brief COPE Maladaptive Coping Subscales and PCL-C PTSD Symptom Clusters

Subscale	Loadings	
	Factor 1 ^a	Factor 2 ^b
Coping Method: Distraction		.33
Coping Method: Denial		.38
Coping Method: Alcohol/substance use		.43
Coping Method: Disengagement		.78
Coping Method: Venting		.00
Coping Method: Blaming		.53
PTSD Symptom Cluster B (Re-experiencing)	.89	
PTSD Symptom Cluster C (Avoidance)	.78	
PTSD Symptom Cluster D (Arousal)	.93	
	Percentage of Variance: 36.62%	7.66%

Note. ^a = PTSD symptoms. ^b = Coping strategies.

4.5 Discussion

It has been well documented that fire and emergency service work is characterised by frequent exposure to critical incidents and PTEs (Bryant & Harvey, 1996; Tuckey & Scott, 2013), however there is no current published data outlining PTE exposure and mental health outcomes (such as PTSD, depression and anxiety) within the Department of Fire and Emergency Services (DFES) in Western Australia. In replication of findings by Del Ben and colleagues in previous samples (2006), despite working in a high risk environment and encountering frequent and varied PTEs the majority of DFES career members appeared to be functioning well, with few mental health symptoms.

Hypothesis one, that DFES career fire fighters would be exposed to PTEs at a higher rate than the general Australian population, was supported. The majority (96.7%) of DFES career fire fighters reported exposure to at least one PTE. This is higher than recent estimates of 50.0% to 75.0% lifetime PTE exposure in the Australian population (ACPMH, 2007, 2013). High PTE exposure has been linked to increased PTSD prevalence and these results indicate that DFES career fire

fighters or DFES trainee fire fighters would be appropriate candidates for a program designed for people at high risk of frequent and/or multiple exposures to PTEs.

A breakdown of PTE items revealed that DFES members are most likely to be exposed to accidents in which there are multiple victims or severe mutilation of bodies. Nearly a quarter of the sample provided voluntary, qualitative information specifying that attending accidents with multiple victims and/or child victims was most distressing. Some acknowledged the cumulative impact of multiple PTE exposures, with one member stating “the more I go to them the more it affects me”. The number of qualitative responses specifying distressing work scenarios from the past was poignant, as the measure used was designed to measure all life stressful events and rarely specified workplace stressors. This aligns with previous reports that incidents with multiple deaths or casualties and/or involving children are among the most stressful for fire and emergency service workers (Beaton & Murphy, 1993; Cook & Mitchell, 2013).

Hypothesis two, predicting elevated rates of PTSD within this sample, was supported. Using a common scoring method for the PCL-C yielded a current PTSD prevalence estimate of 9.1% in this sample. A more stringent scoring method, requiring endorsement of a threshold number of symptoms for each DSM-IV symptom cluster, yielded a more conservative estimate of 5.0%; this estimate remains higher than the 3.5-4.4% 12 month prevalence rates that would be expected within the general population (ACPMH, 2013; Kessler et al., 2005), indicating that DFES career fire fighters or DFES trainee fire fighters would be appropriate candidates for the targeted prevention of PTSD.

Hypothesis three, predicting elevated rates of depression, anxiety and stress within DFES members, as compared to the general Australian adult population, was partially supported. Depression is estimated to have a one month prevalence rate of 3.2% in the general population (Wilhelm et al., 2003); the prevalence of 14.3% (for at least moderate symptoms) in the DFES sample is significantly higher than general population estimates, but may not reflect clinical or major depression. Overall scores on the depression scale were significantly higher than scores in the general Australian adult population, indicating elevated rates of depressive symptomatology in this sample of DFES members.

Within the Australian adult general population, DSM-IV anxiety disorders are estimated to have a 5.6% 12-month prevalence (Andrews, Henderson, & Hall,

2001). Of the DFES members surveyed, 10.4% reported moderate to extremely severe anxiety in the past four weeks; this rate is higher than would be expected within the general population and the difference was shown to be statistically significant. Despite elevated levels of depressive symptoms and anxiety, the DFES members surveyed reported lower rates of stress than the general population. This may indicate that some symptoms of anxiety are, in fact, adaptive. Remaining vigilant to danger, highly responsive to alarms or other warning systems, constantly watching over the safety of self and others and checking safety systems and equipment may all register as symptoms of anxiety while simultaneously being indicators of a highly trained fire and emergency service worker. Conversely, this may point to elevated depression and anxiety being an ongoing issue for this population; an issue that is present even in the absence of perceived stress, or a response bias, in which DFES members did not want to “appear stressed” by endorsing stress related items.

Elevated scores on depression and anxiety measures are expected, given an environment of ongoing stress and PTE exposure. Depressive and anxiety symptoms may be precursors to and risk factors for other psychological disorders, particularly in a high PTE exposure environment (Barnes, 2000). Elevated depressive symptoms may indicate fatigue, risk of burnout or a primary depressive disorder. However, some symptoms may be adaptive and indicative of the nature of fire and emergency work. For example, hypervigilance to the sounds of an alarm is adaptive in fire and emergency work, when rapid response to emergencies is trained for and required.

Hypothesis four was supported, with evidence that trauma exposure, social support and coping strategies significantly contributed to levels of PTSD symptomatology. Exposure to trauma was the best predictor of PTSD symptoms, a finding that fits with current conceptualisations of the aetiology of PTSD. PTSD is one of the few disorders with embedded assumptions regarding its development (Bodkin, Pope, Detke, & Hudson, 2007). It is not possible to diagnose PTSD in the absence of any prior trauma and it has been widely demonstrated that increased exposure to PTEs is linked to increased rates of PTSD (Bryant & Harvey, 1996).

The significant contributions of perceived social support and coping strategies on PTSD symptoms have been indicated within stress and resilience literature. Coping strategies have long been associated with mental health outcomes (Lazarus, 1999; Lazarus & Folkman, 1984), with approach-oriented coping

acknowledged as a protective factor and avoidance associated with increased adverse mental health outcomes. Social support has similarly been identified as a strong protective factor that may “buffer” against the toll of stress (Ozer, Best, Lipsey, & Weiss, 2008). Exploration of the coping data shows that maladaptive coping strategies accounted for more variance in PTSD symptomatology than adaptive coping strategies. Further investigation revealed that distraction, substance use, venting and self-blame are specific maladaptive coping strategies that accounted for a significant amount of variance in PTSD symptomatology in this sample. Inspection of the items contributing to these subscales showed that cognitive avoidance (using external distracters to “take my mind off things”), avoidance through use of alcohol and other drugs, verbal catharsis and self-directed blame and criticism were correlated with the development of PTSD symptoms. Fire and emergency service workers have notably elevated alcohol use (Haddock et al., 2012), and problematic alcohol use is commonly comorbid with PTSD diagnoses (McFarlane, 1998). Other avoidance strategies (such as distraction) and rigid self-blaming beliefs have also been identified as significant factors in the aetiology and maintenance of traumatic stress disorders (Ehlers & Clark, 2000; Foa et al., 2000).

It seemed possible that the contribution of maladaptive coping strategies to PTSD symptomatology could be the result an inherent confound. That is, the measure of maladaptive coping strategies may have been detecting avoidance strategies that are inherent in PTSD. An exploratory factor analysis confirmed that this confound was not present in the current dataset and that maladaptive coping strategies and PTSD symptoms could be treated as two separate (but correlated) constructs. People who are prone to using avoidance to cope are at higher risk of developing psychopathology (Fledderus et al., 2010) and people under stress have a higher need to employ coping mechanisms than non-stressed individuals (Coyne & Gottlieb, 1996). It seems likely that people who are developing PTSD symptoms are more likely to engage in more avoidance coping at each stage of the disorder; tendency towards avoidance is often present at all stages of the case formulation (predisposing, precipitating and perpetuating factors) for clients with PTSD.

Recent research has explored the efficacy of teaching new and different coping strategies to at-risk populations to decrease depression, with reported success. In the current study nearly ten per cent of the sample presented with significant symptoms of PTSD. The majority of the sample reported being at risk, by endorsing

multiple PTE exposures. Evidence of the efficacy of utilising such strategies to protect against PTSD has not been explored in the literature to date (Day et al., 2003). The current results indicate that coping strategies and social support would be well placed within a program for Western Australian fire fighters aimed at the primary prevention of PTSD. Specifically, the current data indicates that a program targeting the prevention of PTSD could place a priority on decreasing maladaptive coping strategies such as substance use, distraction, venting and self-blame. This may be achieved via psycho-education and a focus on decreasing maladaptive coping strategies and/or by equipping fire fighters with more adaptive coping skills, thus providing opportunity for adaptive strategies to be used and diminishing maladaptive approaches.

The demographic variables, age and gender, also contributed a significant portion of the variance in PTSD. Gender differences in trauma literature have been well studied; females in the general population are more likely to report being exposed to PTEs (Feldner et al., 2007) and display greater symptoms of anxiety, depression and distress after experiencing a trauma (Foa et al., 2000; Nasky et al., 2009; Silverman & La Greca, 2002). Previous research has found gender differences in PTSD in other high risk (e.g., law enforcement) samples (Darensburg et al., 2006; Violanti & Gehrke, 2004). Similarly, links between age, time in the field and mental health issues, such as PTSD and depression, have been found in high risk samples (Beaton, 1998; Darensburg et al., 2006). As time spent working in a high risk profession increases, the potential for PTE exposure (including repeated PTE exposure) also increases. The cumulative impact of trauma exposure is well documented (Bryant & Harvey, 1996) and is well demonstrated in replications of increased mental health symptomatology co-varying with increased age within high risk professions.

4.5.1 Limitations

Even though responses were anonymous, participants may have been reluctant to portray themselves or their profession in a negative light, and thus may have minimised negative responses. It is possible that firefighters minimise symptom reporting (Bryant & Guthrie, 2007; Wagner, Heinrichs, & Eklert, 1998) and past research has reported that non-participation due to fear of stigma is an issue among fire fighters. For example, Bryant and Harvey (1996) noted that numerous

firefighters declined an invitation to participate in a research survey as they believed “admission of stress in their duty represented inadequacy as a firefighter”.

Self-selection in response to an electronic invitation to the online survey may have also skewed results. An attempt was made to enhance the representativeness of the sample by randomly selecting Perth metropolitan fire stations for participation. A response rate of under 25.0% may appear conservative, however the response rate achieved in the current study is representative of survey response rates in similar populations and with similar methodologies (Bryant & Harvey, 1996; Kaplowitz et al., 2004).

DSM-IV (APA, 1994) diagnostic criteria were used initially, as opposed to the recently published DSM-5 diagnostic criteria (APA, 2013), as the prevalence rates published by the Australian Centre for Posttraumatic Mental Health were calculated following DSM-IV diagnostic guidelines.

4.5.2 Future Research

This chapter outlines a “snapshot” of DFES members in 2013. It has informed knowledge of current presenting issues for fire and emergency service workers in Western Australia, but conclusions regarding causality or meaningful relationships between variables cannot be drawn from this data. A longitudinal study of fire and emergency services workers, including careful measurement of PTE exposure (frequency and time of exposure), PTSD symptoms, depression, stress and anxiety could provide meaningful connections between these variables, and shed light on the aetiology of mental health issues in relation to trauma exposure. Additional measures of wellbeing, such as substance use, quality of relationships and coping mechanisms would also be of interest to this field of research. A significant gap within fire and emergency research is lack of clear data regarding diagnosis rates of depression and anxiety, as distinct from PTSD. Future research focussing on gold standard diagnostics within this population would be well founded.

Chapter 5: Program Development and Consultation

5.1 Overview

As outlined in Chapter Two, this program of research consists of a systematic, step-wise approach to the development and evaluation of an evidence-based and theory driven program for the primary prevention of PTSD. This chapter provides information about the Mental Agility and Psychological Strength training program (MAPS), including initial program development and the consultation and feedback process.

5.2 Initial Program Development

The limited number of research articles found and the absence of any RCTs made it difficult to confidently outline an evidence-base for the primary prevention of PTSD (Chapter Three); a synthesis of the results of previous studies flagged psycho-educational and skills building interventions as preferable to psycho-education only. All interventions identified in the review had been conducted face-to-face, although length of intervention varied widely from four and a half hours or half a day (Deahl et al., 2000) to fourteen 45-minute sessions (Wolmer et al., 2011). Common psycho-educational components included relating to stress and identifying the normal stress response. Skills building components included anxiety reduction and relaxation techniques, coping strategies, identifying thoughts, emotions and body tension, choosing how to act, attentional control, emotion processing and regulation. Emotion processing, boundaries and regulation have been identified as important factors in a range of demanding professions (Hayward & Tuckey, 2011) and job-related emotional demands have been found to have a greater impact on psychopathology than PTE exposure (Tuckey, Dollard, Saebel, & Berry, 2010; Tuckey & Hayward, 2011). A focus on coping and stress management was generally considered to be more beneficial than a focus on pathology. Review papers also recommended an emphasis on social support and appraisal (Armfield, 1994; Baker & Armfield, 1996; Boozer, 1998; Sarason & Sarason, 1989).

The needs analysis (Rossi, Lipsey, & Freeman, 2004) confirmed elevated rates of PTE exposure and elevated symptoms of psychopathology within the DFES sample, as compared to current reported rates of PTE exposure and psychopathology in the general population (Chapter Four). Exploration of coping strategies showed that maladaptive coping strategies accounted for more variance in PTSD symptomatology than adaptive coping strategies, with distraction, substance use,

venting and self-blame accounting for most of the variance. This indicated that an intervention focussing on reducing maladaptive coping strategies, as well as building adaptive coping strategies, would be beneficial.

Given the information gathered during the initial phases of program development, a draft program outline, inclusive of presentation materials, participant and facilitator handbooks and general outline, were produced. These draft materials were shared with experts and key stakeholders through an iterative process to refine and contour the MAPS program into its final form.

5.3 Consultation and Feedback

The final step of the program development phase was consultation with key experts and stakeholders and integration of their feedback. After initial formulation of the MAPS program by the PhD candidate (Skeffington) it was reviewed by three other psychologists. Clinicians were chosen for this role based on their clinical expertise in trauma and PTSD, and their research background. Reviewer feedback was discussed in person with each reviewer and suggested alterations were integrated into the program.

5.3.1 Clinician and Expert Feedback

Clinical and expert feedback focussed on the face validity and clinical integrity of the program. Feedback was provided in written notes on hard copies of the draft program and during unstructured feedback interviews. All comments were reviewed in conjunction with the supervisory team to ensure comprehensive integration of the advice provided. The program at this stage of development was noted by reviewers to be clinically sound in terms of a Cognitive-Behavioural model of trauma reactions with a good focus on adaptive coping and presumption of recovery. The balance between accessible or conversational language and clinically sound content within the workbook was cited as a strength by one reviewer, although there were also suggestions to alter the use of some clinical jargon and some colloquial phrases.

Notable changes to the program following this phase of clinician and expert feedback were inclusion of more figures and pictures in the workbook to break up the text, rearranging text to create an introduction that was separate from the modules, improving explanation of key concepts (such as Acceptance and Commitment Therapy concepts), providing clearer facilitator instructions, specifying

parameters for eligible facilitators, re-ordering material and inclusion of suggested examples for group discussion.

5.3.2 Stakeholder Feedback

After clinician and expert feedback was considered and appropriate changes made, the MAPS program was further refined in consultation with five key stakeholders from DFES. This included the Wellness Team (comprising one DFES psychologist, a Chaplain and a career fire fighter). This stage of program development focussed on face validity, ecological validity and acceptability of the program, including the suitability of content and examples for DFES trainee fire fighters (TFFs). Stakeholder feedback went through several iterations with lengthy discussion of each comment and concern with DFES stakeholders. Maintaining a collaborative relationship and establishing the DFES team as equal partners in the program development process was prioritised in order to observe to the basic doctrines of Community-based participatory research (Ahmed et al., 2010).

The primary suggestion from stakeholders was inclusion of the “PERMA” model (Positive emotions, Engagement, Relationships, Meaning, Achievement), where “PERMA” is a theory of wellbeing introduced by Martin Seligman (Seligman, 2011a). As there was no evidence-base for the PERMA model in terms of the primary prevention of mental health issues it was decided by the primary author that it would not be included as part of the MAPS program. This was accepted by the stakeholders when the rationale for including only components with a clear evidence base was explained. Feedback indicated that facilitator notes could be further improved for clarity and inclusion of physiological facets of the fight or flight response was requested.

Many of the examples included were suitable for a civilian or defence audience but were not acceptable to DFES stakeholders. As such, a full review of examples and activities was conducted to ensure all examples were relevant and appropriate. For example, one DFES stakeholder stated that fire fighters would not relate to violent personal assault, car or plane accidents, military combat, industrial accidents and natural disasters as examples of PTEs. It was suggested that they may more easily related to fire and emergency examples.

A final review of the MAPS program in consultation with DFES stakeholders ensured that details for support services were customised to include the names and contact details of the DFES Wellness Coordinator and Wellness Officers, Chaplains

and Employee Assistance Programs. Advice for organisational management of stress, reporting requirements and other support options were also updated in line with DFES organisational policies. After this consultation process final program content and format was established and cleared by DFES before implementation. A full outline of stakeholder feedback is provided in Table 5-1.

5.4 The Mental Agility and Psychological Strength (MAPS) Program

The MAPS program comprised four 1-hour group sessions delivered to trainee fire fighters as part of recruit training at DFES. This program was evidence-based and theory driven, having been developed and informed by a systematic review of evidence for the primary prevention of PTSD (see Chapter Three) and a cross-sectional survey of current serving DFES career fire fighters (see Chapter Four). The full MAPS program, including facilitator notes, is included in Appendix B : MAPS Facilitator Manual. See Table 5-2 for a brief overview of each module. The rationale for delivering this program to recruits, who do not yet have experience of fire-fighting as an occupation or the related PTE exposures, is to trial MAPS as a primary prevention intervention.

It should be noted that the program was initially written to be eight hours in length, as this was the shortest comparable resilience program length published at that time (Steinhardt & Dolbier, 2008). Due to timetable constraints within the recruit school this was not possible and so program length was reduced by half. It was also intended that the MAPS program be delivered by a suitably qualified and experienced independent DFES staff member, preferably a psychologist from the Wellness Team. This was also not possible due to workload and time constraints within the Wellness Team.

Each one-hour MAPS session comprised a fully contained module. The MAPS précis was presented at the start and end of each session, as follows:

Creating strong MAPS:

1. Moment—Take a moment to choose the strongest option
2. Assess—Make an assessment of what the situation is, what is happening for you (internally and externally) and what outcome you would like.
3. Plan—Plan your course of action
4. Support—what support(s) might you need to follow through with the strongest possible response?

Table 5-1
Stakeholder feedback

Stakeholder	Feedback	Response
Clinical Stakeholders	Good clear explanations, nicely worded	n/a
	Maybe a bit text-dense, could break up visually with text art, lists, diagrams for visual learners/presenters, underlining subheadings.	Included pictures, diagrams and underlined key words.
	Clinically sound CBT model of trauma reactions.	n/a
	Good focus on adaptive coping and presumption of recovery.	n/a
	Be careful of jargon.	Reviewed text for clinical jargon and amended language and terminology to be more accessible E.g. Changed “succumb” to “give up” and “thrive” to “step up”.
	Good balance between accessible/conversational language and clinically sound content.	n/a
	Modules 3-4 very brief compared to a dense Module 1.	Re-organised the participant manual so that the background and overview portion (which is information dense) is presented as a background section that is separate to the modules.

Table 5-1 (cont.)

Stakeholder	Feedback	Response
Clinical stakeholders (cont.)	<p>Pretty dense participant manual versus very brief facilitator outline- the facilitator would need to be very familiar with the material.</p> <p>Define the parameters for eligible presenters.</p> <p>Include time allocation for each module in facilitator notes.</p> <p>Also a presumption that the facilitator is familiar with ACT.</p> <p>Module 1: 1 hour is likely not sufficient to cover all content.</p> <p>Consider moving mindfulness concepts to a later module.</p> <p>Modules 3-4: Very good overall. Should fit within the allocated time for delivery.</p> <p>Perhaps a presumption that people will quickly grasp the ACT concepts behind it- maybe need extra info or additional references.</p> <p>Include a “cheat sheet” or reminder of socratic questioning</p> <p>Facilitator guide should include more examples/exercises, unless the facilitator is very experienced with groups.</p>	<p>Amended the instructions to facilitators to include the time allocation for each module and specification of expected skills or qualifications for facilitators.</p> <p>Reviewed content for each module and removed some exercises from module 1 to ensure it can be completed within the time allocation.</p> <p>Re-ordered modules so that mindfulness concepts are not presented in Module 1 and can be discussed more than once to assist in consolidation.</p> <p>Overview of socratic questioning added to the facilitator manual.</p> <p>Additional examples added to the facilitator manual</p>

Table 5-1 (cont.)

Stakeholder	Feedback	Response
DFES	Include PERMA model	Not included (as outlined in Chapter 5)
Stakeholders	<p>Include psychophysiological model of stress, including explanation of cortisol and other hormonal stress responses and links between heightened risk of heart attack in firefighters.</p> <p>Include withdrawal behaviours, such as alcohol use.</p> <p>Adapt examples to be more emergency services focussed.</p> <p>Highlight increased rate of PTSD for firefighters.</p>	<p>Added to background section.</p>
	<p>Adapt examples to be more emergency services focussed.</p>	<p>Emergency services specific examples were developed in conjunction with DFES Psychologist and added to the manual.</p>
	<p>Highlight increased rate of PTSD for firefighters.</p>	<p>Added to background section</p>
	<p>Firefighters will not understand or relate to assault, mugging, accidents or natural disaster.</p>	<p>Removed general PTE examples and replaced with emergency specific examples.</p>
	<p>Include case examples.</p>	<p>Included ongoing case example of “Joe” to illustrate key concepts.</p>

Table 5-1 (Cont.)

Stakeholder	Feedback	Response
DFES Stakeholders (cont.)	More information about cumulative and unexpected stressors.	More detailed information added to background section.
	Provide DFES specific supports and resources, such as Wellness Team and EAP + contact details.	Information box with DFES supports and contact details added.
	Include operational doctrine and duty of care in Module 4	Added to Module 4 as requested.

The MAPS program has a salutogenic focus on strength and draws parallels between mental and physical wellbeing, to normalise coping and efforts to maintain psychological wellbeing and promote a focus on mental health (Harrop, Addis, Elliot, & Williams, 2006). Research literature has indicated that often psycho-educational seminars and other similar programs for high-risk professions have a focus on trauma and negative trauma outcomes (such as PTSD); this was deliberately avoided in the MAPS program as it can give the impression that PTSD is the only outcome or a likely outcome following PTE exposure.

Module One was an introduction to the MAPS program. Participants were introduced to the presenter (Skeffington), given an overview of the MAPS program (as above) before being supported through group discussions and psychoeducational Powerpoint material about coping strategies, helpful versus unhelpful coping and planning coping strategies for mental strength. This included psycho-education about the expected physiological and neurobiological responses to stress. Information about PTSD was presented to facilitate correct identification of PTSD symptoms; this was presented as a possible, but not probable, outcome following trauma. Activities around coping strategies and identification and use of social supports were also included to encourage consideration of coping options and the final session provided a recap and information about ongoing self-care. Increasing knowledge about stress, PTE exposure and stress reactions, as well as broadening coping skills was intended to bolster self-efficacy and to encourage adaptive coping behaviours in response to stress. If threats and stress responses are perceived as more benign then the opportunity for self-regulation, resilience and growth is improved (Smith, Donlon, Anderson, Hughes, & Jones, 2015).

The objective of Module Two was to instruct participants in how to “take a moment” to be able to choose their response while under stress. This included identifying features of mentally strong individuals, identifying thoughts and feelings and defusion tactics. The “ACT in a nutshell” and “thinking self versus observing self” activities (Harris, 2008) were used as experiential exercises to illustrate metacognitive concepts, such as how we identify and relate to thoughts and how we can “step back” or “defuse” from thoughts in order to choose our behaviour. These concepts were revisited and consolidated in Module Three, where the concept of identifying and using appropriate supports was added. The role of social support in mental and physical wellbeing was highlighted and participants identified their own

emotional, instrumental and formal supports across personal and professional settings. Meaningful connections were also explored, including an activity based on identifying positive and negative connections and discussions of how to manage interpersonal stressors.

The final MAPS module targeted maintenance and self-care. It aimed to further normalise stress reactions, particularly in high-risk settings, and to improve self-awareness and indicators of stress. Participants completed worksheets that asked them to endorse symptoms of stress from their personal experience that may be used as early warning signs and individual self-care plans were completed. Group discussion around the importance of recognising stress and engaging in self-care as a way to maintain mental strength was facilitated.

The entirety of the MAPS program was facilitated in a Socratic style and an underlying theme of normalisation of stress reactions and reducing barriers to treatment or support seeking were present. For example, a recurring metaphor was drawn between physical and mental health. In terms of seeking support this metaphor was included:

If I hurt my knee at the gym, I will know because of pain, restricted movement and inability to continue exercising or bear weight on that leg. At first I can manage this myself—I can RICE (Rest, Ice, Compression, Elevation) and see if that helps. I might ask a friend or family member for physical assistance with things for a few days. If it is still painful after a few days (or over a week) of this, I would be thinking about getting a professional involved. I can go to the physio and if I go early, before more damage is caused, the physio can rehab me in a short amount of time. It is similar with my mental health. If I have a build-up of stress or one significantly stressful event, I can first think about managing this myself through rest and self-care. I might talk to friends and family and take it easy for a while. However, if after a few weeks it is still bothering me, it might be time to get a professional involved. I can talk to the Wellness Team, use my EAP (Employee Assistance Program) or go to my GP for a referral to a private psychologist. As with my knee problem, the longer I leave it, the longer the rehab will be.

During the introduction to MAPS and throughout the course a briefer version of this metaphor occurs, with the simple question “If I went to the gym once, two years ago, would I expect to be fit today?”, to reinforce the normality and ongoing nature of tending to self-care and mental health.

Table 5-2
Overview of MAPS Content

Module	Content	Support
1	<p>Overview of MAPS</p> <ul style="list-style-type: none"> - How to create strong MAPS - Introduce the physical fitness/ mental fitness analogy <p>Extend the salutogenic analogy: mental fitness also requires ongoing practice, sometimes will need professional assistance and both mental and physical wellness should be attended to for overall fitness and wellbeing.</p> <p>Helpful vs. unhelpful coping strategies</p> <p>Choosing your response</p>	<p>Sijaric Voloder, 2008</p> <p>Wolmer et al., 2011</p> <p>Sarason et al., 1979</p>
2	<p>Features of “mentally strong” people</p> <p>Taking a moment</p> <p>Defusion exercise</p> <p>Benefits of daily practice</p>	<p>Berceli & Napoli, 2006</p> <p>Ozer et al., 2008</p> <p>B. W. Smith et al., 2011</p>
3	<p>Seeking support—different types of support</p> <p>Identifying appropriate supports</p> <p>Identifying and using meaningful connections</p>	<p>Sarason et al., 1979</p> <p>Armfield, 1994</p> <p>Tuckey & Hayward, 2011</p>
4	<p>Self-care</p> <p>Identifying early signs of stress</p> <p>Developing self-care strategies</p> <p>Final recap</p>	<p>Pearlman, 1995</p> <p>Shapiro, Brown, & Biegel, 2007</p>

Chapter 6: Program Evaluation

6.1 Overview

Fire and emergency service workers are at increased risk for PTSD, depression, anxiety, sleep difficulties, problematic alcohol use, relationship breakdown and suicide (Antonellis & Thompson, 2012; Berger et al., 2012; Carey et al., 2011; Corneil et al., 1999; Hall, Dollard, Tuckey, Winefield, & Thompson, 2010; Lee et al., 2014; Shakespeare-Finch, Smith, & Obst, 2002; Winwood, Tuckey, Peters, & Dollard, 2009). The estimated prevalence of PTSD in fire and emergency service workers is 17%-22%, compared to a lifetime prevalence of 1%-8% in the general population (Lee et al., 2014). Given the high incidence of pathology and burnout within the fire service, as well as economic loss stemming from chronic and acute occupational stressors, there is growing pressure for stress research and the development of stress management practices (Boozer, 1998).

The financial and personal burden of PTSD is extraordinary, as it can impair functioning across many (if not all) domains of life. PTSD is associated with increased physical health problems (Friedman & Schnurr, 1995; Schnurr & Jankowski, 1999), suicidality (Cornelius et al., 2012; Ramsawh et al., 2014), anger management issues (James et al., 2007) and problematic alcohol use (Chopko et al., 2013). PTSD is a disorder that carries a high level of disability and high utilisation of the healthcare system, with the impact of PTSD commonly extending beyond the individual to family members, relationships and wider society (ACPMH, 2013). Research comparing mental health outcomes following PTE exposure has shown that PTSD cases incur significantly higher healthcare costs than non-PTSD cases, with the highest economic burden related to untreated PTSD (Chan et al., 2003; Walker et al., 2003; Zatzick et al., 2000).

It is critical to fire and emergency services and other high risk professions that measures are taken to develop a comprehensive plan for managing psychological stressors (Boozer, 1998). A white paper published by the Legislative Assembly Parliament of Western Australia in 2012 (Community Development and Justice Standing Committee, 2012) emphasised the toll of trauma on Western Australian (WA) emergency staff and volunteers. There has been limited Australian research regarding critical incident stress and trauma exposure in high risk government agencies, such as the Department of Fire and Emergency Services (DFES). Clear and

explicit recommendations in the report included directives that government agencies should be made personally responsible for the psychological health (as a result of PTE exposure) of their staff, that active efforts to boost resilience to trauma be made and that cultural changes be prompted to reduce stigma and diminish barriers to treatment seeking (Community Development and Justice Standing Committee, 2012).

While resilience programs are becoming more popular, studies utilising robust methodology to test the effectiveness of these programs are rare (Skeffington, Rees, & Kane, 2013). In some cases this is due to practical constraints or ad hoc analyses. However some wide-scale programs have been highly criticised for their lack of scientific rigour prior to application, such as the universal implementation of the Comprehensive Soldier Fitness program with the U.S. Army (Eidelson et al., 2011). There is currently no published evidence for the efficacy of resilience building programs or the primary prevention of PTSD within high risk professions. The aim of the present study is to conduct a scientifically rigorous evaluation of a theory driven resilience program with trainee fire fighters in Western Australia.

6.1.1 The Mental Agility and Psychological Strength (MAPS) training program

Identification of risk and protective factors for PTSD and a model or framework for understanding the aetiology of PTSD as a disorder have critical implications in approaching the issues of resilience and prevention (Lee et al., 2014). As discussed in earlier chapters, support seeking, appraisal, coping strategies and peri-traumatic arousal are important risk and protective factors in PTSD development (Berger et al., 2012; Heinrichs et al., 2005; Ozer et al., 2008).

A key risk factor for PTSD is maladaptive cognitive appraisal. Unhelpful appraisals of stress responses and trauma reactions, as well as isolation and avoidance behaviours fit within a cognitive model of PTSD as precipitating and perpetuating factors of the disorder (Bryant & Guthrie, 2005, 2007; Ehlers & Clark, 2000). It can be argued that these factors also contribute to common comorbid issues, such as drug and alcohol use, relationship breakdown, depression and additional anxiety diagnoses (Brewin, 2000; Renshaw, 2011; Stander, Thomsen, & Highfill-McRoy, 2013). Fire fighters' reports indicate that a sense of helplessness over a traumatic situation was often critical in terms of their emotional response; many have reported events in which their physical safety was not threatened but they felt threatened by their inability to manage the physical or emotional trauma being

suffered by the victim (Bryant & Harvey, 1996). Given the information we have to-date about the importance of appraisal in the development of PTSD, a PTSD prevention program should be expected to include cognitive and psychoeducational components that may facilitate helpful and adaptive appraisals of stressful or potentially traumatic situations. However, robust research exploring the relationship between perceived stress, PTE exposure and PTSD and the possible mediating effect of appraisal or perception is lacking (Lee et al., 2014).

Resilience literature characterises resilient individuals as having a sense of self-esteem or self-efficacy; taking an action oriented approach to obstacles or challenges; having the ability to see obstacles as problems that can be engaged, changed, overcome or at least endured; reasonable persistence; and flexible problem-solving and stress management tactics (Everly, Welzant, & Jacobson, 2008). There is a notable scarcity of vigorous research regarding resilience to and protective factors against PTSD. Correlational and cross-sectional studies have indicated that peritraumatic arousal, coping strategies, and social support impact PTSD development, but research to-date does not imply direction or causation in the relationship between these variables (Cohn, 2010; Fledderus et al., 2010; Gidron et al., 2001; Tusaie & Dyer, 2004). Three key components of any stress management intervention are recognised as appraisal, coping resources and social support (Boozer, 1998; Lazarus, 1999; Sarason et al., 1979). However, stringent, scientific research is required to determine whether variables such as appraisal, arousal, support seeking and coping strategies can be changed and whether such a change may, in-turn, influence PTSD development.

Social support, camaraderie and support seeking are frequently cited factors that buffer individuals against both psychological and physical disease (Berkman et al., 2003; Charuvastra & Cloitre, 2008; Sarason et al., 1987; Tuckey & Hayward, 2011). Support seeking behaviours have been linked to resilience and growth following PTE exposure (Prati & Pietrantonio, 2009; Smith et al., 2015) but the specifics of the direction and nature of the relationship between social support, support seeking and PTSD remain unknown. There is some controversy surrounding reports of support within high risk professions such as the fire and emergency services. Durham, McCammon, and Allison (1985) reported that rescue workers appeared to infrequently seek out emotional support, with only 11% of their sample agreeing that they sought emotional support from others. This would suggest that

there exists a need for educating fire fighters in the importance of using a range of support systems, including emotional support (Boozer, 1998). It is frequently reported that fire fighters tend to repudiate any notions toward help-seeking behaviours. As recently as 2012, representatives from high risk professions within Western Australia have been quoted describing a “macho” culture, including beliefs that “they [firemen] are tough and they do not need it [assistance]” (Community Development and Justice Standing Committee, 2012). However, there are also reports of strong camaraderie, community or “brotherhood” within high risk professions, suggesting that fire fighters do seek support but that they do so from each other, rather than looking toward external sources (Haslam & Mallon, 2003; Regehr, Dimitropoulous, Bright, George, & Henderson, 2005).

Peri-traumatic arousal and a sense of being out of control of personal reactions during a PTE have been correlated with PTSD development (Ehlers & Clark, 2000; Gidron et al., 2001). It has been suggested that mindfulness skills may facilitate a sharper focus during a PTE and decrease the likelihood of dissociation (Ozer et al., 2008). Mindfulness may improve the regulation of emotions associated with traumatic and other stressful events (Kabat-Zinn, 1990). As outlined in Chapter 2, some interventions have found promising results in boosting psychological resilience with the provision of relaxation and mindfulness based training prior to exposure to trauma (Deahl et al., 2000; Sijaric-Voloder & Capin, 2008; Skeffington et al., 2013; Wolmer et al., 2011).

Some authors have indicated that psycho-education alone, such as educating individuals about normal stress reactions and the importance of applying stress management strategies, can impact incidence of mental health issues following PTE exposure (Benedek & Ritchie, 2006; Sharpley et al., 2008). There is no robust evidence to indicate that a purely psycho-educational program, without the inclusion of coping skills, would be effective in the management of stress and prevention of mental health issues. A series of uncontrolled studies, to-date, indicate that psycho-education in conjunction with skills building is optimal however a dearth of randomised controlled trials or targeted research with a robust research design limits confidence in these recommendations. Psycho-education covering stress, common stress responses and trauma reactions is useful, but should be supplemented with skills building around self-regulation, mindfulness or relaxation for a resilience building effect (Skeffington et al., 2013).

6.1.2 Summary

For some time it has been stated by government bodies, researchers and academics that there is a clear need for more research into resilience and the primary prevention of PTSD within high risk professions (Boozer, 1998; Community Development and Justice Standing Committee, 2012; Skeffington et al., 2013), although no robust research has been published in this area to-date despite the clear need to apply research to interventions that translate into the real world (Shochet et al., 2011). Through systematic critical analysis of the literature (Skeffington et al., 2013) and consultation with clinicians and key stakeholders, the MAPS program was developed and evaluated as an evidence based and theory driven program aimed at the primary prevention of PTSD in early career fire fighters at DFES in WA. The aim of the current study is to conduct a rigorous evaluation of the MAPS program in a randomised control trial with a 12-month follow up.

6.1.3 Hypotheses

A number of hypotheses about the effects of MAPS training were generated. Hypothesis 1 is based on the assumption that taking part in an intervention about resilience and trauma exposure with psychoeducational components will increase knowledge of program relevant aspects of resilience and trauma exposure. This hypothesis will be evaluated by measuring whether participants retained program content. Participating in the MAPS program is expected to increase knowledge of resilience and trauma exposure concepts.

H1. Compared to the Training-As-Usual (TAU) group, the intervention group will show a significantly greater increase in trauma knowledge from pre-test to 6-month and 12-month follow-ups (as measured by a trauma knowledge test).

One key component of the MAPS program that is expected to impact resilience to mental health issues is psycho-education and activities aimed at building awareness and utilisation of social support. Social support is known to buffer people against the impact of stress (Brancu et al., 2014) and has been a component of previously examined resilience building programs (Burton et al., 2009). Hypothesis 2 reflects the expectation that participation in the MAPS program will improve awareness and utilisation of social support.

H2. Compared to the TAU group, the intervention group will report a significantly greater increase in levels of perceived social support from pre-test to 6-month and 12-month follow-ups (as measured by the Social Support Questionnaire; SSQSR).

Hypotheses 3 and 4 reflect past research outlining the protective mechanism of adaptive coping strategies, which have been linked to resilience when under stress, while maladaptive coping strategies, particularly avoidance strategies, have been associated with poorer psychological outcomes (Beasley et al., 2003). The MAPS program includes psycho-education and interactive activities around adaptive and maladaptive coping and the impact of coping strategies on mental health and is expected to increase adaptive and decrease maladaptive coping strategies in the Intervention group, as compared to the TAU group.

H3. Compared to the TAU group, the intervention group will report a significantly greater increase in levels of adaptive coping from pre-test to 6-month and 12-month follow-ups (as measured by the Brief COPE).

H4. Compared to the TAU group, the intervention group will report a significantly greater decrease in levels of maladaptive coping from pre-test to 6-month and 12-month follow-ups (as measured by the Brief COPE).

Hypothesis 5 represents the overall intention of the MAPS program as a targeted intervention for the prevention of mental health issues following PTE exposure. Past research has demonstrated efficacy of group programs in the prevention of depression and anxiety (Barrett & Turner, 2001; Day et al., 2003). This study also measures the impact of this group program on symptoms of stress and PTSD, with an expectation that participation in the MAPS program will be associated with fewer symptoms of stress and other mental health disorders.

H5. Compared to the intervention group, the TAU group will show a significantly greater increase in pathology from pre-test to 6-month and 12-month follow-ups (as measured by the PTSD Checklist—Civilian version; PCL-C and Depression, Anxiety and Stress Scale; DASS-21).

6.2 Method

6.2.1 Power

Hypotheses 1 to 5 predict Group x Time interactions. According to the power program (G*Power 3.1), at a per-test alpha-level of .05, 82 participants (41 in each group) are required for an 80% chance of capturing a “small” to “moderate” Group x Time interaction ($f = .158$). This is the repeated measures ANOVA estimate. The Generalised Linear Mixed Model (GLMM; the statistical procedure used to test the hypotheses, as outlined below) estimate would be approximately equivalent; but with GLMM, natural attrition can occur without seriously compromising power. This is because the GLMM maximum likelihood procedure is a full estimation procedure, which uses all of the data available at each time period without being dependent on each participant providing data at each time point (Holden, Kelley, & Agarwal, 2008).

6.2.2 Recruitment

Participants were 75 male and 2 female Trainee Firefighters (TFFs) at the DFES Training Academy in Perth, WA. TFFs underwent psychological screening prior to acceptance into recruit school (the details of this psychological screening are not available) and did not meet diagnostic criteria for any mental health conditions at baseline. All TFFs within training schools commencing training during the duration of the data collection period (2012-2013) were invited to participate. Participation was anonymous and voluntary. There were no exclusion criteria. All participants were invited to participate in the study during their first week of recruit school, at which time they completed baseline measures if consent was given.

6.2.3 Study Design and Procedure

A mixed-methods experimental design was utilised to evaluate the program. In the present study, MAPS was delivered in a selective fashion; individuals at risk of PTSD due to their profession will be targeted (Feldner et al., 2007). A pre-intervention/ post-intervention/ follow-up TAU group design with clustered random allocation of participants to groups was used. TFFs within DFES are naturally grouped into “schools”, where a school is a cohort that completes training together. For this reason, random allocation of single subjects to treatment or TAU groups is not feasible. Rather, schools were randomly allocated to treatment or TAU. As four schools were expected to participate, four sealed envelopes (two containing “TAU”

and two containing “intervention”) were prepared at the start of the trial. Before contact with each school one envelope was selected, designating the condition for that school.

It was originally intended that two TFF schools would be randomly allocated to the TAU condition and two to the Intervention condition, in order to achieve the minimum number of participants required, as estimated by the power analysis. With two TFF schools scheduled in both 2012 and 2013, the study was on track with this target; however, due to reasons not communicated to the researchers, one TFF school in 2013 was cancelled by DFES after it had been allocated as an intervention group. Given the 12 month follow-up period, it was not possible to recruit an additional TFF school in 2014 and complete this project within the required timeframe.

The TAU group was treated identically to the intervention group, proceeding through all components of DFES training, but did not participate in the intervention program. Due to the limited time and resources available within the DFES professional training program, an attention placebo TAU group was not a viable option. Both the intervention and TAU groups engaged in an equal number of overall professional training hours. All participants were measured on the outcome variables immediately prior to the intervention. All participants were measured once again on the outcome variables at 6 months post-intervention, and for one final time 12 months post-intervention.

The intervention program was delivered by the primary researcher (Skeffington) on-site at DFES over four hours (four 1-hour sessions over four weeks). The researcher is a Registered Psychologist with a Masters level qualification and experience in delivering psycho-education and training seminars and treating stress and trauma syndromes.

Participants in the intervention group ($n = 30$; one school) received four group sessions of MAPS training. Participants in the TAU groups ($n = 45$; two schools of 24 and 21 TFFs, respectively) completed the same measures at the same times as the intervention group, but engaged in another aspect of professional training that was unrelated to the intervention. Participants were not compensated for their time, as the training comprised part of their professional training for which they were remunerated by DFES.

Measures were administered pre-intervention (T1), at 6-month follow-up (T2) and at 12-month follow-up (T3). Data collection at T1 was done in person. At T2 and

T3, an invitation to complete the measures online was delivered electronically to all participants. During this phase of data collection the window for response was six weeks following the initial invitation, with a reminder invite sent to non-responders three weeks following the initial invite. This research was approved by the Human Research Ethics Committee at Curtin University (HR113/2011) and was registered as a clinical trial with the Australian and New Zealand Clinical Trials Registry (2011).

6.2.4 Measures

The PCL-C, Traumatic Stress Schedule, DASS-21, SSQSR and Brief COPE were all administered (see Chapter 4 for further details). In addition to these measures, the following were also administered:

Demographics. A short demographic questionnaire to gather information relating to age, gender, education and marital status.

MAPS knowledge. A short assessment of trauma knowledge, developed specifically for this study, to assess whether the psycho-educational component of the intervention effectively improves knowledge of trauma. Items on this assessment were directly related to information provided during the psycho-educational phase of the intervention. A copy of this questionnaire can be found in Appendix A: MAPS Knowledge Questionnaire.

6.2.5 Treatment Adherence

All intervention sessions were observed by at least two members of the DFES Health and Wellness Team and senior officers involved with TFF instruction. The primary researcher (Skeffington) constructed a session checklist outlining the objectives of each intervention module. Prior to delivery of any intervention sessions, the checklist was examined by the Primary Supervisor (Rees) to ensure content validity. Each impartial observer present for each intervention module (minimum of two observers for adherence ratings) was asked to rate adherence to module objectives on a 7-point Likert scale that ranges from (1) *not at all covered* to (7) *completely covered* (see Appendix C: Treatment Adherence). The inter-rater reliability of this measure was calculated and found to be strong (Pearson's $r = .91$). Mean adherence to treatment protocol across sessions was rated as 6.77/7 ($SD = 0.98$).

6.2.6 Hypothesis testing

Each hypothesis predicts that this section of the trajectory will change at a greater rate for the intervention group than the TAU group. These predictions are

best tested with GLMM (Holden et al., 2008). GLMM was used to analyse the outcome data within the context of a hierarchical design in which Time (T1, T2, and T3) was nested within participants, and participants were nested within schools, and schools were nested within group (intervention, TAU).

GLMM has several advantages over traditional statistical procedures for analysing behavioural change. Firstly, GLMM does not rely on participants providing data at every assessment point; it uses all the data present at each assessment point thereby reducing the impact of subject attrition on statistical power. Moreover, GLMM can deal with unequally spaced data collection points, is robust to unequal group sizes, does not require equal variances at each measurement occasion, or equal co-variances between all pairs of time points, and is able to account for correlations that occur between repeated measurements. Relative to other techniques, GLMM is able to more accurately estimate sample means when group sizes are small (Rasbash, Steele, Browne, & Prosser, 2004). As sampling bias was a possibility in the present study, it was decided to assume a normal population distribution and then invoke the GLMM ‘robust statistics’ option to compute the parameters of the covariance matrix. GLMM allows the comparison of many different covariance structures such as autoregressive, compound symmetry, diagonal, scaled identity, Toeplitz, unstructured, and variance components. The within-subjects component of the data matrix in this study violated the sphericity assumption. In these circumstances a combination of autoregressive and compound symmetry structures has been recommended (Garcia, Vallejo, Livacic-Rojas, Herrero, & Cuesta, 2008).

6.2.7 Assumption testing

The traditional ANOVA model for repeated measure designs assumes homogeneity of variance, normality, sphericity, and independence of observations (Field, 2013). The GLMM “robust statistics” option generally takes care of violations of normality and homogeneity of variance. Violations of sphericity can be accommodated by changing the covariance matrix from the default of compound symmetry to autoregressive. Finally, by specifying the multilevel nature of the current data (participant nested within schools) in the GLMM syntax, GLMM can accommodate intra-school dependencies in the outcome measures (Rasbash et al., 2004). GLMM was implemented through SPSS’s (Version 22) GENLINUXMIXED

procedure. The ‘robust statistics’ option used by this procedure adopts a nonparametric maximum likelihood approach to estimation (Yau & Kuk, 2010).

6.3 Results

6.3.1 Participant Flow

During the recruitment phase of this study, 77 participants within three separate TFF schools were recruited. All consented to participation in this program of research. One participant assigned to the TAU group signed the consent form but completed less than half of the baseline measures and was excluded from analyses. One participant assigned to the intervention group withdrew from TFF school temporarily due to personal circumstances and did not complete MAPS training or any subsequent measures and was thus excluded from analyses. Seventy-five participants remained. For a full outline of participant flow see Figure 6-1.

There were no significant pre-test differences between remainers ($n = 47$) and dropouts ($n = 28$) on any of the outcome measures (MAPS, $p = .128$; PCL, $p = .224$; TSS, $p = .621$; Depression, $p = .162$, Anxiety, $p = .055$, Stress, $p = .261$; SSQ, $p = .339$, SSQSAT, $p = .940$; Adaptive, $p = .508$; Maladaptive, $p = .093$); the two groups were also equivalent in terms of male/female ratios ($p = .610$), education ($p = .256$), marital status ($p = .896$ and age ($p = .458$).

6.3.2 Tests of sample representativeness (external validity)

The majority of participants were male because high-risk professions, such as fire and emergency service work, are renowned for being male dominated (Voracek, Pum, & Dressler, 2010). A chi-square goodness-of-fit was conducted to determine whether the sample fit the gender demographics present at DFES. The chi-square goodness-of-fit test indicated that gender was similarly distributed in the participants responding to the study as the DFES career firefighter population ($\chi^2 (1) = .03$, $p = .866$). A goodness-of-fit test for age was not run as it was not expected that members of the recruit school would reflect the age demographics of the organisation as a whole because recruit school members would be, on average younger and less experienced in fire and emergency work than career fire fighters. For all demographic details see Table 6-1.

6.3.3 Tests of group equivalence (internal validity)

Table 6-2 displays the baseline demographic and clinical characteristics for participants in the intervention and TAU conditions. Fisher’s exact tests (2-sided)

indicated that participants in the intervention and TAU conditions did not significantly differ in terms of gender ratio or marital status. Independent samples *t*-tests indicated that participants in the intervention and TAU conditions did not differ significantly in age, PTSD symptoms, past trauma exposure, depressive symptoms, anxiety symptoms, stress symptoms, social support, adaptive coping and maladaptive coping at baseline (Table 6-2).

6.3.4 Trauma exposure

At baseline 33 (73.3%) participants randomised to TAU and 24 (80.0%) randomised to intervention reported at least one prior PTE exposure. A chi-square test for goodness of fit (with $\alpha = .05$) was used to assess whether there was a difference in previous PTE exposure across the intervention and TAU groups. Table 6-3 lists the percentages of TFFs endorsing each frequency of PTE exposure to date across each data collection time point. The Chi-square test at baseline was not statistically significant, $\chi^2 (6, N = 75) = 10.60, p = .101$. At Time 2 80.4% of the TAU group and 80.0% of the Intervention group reported some form of lifetime PTE exposure, $\chi^2 (6, N = 61) = 5.49, p = .483$. At Time 3 90.9% of the TAU group and 90.0% of the Intervention group reported some form of lifetime PTE exposure, $\chi^2 (6, N = 52) = 2.45, p = .874$.

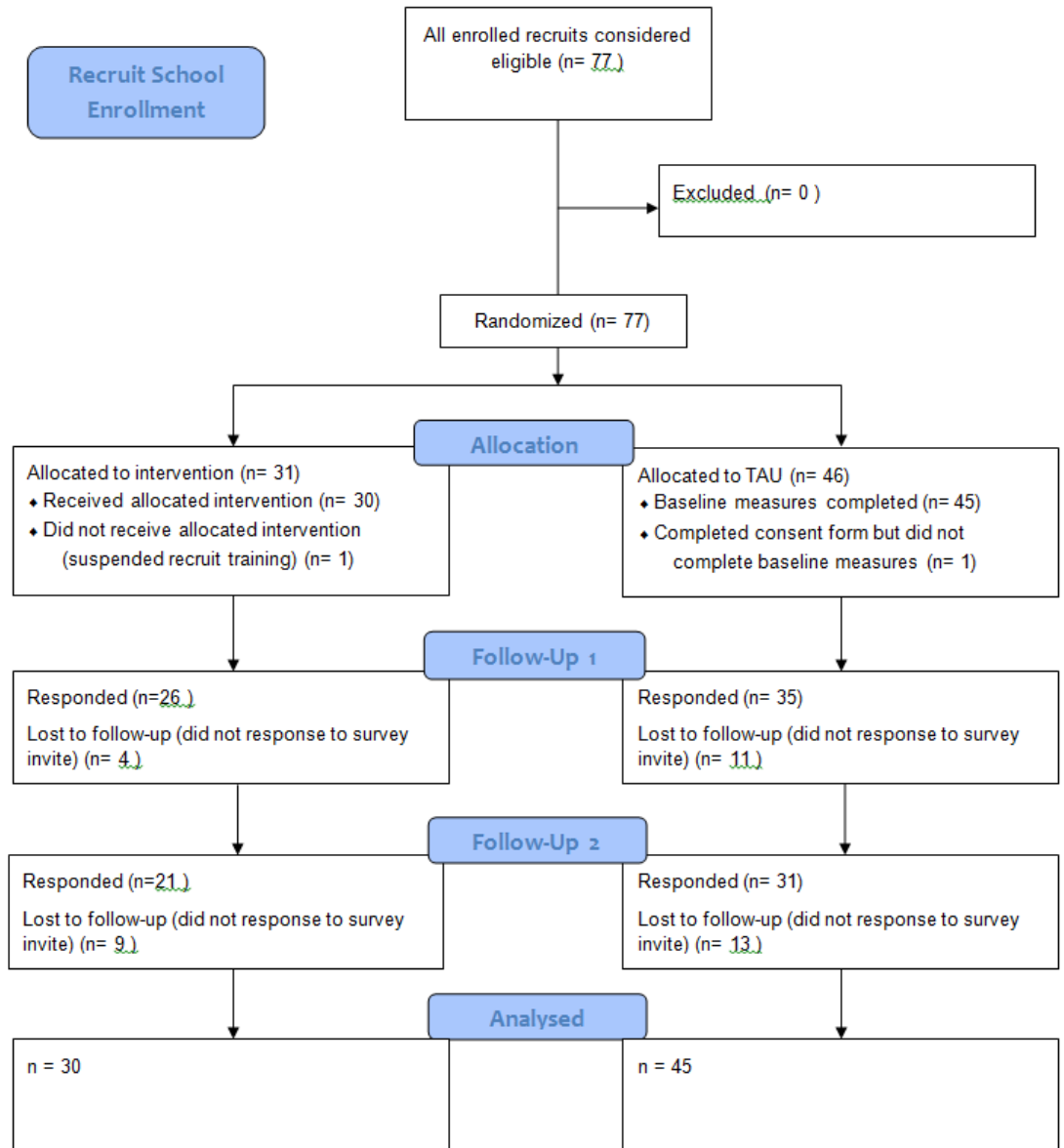


Figure 6-1. CONSORT participant flow diagram.

Table 6-1

Demographic Characteristics (n. %) for Participants in the Intervention and TAU Conditions

	Intervention (<i>n</i> = 30)	TAU (<i>n</i> = 45)	Two-sided <i>t</i> -test and Fisher's exact test (only <i>p</i> -values are reported for the latter)	Entire sample (<i>N</i> = 75)
Mean age in years (<i>SD</i>)	29.23 (4.55)	28.58 (4.72)	$t(73) = -.60, p = .552$	28.85 (4.73)
Gender (male)	29 (96.7%)	44 (97.8%)	$p = 1.00$	73 (97.3%)
Marital Status	12 Divorced (40.0%)	22 Divorced (48.9%)	$p = .738$	34 (45.3%)
	17 Never Married (56.7%)	22 Never married (48.9%)		39 (52.0%)
	1 Married/ de facto (3.3%)	1 Married/de facto (2.2%)		2 (2.7%)

Table 6-2

Baseline Means, Standard Deviations and t-tests for Participants in the Intervention and TAU Conditions

Measure	Intervention <i>M (SD)</i>	TAU <i>M (SD)</i>	<i>t-test</i>
Trauma Knowledge	16.60 (1.38)	16.64 (1.30)	$t(73) = 0.14 p = .888$
PTSD symptoms	21.13 (5.16)	23.69 (7.54)	$t(73) = 1.62 p = .110$
PTE exposure	2.27 (1.91)	1.73 (1.48)	$t(73) = -1.36 p = .179$
Depression	0.53 (1.38)	1.56 (2.83)	$t(73) = 1.84 p = .070$
Anxiety	2.93 (4.51)	2.76 (3.47)	$t(73) = -0.19 p = .848$
Stress	5.40 (4.96)	5.11 (4.60)	$t(73) = -0.26 p = .797$
Social Support	4.85 (1.90)	4.71 (2.16)	$t(73) = -0.29 p = .776$
Adaptive Coping	37.60 (7.05)	36.89 (8.36)	$t(73) = -0.38 p = .702$
Maladaptive Coping	18.23 (4.93)	17.93 (3.11)	$t(73) = -0.32 p = .747$

Table 6-3

Potentially Traumatic Event Exposure Frequency (%) across the Intervention and TAU Conditions at Baseline (Time 1), Time 2 and Time 3

Freq	Time 1		Time 2		Time 3	
	TAU	Intervention	TAU	Intervention	TAU	Intervention
0	26.7	20.0	19.6	20.0	9.1	10
1	22.2	13.3	19.6	13.3	22.7	13.3
2	20.0	36.7	10.9	20.0	11.4	13.3
3	17.8	10.0	10.9	6.7	11.4	13.3
4	8.9	3.3	2.2	13.3	9.1	10
5	4.4	3.3	6.5	10.0	6.8	6.7
6	0.0	13.3	6.5	3.3	0	3.3

Table 6-4
Adjusted Means and Standard Errors of Outcome Variables at Baseline, 6-month follow up and 12-month follow up for the Intervention and TAU Conditions

Measure	Condition Effect <i>F</i> (1,182)	Time Effect <i>F</i> (1, 182)	Condition* Time <i>F</i> (1,182)	η^2	Intervention Condition			TAU Condition		
					T1 <i>M</i> (<i>SE</i>)	T2 <i>M</i> (<i>SE</i>)	T3 <i>M</i> (<i>SE</i>)	T1 <i>M</i> (<i>SE</i>)	T2 <i>M</i> (<i>SE</i>)	T3 <i>M</i> (<i>SE</i>)
MAPS	4.34 <i>p</i> = .039	7.54 <i>p</i> = .001	4.34 <i>p</i> = .039	0.11	16.57 (0.23)	17.49 (0.26)	17.77 (0.29)	16.62 (0.19)	17.01 (0.22)	16.69 (0.22)
PCL-C	0.04 <i>p</i> = .838	2.29 <i>p</i> = .104	7.90 <i>p</i> = .001	0.12	20.75 (0.91)	21.73 (0.99)	21.50 (1.05)	23.04 (0.83)	19.75 (0.77)	20.60 (0.82)
Depression	0.10 <i>p</i> = .747	1.97 <i>p</i> = .149	0.45 <i>p</i> = .639	0.00	3.20 (1.44)	4.17 (1.58)	5.75 (2.36)	3.59 (1.01)	2.93 (1.06)	4.74 (1.51)
Anxiety	0.47 <i>p</i> = .495	7.45 <i>p</i> = .001	0.76 <i>p</i> = .469	0.16	3.64 (0.85)	2.41 (0.58)	2.21 (0.55)	3.80 (0.68)	3.11 (0.63)	2.90 (0.58)
Stress	1.18 <i>p</i> = .279	1.05 <i>p</i> = .353	0.15 <i>p</i> = .858	0.006	6.50 (0.87)	5.77 (0.87)	6.11 (1.03)	5.96 (0.64)	4.55 (0.83)	5.32 (0.90)

Table 6-4 (Continued)

Measure	Condition Effect	Time Effect	Condition* Time	η^2	Intervention Condition			TAU Condition		
					T1	T2	T3	T1	T2	T3
					<i>M (SE)</i>	<i>M(SE)</i>	<i>M(SE)</i>	<i>M(SE)</i>	<i>M(SE)</i>	<i>M(SE)</i>
SSQ	2.55	1.80	6.09	0.08	4.60	3.97	3.42	4.63	4.47	5.16
	<i>p</i> = .112	<i>p</i> = .168	<i>p</i> = .003		(0.44)	(0.40)	(0.36)	(0.37)	(0.38)	(0.45)
Adaptive	0.02	3.87	0.22	0.04	37.19	33.45	32.67	36.45	33.83	33.66
Cope	<i>p</i> = .881	<i>p</i> = .023	<i>p</i> = .804		(1.84)	(4.40)	(1.87)	(1.48)	(3.30)	(1.58)
Maladaptive	0.24	3.38	0.21	0.05	17.84	16.46	16.67	17.80	15.62	15.88
Cope	<i>p</i> = .621	<i>p</i> = .036	<i>p</i> = .811		(0.88)	(1.83)	(1.11)	(0.68)	(1.27)	(0.80)

H1: The intervention group will show a greater increase in trauma knowledge from pre-test to 6-month and 12-month follow-ups (as measured by a trauma knowledge test).

The Condition x Time interaction was significant ($F[2,182] = 15.13, p < .001, \eta_p^2 = .14$). The simple main effect of time was significant for the intervention group ($F[2,182] = 8.75, p < .001, \eta_p^2 = .09$) but not for the TAU group ($F[2,182] = 1.39, p = .253, \eta_p^2 = .02$). Least significant different (LSD) post-hoc contrasts conducted across the simple main effect of time for the intervention group indicated a significant T1 – T2 increase in trauma knowledge ($t[182] = 3.17, p = .002, d = .47$), which was maintained at T3 (T1 – T3: $t[182] = 3.80, p < .001, d = .56$). For the adjusted means and standard error of trauma knowledge at Baseline, 6-month follow-up and 12-month follow-up, see Table 6-4. These results support Hypothesis 1.

H2: The intervention group will report a greater increase in levels of perceived social support and satisfaction from pre-test to 6-month and 12-month follow-ups (as measured by the SSQSR).

5.3.6 SSQ

The Condition x Time interaction was significant ($F[2,182] = 5.58, p = .004, \eta_p^2 = .06$). The simple main effect of time was significant for the control group ($F[2,182] = 3.39, p = .036, \eta_p^2 = .06$) but not for the intervention group ($F[2,182] = 2.55, p = .081, \eta_p^2 = .03$). LSD (least significant difference) post-hoc contrasts conducted across the simple main effect of time for the control group indicated a significant increase in perceived social support but only at T3 (T1 – T3: $t[182] = 2.52, p = .013, d = .58$). For the adjusted means and standard error of SSQ at Baseline, 6-month follow up and 12-month follow-up, see Table 6-4. These results are inconsistent with Hypothesis 2.

5.3.7 SSQ Satisfaction

The Condition x Time interaction was not significant ($F[2,182] = 1.52, p = .223, \eta_p^2 = .02$). The main effects of condition and time can therefore be interpreted independently of one another. The main effect for condition was non-significant

($F[1,182] = 3.07, p = .081, \eta_p^2 = .02$), indicating that the two conditions were equivalent in terms of perceived satisfaction with social support at T1, T2, and T3. The main effect for time was also non-significant ($F[2,182] = 1.42, p = .246, \eta_p^2 = .02$), indicating that neither group changed significantly across time. These results are inconsistent with Hypothesis 2.

6.3.8 Brief Cope

H3: The intervention group will report a greater increase in levels of adaptive coping from pre-test to 6-month and 12-month follow-ups (as measured by the Brief COPE).

The Condition x Time interaction was not significant ($F[2,182] = 0.22, p = .804, \eta_p^2 = .00$). The main effects of condition and time can therefore be interpreted independently of one another. The main effect for condition was non-significant ($F[1,182] = 0.02, p = .881, \eta_p^2 = .00$), indicating that the two conditions were equivalent in terms of adaptive coping levels at T1, T2, and T3. The main effect for time, however, was significant ($F[2,182] = 3.87, p = .023, \eta_p^2 = .04$). LSD post-hoc contrasts conducted across the main effect of time indicated a significant decrease in adaptive coping levels from T1 to T3 ($t[182] = 2.73, p = .007, d = .40$). For the adjusted means and standard error of adaptive coping at Baseline, 6-month follow-up and 12-month follow-up, see Table 6-4. These results indicate that both groups significantly decreased at the same rate from T1 to T3, and are therefore inconsistent with H3.

H4: The intervention group will report a greater decrease in levels of maladaptive coping from pre-test to 6-month and 12-month follow-ups (as measured by the Brief COPE).

The Condition x Time interaction was not significant ($F[2,182] = 0.21, p = .811, \eta_p^2 = .00$). The main effects of condition and time can therefore be interpreted independently of one another. The main effect for condition was non-significant ($F[2,182] = 0.25, p = .621, \eta_p^2 = .00$), indicating that the two conditions were equivalent in terms of maladaptive coping levels at T1, T2, and T3. The main effect for time, however, was significant ($F[2,182] = 3.38, p = .036, \eta_p^2 = .04$). LSD post-

hoc contrasts conducted across the main effect of time indicated a significant decrease in maladaptive coping levels from T1 to T3 ($t[182] = 2.48, p = .014, d = .37$). For the adjusted means and standard error of maladaptive coping at Baseline, 6-month follow up and 12-month follow up, see Table 6-4. These results indicate that both groups significantly decreased at the same rate from T1 to T3, and are therefore inconsistent with H3.

H5: Compared to the intervention group, the TAU group will show a significantly greater increase in pathology from pre-test to 6-month and 12-month follow-ups (as measured by the PCL-C and DASS-21).

6.3.9 PTSD

At baseline no participants met the cut-off criteria for PTSD, using the weighted scoring protocol for the PCL-C, as outlined above. At both Time 2 and Time 3, 2 (6.7%) TAU participants appeared to meet the criteria for PTSD, as compared to none (0.0%) of the Intervention participants.

The Condition x Time interaction was significant ($F[2,182] = 7.90, p = .001, \eta_p^2 = .08$). The simple main effect of time was significant for the TAU group ($F[2,182] = 11.02, p < .001, \eta_p^2 = .11$) but not for the intervention group ($F[2,182] = 0.72, p = .490, \eta_p^2 = .01$). LSD (least significant difference) post-hoc contrasts conducted across the simple main effect of time for the TAU group indicated a significant T1 – T2 decrease in PTSD symptoms ($t[182] = 3.30, p < .001, d = .49$), which was maintained at T3 (T1 – T3: $t[182] = 2.45, p = .002, d = .36$). For the adjusted means and standard error of PTSD at Baseline, 6-month follow up and 12-month follow-up, see Table 6-4. These results are inconsistent with Hypothesis 5.

6.3.10 Depression

The Condition x Time interaction was significant ($F[2,182] = 4.20, p = .017, \eta_p^2 = .04$). The simple main effect of time was significant for the intervention group ($F[2,182] = 3.86, p = .023, \eta_p^2 = .00$) but not for the TAU group ($F[2,182] = 1.57, p = .210, \eta_p^2 = .02$). LSD (least significant difference) post-hoc contrasts conducted across the simple main effect of time for the intervention group indicated a significant T1 – T2 increase in depressive symptoms ($t[182] = 2.15, p = .033, d = .50$), which was maintained at T3 (T1 – T3: $t[182] = 2.55, p = .012, d = .59$). For the adjusted means and standard error of depression at Baseline, 6-month follow up and 12-month follow-up, see Table 6-4. These results are inconsistent with Hypothesis 5.

6.3.11 Anxiety

The Condition x Time interaction was not significant ($F[2,182] = 0.68, p = .507, \eta_p^2 = .007$). The main effects of condition and time can therefore be interpreted independently of one another. The main effect for condition was non-significant ($F[1,182] = 0.00, p = .986, \eta_p^2 = .00$), indicating that the two conditions were equivalent in terms of anxiety levels at T1, T2, and T3. The main effect for time, however, was significant ($F[2,182] = 11.52, p < .001, \eta_p^2 = .11$). LSD post-hoc contrasts conducted across the main effect of time indicated a significant decrease in anxiety for both groups from T1 to T2 ($t[182] = 4.10, p < .001, d = .95$, and from T1 to T3 ($t[182] = 4.03, p < .001, d = .93$). For the adjusted means and standard error of anxiety at Baseline, 6-month follow up and 12-month follow-up, see Table 6-4. These results are inconsistent with H5.

6.3.12 Stress

The Condition x Time interaction was not significant ($F[2,182] = 2.21, p = .113, \eta_p^2 = .02$). The main effects of condition and time can therefore be interpreted independently of one another. The main effect for condition was significant ($F[1,182] = 4.35, p = .039, \eta_p^2 = .05$), indicating that the control group was significantly less stressed than the intervention group at T1, T2, and T3. The main effect for time was also significant ($F[2,182] = 7.87, p = .001, \eta_p^2 = .08$). LSD post-hoc contrasts conducted across the main effect of time indicated a significant decrease in stress for both groups from T1 to T2 ($t[182] = 3.73, p < .001, d = .86$), and from T1 to T3 ($t[182] = 2.83, p = .005, d = .65$). For the adjusted means and standard error of stress at Baseline, 6-month follow up and 12-month follow-up, see Table 6-4. These results are inconsistent with H5.

6.4 Discussion

The primary aim of this study was to evaluate the MAPS program in terms of the primary prevention of PTSD in DFES career recruits. We hypothesised that the intervention group would report fewer symptoms of PTSD and other mental health problems, such as depression, anxiety and stress, as compared to the TAU group. We found no evidence that MAPS training was effective in the primary prevention of mental health issues, nor did we find any significant impact of MAPS training on social support or coping strategies. Although two TAU recruits (as opposed to none of the intervention recruits) self-reported clinical levels of PTSD symptomatology

during their first 12 months as career firefighters, this did not represent a significant difference between the groups.

It was also hypothesised that participation in the MAPS program would influence perceived social support and coping strategies; these hypotheses were not supported. Research published after the design of the current study has suggested that there is no link between social support and treatment seeking in individuals with PTSD and that social support is less important at low levels of PTSD and distress (Smith et al., 2015; Sripada, Pfeiffer, Rauch, & Bohnert, 2015). It is plausible that differences in support seeking or perceived social support may be detected over a longer follow-up period or where there is greater variation in symptom severity. Social support is also now recognised as a bi-directional construct (Shakespeare-Finch & Obst, 2011); the measure used in the current study measured perceived social support but not provision of social support to others. The sample in the current study commenced recruit school and, for the most part, remained psychologically healthy for the duration of the study. Changes in support seeking and utilisation of coping skills would be expected when under prolonged or intense stress (Coyne & Gottlieb, 1996) but are not expected to be detected in a sub-clinical and otherwise healthy sample.

Organisational culture, availability of resources, lack of awareness and stigma have been cited as the main barriers to treatment seeking within high risk professions (Britt & McFadden, 2012; Community Development and Justice Standing Committee, 2012). The relationship between social support, support seeking and PTSD development is unclear. The notion that social support can be impacted by targeting awareness and that this will then impact PTSD development is naïve, as the development of PTSD will be influenced by a range of other factors. Avoidance is a key symptom cluster in PTSD (APA, 2013); it is unclear from research to-date whether lack of support seeking allows avoidance symptoms to flourish or whether a predisposition for avoidance inhibits support seeking behaviours. If avoidance behaviours are part of inherent personality qualities within an individual then brief support seeking interventions are unlikely to impact the development of the avoidance cluster of PTSD symptoms.

It was also expected that all participants would be exposed to at least one DSM-5 Criterion A (APA, 2013) PTE during their first 12-months of fire and emergency service work. At 12-month follow up 9.1% TAU and 10.0% Intervention

participants reported no lifetime PTE exposures. This is surprising and it does not seem plausible that one could participate in 12-months of fire and emergency work without at least a single exposure to fire, damage to property, injury, mutilation or death. High risk populations, such as fire and emergency services, have been documented in the past to under report stress and mental health symptoms (Tuckey & Scott, 2013). This may be the case here, although it should also be noted that the measure used (TSS) was designed for civilian use. As such, it may be that items were not interpreted as being inclusive of occupational exposures. For example, questions around exposure to fire and motor vehicle accidents are phrased as “Did you ever suffer injury or property damage because of fire?” and “Were you ever in a motor vehicle accident serious enough to cause injury to one or more passengers?” Such wording precludes endorsement for witnessing fire or injury in a professional context. Past research has adapted the TSS for use in high risk populations, such as law enforcement (Stephens & Miller, 1998); this may have been useful in the current study. Time frame for this study was limited by the bounds of a PhD program of research. As knowledge level did increase significantly following MAPS, it is possible that participants did not experience PTE exposure or that the benefits of MAPS would not become apparent during this time frame. The impact of cumulative PTE exposure becomes apparent over time and may not be observed within a 12-month time frame (Berger et al., 2012).

The initial impression of these results is that the intervention simply did not work in a primary prevention capacity. At the time of writing the intervention, the briefest comparable resilience program comprising multiple skills and strategies with published data was 8-hours in length (Steinhardt & Dolbier, 2008). Similar resilience programs undergoing evaluation at the time of writing were also typically at least seven hours in length (Shochet et al., 2011). Eight hours was the program length requested for the MAPS intervention, however due to time and resourcing constraints within the recruit school, 4-hours was granted, making the length of the MAPS intervention less than half that of the nearest comparable study. Discarding half of the initially proposed skills building exercises and coping strategies is likely to have had an impact on the efficacy of this program.

The mindfulness component of the training in particular was likely presented in an ineffective dose. Research around the most effective mindfulness treatment programs, such as Mindfulness Based Stress Reduction (Kabat-Zinn, 2003), have a

typical dose of eight, weekly, 2-hour sessions with additional mindfulness homework (at least 40 minutes per day; (Kabat-Zinn, 1990). A recent meta-analysis of a range of mindfulness programs cited typical program lengths of 24-56 days (Eberth & Sedlmeier, 2012). It is unrealistic to expect a single session of mindfulness practice with no enforced follow-up, as was delivered in the current version of the MAPS program, to create change. A reformulation of the program would need to consider alternatives, such as an imagery based visualisation exercise, that might more plausibly be expected to effect change from a single session (Wheatley et al., 2007; Wild, Hackmann, & Clark, 2008).

A key focus of the MAPS program was reducing barriers to treatment seeking. A measure designed to detect changes in support seeking behaviours would have been more suitable than the SSQ, which measures perceived social support and satisfaction with current supports, both of which recent research has indicated may not be linked to coping in PTSD samples (Smith et al., 2015). Stress reactions were normalised as part of the normal coping response in a range of ways, including using analogies to physical health. It may be that this normalisation process meant that the intervention recruits were more open in their reporting of distress. Decreased stigma and open reporting of symptoms may mask any potential benefit of a resilience program. Underreporting of distress or mental health symptoms is typical in high risk and male dominant populations and has been observed in similar studies involving firefighters; the additional inclusion of measures known to be more transparent in fire and emergency populations, such as alcohol use, could have been useful here (Nydegger et al., 2011; Tuckey & Scott, 2013).

The significant difference across conditions in trauma knowledge is indicative of some impact of the MAPS program. The limited conceptualisation of “resilience” as the absence of psychopathology restricted the scope of this program of research. Unfortunately, alternative possible areas of impact, such as core resilience, post-traumatic growth, feelings of efficacy, agency and competence in managing stress and treatment seeking, were not measured here. Past research indicates that people often experience depreciation as well as growth following PTE exposure (Barrington & Shakespeare-Finch, 2013). Alcohol use, which has been touted to be a more sensitive measure of stress in populations that are notorious for under-reporting mental health symptoms due to stigma (Tuckey & Scott, 2013), was also not measured. Evaluations of the Australian Defence Force’s BattleSMART

resilience training program have shown that the program significantly decreases mental health stigma and barriers to care (Moss, 2013), so it is plausible that the MAPS program also had this effect, resulting in more transparent reporting of mental health symptoms in the intervention group.

Dropouts or non-responders were an issue in the current study, as they have been in previous research. In a longitudinal follow up of US veterans, the prevalence of PTSD was almost twice as high in those who had separated or retired from the military as in current active duty service members (Schell et al, 2008 cited from Hermann et al, 2012) and the development of mental health problems has been found to increase the likelihood of attrition from the military (Hoge, Auchterlonie, & Milliken, 2006). The natural link between high distress and mental health symptoms and retirement or discharge from service can bias high risk populations to appear resilient, as it is the robust members who remain. We cannot determine whether non-responders at the six and 12-month follow-ups were different to responders in terms of mental health symptoms, coping or social support, although reports from DFES confirmed that non-responders had not left the organisation. There were proportionately more non-responders in the TAU than the Intervention group; this may be attributed to greater rapport built between the researcher and TFFs during MAPS training.

The MAPS training program may have failed to impact mental health symptoms because of statistical, design and power issues, or due to insufficient intervention dosage. However, it is also plausible that the primary prevention of PTSD and other mental health issues via group intervention is simply not effective. Past research has shown that intervening in natural coping responses, as in some cases of critical incident debriefing, can be harmful (Devilley et al., 2006). Recruit training is a time when fire and emergency personnel are acquiring one of their strongest protective factors: their preparedness, competence and professional knowledge (Basoglu, Mineka, Paker, Livanou, & Gok, 1997; Paton, 2005).

Resilience and positive psychology literature touts individual inherent strength that can be developed; the propensity to thrive can be overlooked within clinical settings where healthy individuals are rarely the focus of attention (Bonanno, 2004). While fire and emergency service workers are at increased risk for some mental health issues, such as PTSD, the majority of them will have a resilient response (ACPMH, 2013) and so, perhaps a focus on stress and PTSD does more

harm than good. Some have argued that excessive focus on “stress management” and misrepresentation of stress as harmful, when it is often adaptive and necessary, creates problems for individuals (Patmore, 2014; Vaananen, Anttila, Turtliainen, & Varje, 2012). It may be that TFFs are better served by naturally adapting to their new roles. Stimulating thought, conversation and activities around stress, PTE exposure and psychological risk inherent in their new career may have been disruptive and unhelpful for recruits. Resilience or mental health training may be better suited for established, career members of high risk professions, as a way to bolster mental health once the core competencies and skills of the profession have been acquired and consolidated through practice. Preliminary, uncontrolled research into resilience training for established emergency service workers indicates some efficacy in boosting resilience (Gunderson, Grill, Callahan, & Marks, 2014). Alternatively, resilience training may be better conceptualised and implemented as a tertiary intervention or treatment that is provided individually to career members who have had significant PTE exposure or show early signs of anxiety.

6.4.1 Future Directions and Limitations

While the key hypotheses in the current study were not supported this study is the first scientifically designed randomised control trial investigating the primary prevention of PTSD. Practical barriers around the implementation of this program, including difficulty finding organisations to collaborate with, limited time and resourcing within the recruit school and unexpected rescheduling of recruit training, may inform the design and implementation of resilience and primary prevention programs in the future. Notably, this program of research was delayed by over 12 months when consent for collaboration was unexpectedly withdrawn by a different Western Australia based organisation due to time constraints within their recruit school. As long as resourcing is limited and psychological resilience is not prioritised, these barriers to moving towards resilience will remain.

For ease of measurement within the confines of a PhD program of research, resilience in the current study was operationalised as the absence of PTSD or other mental health symptoms following trauma exposure. Evidence for the prevention of mental health issues was not found, but the absence of mental health symptoms is only one conceptualisation of resilience. It is problematic to assume that resilience is merely the absence of psychopathology because resilience and psychopathology are conceptually distinct notions (Yehuda & Flory, 2007). Future research should

include an alternative measure of resilience, such as the Connor-Davidson Resilience Scale (Connor & Davidson, 2003). Inclusion of qualitative components may also shed insight into the process and application (or otherwise) of resilience training.

The practical barriers to finding sufficient time within recruit programs to schedule resilience training indicates that recruit school is a time when TFFs are required to learn many other aspects of fire and emergency work. We must consider the possibility that providing resilience training during recruit school could interrupt natural coping responses. The impact of providing resilience training at a later time, when basic training and professional skills have been consolidated and participants are not in the midst of training stress, should be investigated. The possibility of delivering resilience training in an individual, targeted, format, rather than as a universal group program, should also be considered as individual, formulation driven training can be targeted to the needs of each participant.

In conclusion, the current study did not find evidence for the efficacy of the MAPS training program in the primary prevention of PTSD or other mental health issues in trainee fire fighters at DFES in Western Australia. The version of the MAPS program trialled in the current study was “watered down” to include only half of the original content due to time constraints within the recruit school; this may account for the unexpected impotency of the program. Trialling resilience or primary prevention programs of increased length (8 hours as opposed to 4 hours) with components that have been shown to be effective in a short-term intervention and including alternate measures of resilience as well as qualitative data collection would assist in further developing knowledge in this area.

Chapter 7: Discussion and Conclusions

7.1 Summary of findings

The aim of this program of research was to develop and evaluate an evidence-based and theory driven program for the primary prevention of PTSD. This was to be achieved via a six stage process, commencing with a systematic review as outlined in Chapter Two to identify any current research in the field and to synthesise a current evidence-base that could be used to inform program development. A cross-sectional survey of the target population, career fire fighters at DFES in WA, was conducted to confirm suitability and to explore the relationship between perceived social support and coping strategies within this population to further inform program development (Chapter Three). After an initial draft of the Mental Agility and Psychological Strength (MAPS) program was prepared it was refined by expert feedback from three psychologists and extensive consultation with key DFES stakeholders in a community-based participatory research approach, as outlined in Chapter Four (Ahmed et al., 2010). Finally, the MAPS program was evaluated in a RCT with DFES trainee fire fighters within the DFES recruit school (Chapter Five).

A general literature review (Chapter One) explored the risk and protective factors for PTSD and current resilience building research, however, little targeted research for the primary prevention of psychopathology was available, with research around PTSD prevention focussing on post-PTE exposure interventions (e.g., debriefing, screening and early intervention where symptoms were observed). Peri-traumatic arousal, appraisal, coping strategies and utilisation of social supports appeared to be factors that could be influenced through intervention (Day et al., 2003; Schiraldi, Brown, et al., 2010; Steinhardt & Dolbier, 2008). However, programs reviewed at that time were diverse in terms of program length and content with little description of their development, theoretical base or evidence-base.

To be certain of the current research targeting the primary prevention of PTSD a systematic review was conducted (Chapter Two). This review identified eight research articles outlining pre-trauma psychopathology prevention programs, none of which had a robust design. From this limited evidence-base, common program components in this literature included anxiety reduction, relaxation techniques, coping strategies, identifying thoughts, feelings and body tension, choosing how to act, attentional control and emotional processing and regulation.

Related literature indicated that boundaries and self-regulation were important in demanding professions (Hayward & Tuckey, 2011) and that a focus on coping and stress management was more beneficial than psycho-education alone.

The final step towards informing program development was a cross-sectional survey of the target population to confirm the suitability of DFES as the recipient of a primary prevention program targeting PTSD (Chapter Three). This cross-sectional survey confirmed elevated rates of PTE exposure and psychopathology within DFES career fire fighters. PTE exposure, social support and coping strategies significantly contributed to variance in PTSD symptomatology, with maladaptive coping strategies such as cognitive avoidance, avoidance through the use of alcohol and other drugs, verbal catharsis and self-directed blame, found to have a greater contribution to the variance than adaptive coping. This suggested that a primary prevention program should actively focus on decreasing maladaptive coping strategies, rather than simply attempting to build adaptive strategies.

With the preliminary reviews completed, an initial draft of the MAPS program was drafted (Chapter Five). Clinician feedback confirmed face validity and reviews indicated that experts judged the program to be clinically sound. Changes were made in response to suggestions around placement of program content, timing of each component and suggestions that more detail or explanation may be required for some key concepts. This was followed by extensive consultation with key DFES stakeholders, including the DFES psychologist, Wellness Team, chaplain, professional staff and a career fire fighter. Several iterations of the program followed consultation with recommendations to tailor examples to make them specific to TFFs and include DFES specific support services and resources.

Finally, the MAPS program was evaluated in a RCT with DFES TFFs (Chapter Six). Seventy-five TFFs participated in this trial and were followed for their first 12-months with DFES following graduation from recruit school, although due to unforeseen operational changes within the recruit school the study was underpowered. The MAPS program was reported by supervisors within the recruit school to be well received by DFES TFFs and was judged to be relevant and clinically sound by a panel of experts and key stakeholders. Participation in the MAPS program led to a significant increase in trauma-related knowledge which was maintained for the duration of the 12-month follow up period. The MAPS program was not demonstrated to have a significant impact on symptoms of PTSD,

depression, anxiety or stress and perceived social support and coping strategies were also unaffected by participation in the program.

7.2 Theoretical Implications

Due to variability within the resilience literature and no apparent “gold standard” or consistent measure of resilience at the time of constructing this program of research for candidacy (Windle, Bennett, & Noyes, 2011), it was decided to functionally conceptualise resilience as an absence of psychopathology following PTE exposure. This followed an outcome (rather than a process) model of resilience, whereby resilient individuals are thought to “rebound” to or maintain healthy psychological functioning following adversity (Bonanno, 2004; Garcia-Dia, DiNapoli, Garcia-Ona, Jakubowski, & O’Flaherty, 2013), but neglected aspects of resilience that mark it as distinct from recovery, such as maintaining positive emotions and the capacity for generative experiences (Bonanno, 2004). The failure to impact psychopathology within the 12-month follow up period may indicate that the presence or absence of psychopathology is a fundamentally different construct to resilience or hardiness (Almedom & Glandon, 2007). In the future measurement of both resilience and psychopathology would allow for exploration of this distinction and further inform the conceptualisation of resilience.

Based on the outcomes of this program of research, it is understood that we do not currently have adequate evidence for the primary prevention of PTSD via a brief, group intervention. Given the low base rates for PTSD, even in high risk populations (ACPMH, 2013), it was unlikely that a significant effect of the program would be observed within the 12 month follow up. Future research should allow for a true longitudinal design so that any primary prevention effects may be observed.

7.3 Clinical Implications

The clinical goals of this program of research were to investigate the possibility of the primary prevention of PTSD. The MAPS program was well received and was clearly shown to increase trauma-related knowledge, indicating that the content of the program was valuable from a psycho-educational viewpoint. The way in which this increase in knowledge may translate into preventing ongoing psychological distress has not been adequately addressed due to the time constraints and 12-month follow up. It may be that any potential prevention effect would not become apparent until much later, following the accumulation of stress and PTE exposure over a number of years. Time constraints within the recruit training school

indicate that alternative modes of delivery may be useful. Exploring the efficacy of delivering a primary prevention intervention in a self-guided, online format could open up the possibility of working towards primary prevention without competing for program time within the recruit training program and would provide further scope for evaluation. Based on the cross-sectional data outlined in Chapter four, therapists who are working with clients from high risk populations should be mindful of assessing social support and coping (particularly maladaptive coping) during treatment planning.

7.4 Research Implications

The findings of this program of research represent an important step forward in the field of the primary prevention of PTSD, in that a robust longitudinal RCT was used to evaluate an evidence-based and theory driven program. This contributes to fill a substantial gap in the literature to-date. The lack of efficacy of the developed program stresses the need for careful thought and planning for any future interventions. As had been observed in the debate surrounding debriefing (Rose et al., 2002; Tuckey, 2007), care must always be taken to minimise risk and avoid harm. In some cases, the ethical pathway may be to allow the inherent resilience of each individual to function without interference.

It is rare for programs to be built “from the ground up” with an evidence-based and theory driven approach that is thoroughly documented in peer reviewed literature. The extensive consultation process resulted in the development of a clinically sound program that was tailored to DFES as an organisation and was well received by TFFs, as evident in the retention of key messages for the duration of the 12-month follow up period. The impact of this program, particularly in relation to the impact of cumulative trauma and allostatic stress, may not be apparent within this time frame. Where possible, future research should extend the longitudinal design to explore the impact of similar programs over two to five years of elevated PTE exposure.

Future research in this area would benefit from considering the potential for growth. A strenuous review of the program, including updating the informing literature to include more recent examples of resilience and primary prevention research (Shochet et al., 2011) and inclusion of program components that could reasonably be expected to have an impact within a brief intervention (Wheatley et al., 2007) would benefit future designs.

7.5 Limitations

The lack of demonstrated efficacy of the MAPS program in relation to the primary prevention of PTSD may have been due to the small sample size or failure to measure associated variables, such as resilience, post-traumatic growth, alcohol use and support seeking. This may have also been due to impotence of the program due to factors included (such as mindfulness) which may not be expected to change following brief intervention and program length, which was halved due to constraints within the recruit school. It cannot be overlooked that the lack of demonstrated efficacy may also be due to an inability to modify core risk and protective factors via a brief, group intervention. Given the demonstrated robust mental health in the majority of career DFES fire fighters (Chapter Four), it should be considered that disrupting the learning process during recruit school and inherent resilience within TFFs was not beneficial or detrimental to psychological functioning.

Much of the research surrounding PTSD in high risk professions presupposes that frequent PTE exposure will lead to pathology (Burke & Shakespeare-Finch, 2011). In hindsight, measures of wellbeing, growth and a direct measure of resilience may have been useful inclusions. The consideration and measurement of resilience and PTG, as distinct constructs may have broadened the scope of these findings. There is little research examining positive outcomes following PTE exposure (Burke & Shakespeare-Finch, 2011), but past research indicates the possibility of stronger emotional bonds (Paton, 1997) and personal job satisfaction (McDowell, 1998).

7.6 Conclusions

This program of research has identified the primary prevention of PTSD in high risk professions as an important area for research. Governmental and organisational reports support the need for further research in this area, particularly with recommendations that organisations should be responsible for the mental health outcomes of employees that encounter cumulative professional PTE exposure (Community Development and Justice Standing Committee, 2012). Creating and evaluating an evidence-based and theory driven program for the primary prevention of PTSD from the “ground up” provided a valuable contribution to this argument. Where organisations may have been criticised for not providing primary prevention or resilience building strategies, this thesis has initiated an evidence-base for the efficacy of such interventions and supports current secondary and tertiary PTSD prevention measures as the evidence-based options at this time. The lack of efficacy

of the MAPS program in regards to the primary prevention of PTSD raises many theoretical questions about the way in which resilience is conceptualised and can inform future primary prevention and resilience research.

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Every reasonable effort has been made to acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.

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Appendix A: MAPS Knowledge Questionnaire

Please circle the correct answer.

1. What does MAPS stand for?
 - a) Momentary Areas of Psychological Stress
 - b) Moving Around for Physical Strength
 - c) Mental Agility and Psychological Strength
 - d) None of the above

2. Which of the following are component of strong MAPS?
 - a) Take a moment.
 - b) Assess the situation.
 - c) Plan your response.
 - d) Seek Support.
 - e) All of the above.

3. The physiological or bodily reactions to stress include:
 - a) Sweating, rapid or shallow breathing, increased heart rate.
 - b) Anger and frustration.
 - c) Tiredness.
 - d) All of the above.

4. PTSD is a likely outcome following a “traumatic” event.
 - a) True
 - b) False

5. Many people are exposed to trauma.
 - a) True
 - b) False

6. How stressful a situation is depends on:
 - a) Your assessment of the situation.
 - b) Your assessment of your ability to cope.
 - c) Whether you feel supported.
 - d) All of the above.

7. Asking for support shows Psychological weakness.
 - a) True

b) False

8. The best way to get over something is to avoid thinking about it.

a) True

b) False

9. Self care is selfish.

a) True

b) False

10. Intentionally trying to avoid a thought will increase the frequency and intensity of the thought.

a) True

b) False

11. How often do you need to work on mental fitness to maintain it?

a) Once only.

b) Never.

c) Every 2-4 years.

d) Regularly.

12. Seeking help and support means:

a) You're weak.

b) You can't cope.

c) You are likely to have stronger mental health.

13. Which of the following is a helpful coping strategy?

a) Accepting and making a plan.

b) Watching more TV to relax.

c) Going out drinking

d) Blaming others

14. Which of the following is an unhelpful coping strategy?

a) Seeking support.

b) Making an appointment with a counsellor.

c) Just trying to think about something else.

d) Taking action.

15. When people go to counselling or therapy it means:
- a) They're crazy.
 - b) They have personal weakness.
 - c) They have major problems.
 - d) None of the above.
16. It is important to know about stress because:
- a) It can lead to physical issues.
 - b) It can lead to psychological issues.
 - c) It can interfere with your everyday life and relationships.
 - d) All of the above.
17. Which is not an indicator of post-traumatic stress disorder?
- a) Flashbacks.
 - b) Insomnia.
 - c) Depression.
 - d) Personal weakness.
18. When is it critical to practice self-care?
- a) When you have been under stress for more than 6 months.
 - b) Never.
 - c) After a particularly stressful day or when you are starting to notice symptoms of stress.
 - d) When you are hung-over.
19. The best way to relax after a stressful day is to:
- a) Drink alcohol.
 - b) Get lost in video games.
 - c) Ignore everyone.
 - d) None of the above.
20. Physical fitness has nothing to do with mental wellbeing.
- a) True
 - b) False

Appendix B : MAPS Facilitator Manual



**Mental Agility & Psychological Strength
(MAPS) Training**

Facilitator Manual

Prologue

This is a research driven and evidence-based training program for the primary prevention of post-traumatic stress disorder (PTSD) in DFES Career Recruits. The content of this program was developed following a systematic review of research aimed at the primary prevention of PTSD and has been adapted to fit the needs and requirements of DFES. Evidence has shown that psychoeducation about stress, common stress responses and trauma reactions is useful, but should be supplemented with skills building around self-regulation, mindfulness and relaxation for a resilience building effect.

Unhelpful appraisals of normal stress responses and trauma reactions, as well as isolation and avoidance behaviours have been identified as salient precipitating and perpetuating factors within cognitive models of PTSD. These factors may also contribute to common comorbid issues, such as drug and alcohol use, relationship breakdown, depression and additional anxiety diagnoses.

This program draws from the philosophy of the positive psychology paradigm, with a focus on strength and highlights parallels between mental and physical wellbeing to normalise coping and to promote a focus on mental health. Research literature has indicated that often psychoeducational seminars and other similar offerings for high risk professions have a focus on trauma and negative trauma outcomes (such as PTSD); this is deliberately avoided in the MAPS program.

The program progresses through mindfulness, psychoeducation about stress, normal stress reactions and trauma reactions (including PTSD, resilient reactions and post-traumatic growth). Information about PTSD is provided to facilitate correct identification of PTSD symptoms; it is presented as a possible, but not probable, outcome following trauma. Activities around coping strategies and identification and use of social supports are also included to encourage consideration of coping options and the final session provides a recap and information about ongoing self-care.

This program should be delivered by a mental health professional with experience in training and working with groups. Familiarity with the Acceptance & Commitment Therapy (ACT) model is also beneficial. The MAPS program is to be evaluated as part of my PhD research in a randomised-controlled trial involving DFES career recruits, with a 12-month follow up, from 2012-2014.

Petra Skeffington

Note to Facilitators

This manual is designed to be both a guide through the Mental Agility & Psychological Strength (MAPS) training course as well as a resource that recruits can refer back to in the future. It is important that you are familiar with the content of the manual, however not all of this content will need to be covered in detail during the four, hour long face-to-face sessions you have available to deliver the training program.

Recruits may be invited to read ahead in the manual to prepare for lessons, but this is not expected or necessary. Be mindful that DFES career recruits are involved in a tight training schedule and may not have the time or motivation for additional preparation for this program. The content of this manual can also be considered as a guide for direction of facilitated discussions during group sessions.

Facilitation of this training is intended to be person-centred and flexible; the aims and learning objectives for each module have been clearly stated but the time allocations are approximate. With some cohorts you may find your time allocation will vary, the course should be adapted to fit the needs of each group as closely as possible while maintaining the learning objectives.

Each face-to-face session is designed to flow around the designated activities, with Socratic questioning used to facilitate discussion and learning.

The participant manual is a duplicate of this facilitator manual, with the removal of facilitator notes and appendices. Please note that as the participant manual does not include facilitator notes, page numbers (for each Module, worksheets etc.) will be different.

Different types of Socratic Questioning

- | | |
|--|---|
| <p>1. Questions for clarification:</p> | <ul style="list-style-type: none"> • Why do you say that? • How does this relate to our discussion? |
| <p>2. Questions that probe assumptions:</p> | <ul style="list-style-type: none"> • What could we assume instead? • How can you verify or disapprove that assumption? |
| <p>3. Questions that probe reasons and evidence:</p> | <ul style="list-style-type: none"> • What would be an example? • What is....analogous to? • What do you think causes to happen...? Why:? |
| <p>4. Questions about Viewpoints and Perspectives:</p> | <ul style="list-style-type: none"> • What would be an alternative? • What is another way to look at it? • Would you explain why it is necessary or beneficial, and who benefits? • Why is the best? • What are the strengths and weaknesses of...? • How are...and ...similar? • What is a counterargument for...? |
| <p>5. Questions that probe implications and consequences:</p> | <ul style="list-style-type: none"> • What generalizations can you make? • What are the consequences of that assumption? • What are you implying? • How does...affect...? • How does...tie in with what we learned before? |
| <p>6. Questions</p> | <ul style="list-style-type: none"> • What was the point of this question? • Why do you think I asked this |

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Mental Agility and Psychological Strength Training

Participant Manual

Overview

The MAPS training program is designed to build Mental Agility and Psychological Strength. We all come across stressful situations in day-to-day life, and the way that we process and respond to these situations can impact on our physical and mental health, relationships and ability to perform at work. This program will outline different responses to stress, how to utilise personal resources and how to build psychological strength and respond in adaptive and appropriate ways. The content of the program is based on current psychological theory and research in the area. The author of this program is a psychologist who has worked in a specialist trauma service.

By the end of the MAPS program, you will:

- Know more about physical, emotional and behavioural responses to stressful events.
- Know how to respond in helpful ways to maximise mental fitness.
- Know how to draw on external supports to build and maintain mental strength.
- Know how to build and maintain mental strength in day-to-day life.



Background: PTSD and Trauma

As part of your recruit training you will be familiar with basic stress responses, including daily stress, critical incident stress, and post-traumatic stress.

Here is a summary of these responses that you can refer back to.

- **Stressful Events**

Following a stressful event, there are three possible outcomes:

1. Most common is a **resilient response** (i.e. return to normal),
2. Some people will experience **growth**; and
3. Some people will experience **long term stress** and/or adverse symptoms.

When you build Mental Agility and Psychological Strength, research shows that you are more likely to have an adaptive or positive outcome following stress.

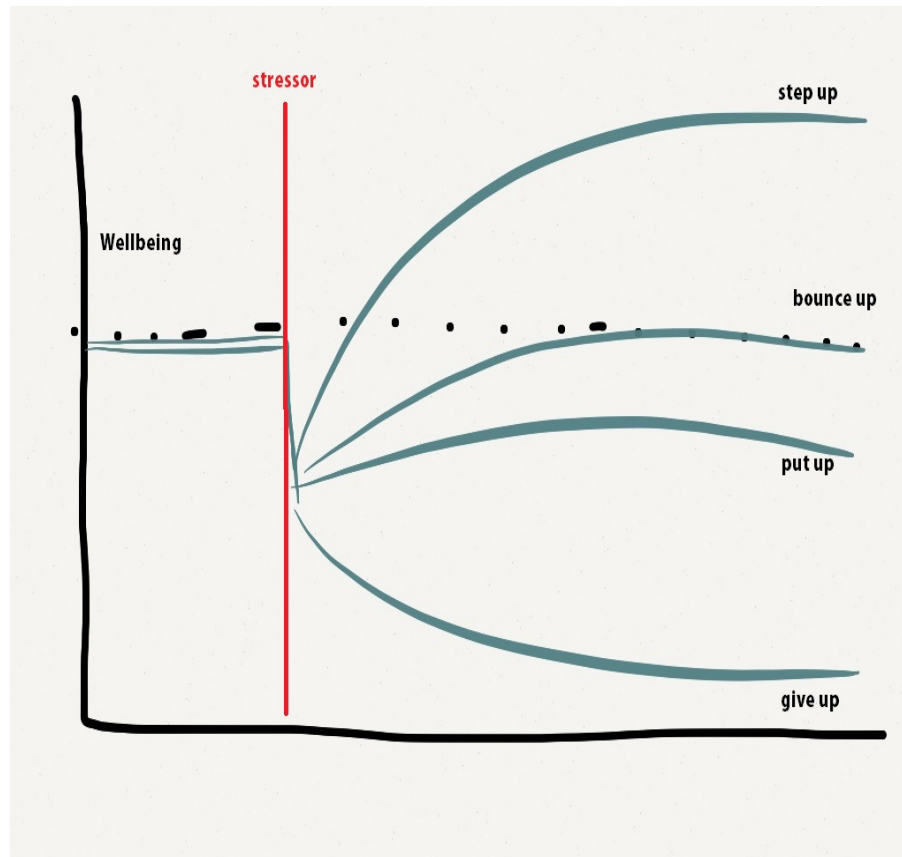
Stressors can be temporary (such as traffic), ongoing (such as financial, relationship) or momentous (such as job loss).

When responding to stress, you can give up (succumb), put up (rise back up but don't get back to where you were), bounce up (fully recover to your previous level of functioning, resilience) or step up (reach a higher level of functioning; thriving).

For example, if you lost your job you may respond in a number of different ways. One person may assess this situation as being a disaster, they may feel low, feel like a failure, withdraw from family and friends, sleep all day, watch television all night, and remain unemployed (give up).

Another person may feel like a failure and make the assessment that they will not be able to get another job easily and/or will not be able to get a good job. This person may take a job they do not like, for less pay, and remain unhappy (put up). These are not examples of resilient responses, as the assessment of the situation and possible outcomes limited each response and undermined mental strength.

If you want to build and maintain mental strength (bounce up or step up), you would first need to take a moment, and accept that you were in an undesirable situation of being unemployed. You may feel discouraged temporarily, but could continue to seek suitable employment. Some people are able to be faced with a difficult situation, such as unexpected unemployment, and respond in a way that leads to higher functioning. For example, a person that became unemployed may need to take a temporary job that may not pay as well or be as satisfying as their previous job. While working at the temporary job they may also further their education or skills via training, leading to a more satisfying job with higher pay in the long term.



A good example of stepping up, is Mike. Mike was working as a labourer; the work paid well but was repetitive, leaving Mike feeling ‘like a robot’. Despite feeling unsatisfied with his work, Mike was devastated when he lost his job during a round of cutbacks. He felt that he didn’t have the energy or motivation to find a new job. After processing the initial shock and juggling his finances, Mike decided to upskill; after further training he was able to find a new job with better pay, where he could creatively solve problems and apply his new practical skills. Mike is happier and more satisfied and has found that his relationships with his partner and friends have also improved, as he is not as drained at the end of each day.

This MAPS training has a focus on how you can develop mental strength and agility to maximise the likelihood of having a resilient or thriving response to stress.

- **Normal Stress Responses**

In the days of the caveman, stress often came in the form of physical threats that required individuals to react quickly and decisively. The body helped out by automatically clicking into high gear at the first sign of trouble, releasing a surge of hormones (notably adrenaline and cortisol) to accelerate the heart rate, raise blood pressure, increase blood sugar, and enhance the brain’s use of glucose. This stress response meant the caveman was instantly ready for fight, flight or freeze.

When in a stressful situation, you put into play the body's "fight, flight or freeze" reaction, causing the release of adrenalin and cortisol, natural body chemicals. This starts the first stage of the stress response. We each have a particular way of responding to stress. Some of us have physical signs such as muscle tension and difficulty sleeping (insomnia). Others may have more emotional reactions, such as outbursts of crying, depression, anxiety or anger. Persistent stress can impact physical and mental health; Fire Fighters are known to be at increased risk of Heart Attacks due to exposure to intense and prolonged stress.

Knowing what you do when you are under stress is the first step. To cope with stress, you need to know when it is happening. These signs of stress can give you clues you can use to change your response to stress. The next time you feel that you are getting "stressed", take the time to check your body, your emotions, your thinking and your behaviour. If you recognize some of your usual signs of stress, then you have a clue that you need to do something to cope.

Physical

When we confront a perceived danger, your body will respond in specific ways. Normal physical reactions to intense stress can include sweating, increased heart rate and increased adrenaline levels. This physical response is sometimes known as the "fight, flight or freeze" response, in which the body prepares itself to either enter combat or run away. This biochemical reaction is likely an evolutionary development; it is an automatic response and is crucial to survival.

In Fire Fighting, you will be primed to become 'ready for action' at the sound of the alarm or tone at your station. This is an adaptive response that moves your body into the 'fight' or action zone and enables quick reactions and optimal physiological capacity in an emergency. However, in some cases this response can become generalised. For example, some people may find that they react to other signals, such as a tone or click of the PA system in shopping centres, resulting in a context inappropriate stress response.

After stressful events have triggered this physiological response, it is common to experience difficulty getting to sleep, or restless and disturbed sleep and feeling tired and fatigued the next day. As our body is ready to react, in the days and weeks following a stressful event you may find you are more easily startled and may experience general agitation and tension, trembling or sweating, nausea or

gastrointestinal issues. There are many other physical signs; this is not an exhaustive list.

People may interpret these responses differently, and the thoughts, feelings and behaviours following an event can vary widely.

Thoughts

People often report frequent thoughts or images of the incident or other frightening events, a feeling of ‘reliving’ the experience, dreams or nightmares, difficulty making decisions and inability to concentrate. This is a normal reaction to an abnormal situation and is to be expected.

Feelings

Common feelings following a stressful event may include:

- Shock (disbelief at what happened, feeling numb)
- Fear (of a recurrence, for safety of self or family or apparently unrelated fears)
- Anger (at who caused it, injustice or generalised anger and irritability)
- Sadness (about losses, loss of feeling of safety and security, depression)
- Shame (for having appeared helpless or emotional, not having behaved as you would have liked)

Brain

Many people find that they have difficulty thinking and making decisions when under stress. Just as physically your body prepares for ‘fight or flight’ by directing blood flow away from your digestive system and into the major muscle groups, your brain starts to direct blood flow differently. Most of the time we have adequate blood flow around the ‘thinking’ and ‘decision making’ parts of the brain (prefrontal cortex).

Especially following a trauma, but also during times of intense or prolonged stress, your brain will decide that it is too risky to spend resources on thinking processes when you could be spending them running away or otherwise saving your life! Brain scans have shown changes in brain activity under stress, and brain scans have also shown changes in the brain following ongoing mindfulness and meditation practice. Understanding what is happening in your brain is one part of understanding how to manage stress.

Behaviour

You can behave in a range of ways following a stressful event; some are more adaptive than others. In terms of Mental Agility and Psychological Strength, some behaviours build strong MAPS and others will undermine MAPS and leave you psychologically vulnerable. When under stress, some people tend towards withdrawal, using isolation, alcohol or other drugs, TV, sex or video games as a distraction.

Behavioural responses to stress that enhance coping are typically 'approach oriented'. Identifying thoughts, feelings and physical reactions is the first step in being able to actively manage stress in an adaptive manner. Reaching out, using relevant supports, and actively managing stress promotes resilience and strong mental health.

▪ **PTSD and Trauma**

Difficult situations are part of life. We all must cope with tough circumstances, such as bereavement or conflict in personal and professional relationships, and learn to move on. But sometimes you can experience an event which is so unexpected or so shattering that it continues to have a serious effect on you, long after any physical danger involved has passed. Fire and emergency work is known for repeated, high stress and intense emergency situations. You have been trained for this and most likely will be well equipped to manage your responses and remain professional. In most cases, we become vulnerable to what is unexpected.

People who have had this kind of experience may suffer flashbacks and nightmares, in which they re-live the situation that caused them intense fear and horror. They may become emotionally numb. When this condition persists for over a month, it is diagnosed as post-traumatic stress disorder.

Post-traumatic stress disorder (PTSD) is one of several conditions known as an anxiety disorder. This kind of medical disorder affects approximately 1 in 10 people and is among the most common of mental health problems. Both children and adults can develop PTSD. The disorder can become so severe that the individual finds it difficult to lead a normal life. Fortunately, treatments exist to help people with PTSD bring their lives back into balance.

What causes it?

PTSD is caused by a psychologically traumatic event involving actual or threatened death or serious injury to oneself or others. Such triggering events are

often called 'stressors'; they may be experienced alone or while in a large group. Fire fighters are at increased risk of developing PTSD, due to the high stress nature of fire and emergency work.

When you think about the stress cycle and the role of assessment of events and your responses to the events, the way PTSD develops becomes clearer. For example, we can consider the case of Joe, who was using alcohol to get to sleep, avoided talking about the incident he was involved in and had begun to avoid family and friends in case they noticed there was something wrong with him. If Joe continued with these behaviours, he may start to create or worsen some symptoms of PTSD. Avoiding thoughts has been shown to increase the frequency and intensity of those thoughts, so by avoiding thinking about the event Joe may find that thoughts of the event become more intrusive. Talking to family and friends assists you to adjust unhelpful assessments; by avoiding talking to family and friends Joe does not have the opportunity to gain feedback and different points of view that may inform a balanced assessment of the situation. By avoiding work and reminders of the event, Joe does not learn that he is a competent fire fighter who is able to work safely.

Cumulative and unexpected stress

People often think about PTSD as a disorder that develops after one 'trauma', with flashbacks, intrusive thoughts and nightmares relating to the single 'traumatising' event. While this is true in some cases, in fire and emergency work PTSD is more likely to develop as a general response to cumulative, repeated stress and unexpected scenarios.

PTSD symptoms may be generalised, rather than specific. The 'trauma event' may not seem significant in the context of your career and past jobs you have attended, rather, it may be 'the straw that broke the camel's back'. This is common and the more quickly you identify your reaction and seek assistance, the easier it is to reverse your symptoms.

People who try to manage ongoing, cumulative and unexpected stress alone, or try to cover their stress using withdrawal, alcohol and other drugs, or other diversions, can learn unhealthy stress management skills and are more likely to be treatment resistant if they develop a mental health disorder.

What are the signs?

The symptoms of PTSD usually begin within 3 months of the traumatic event. However, sometimes they surface many years later. The duration of PTSD,

and the strength of the symptoms, varies. For some people, recovery may be achieved in 6 months; for others, it may take much longer.

There are three categories of symptoms. The first involves re-experiencing the event. This is the main characteristic of PTSD and it can happen in different ways. Most commonly the person has powerful, recurrent memories of the event, or recurrent nightmares or flashbacks in which they re-live their distressing experience. The anniversary of the triggering event, or situations which remind them of it, particularly after attending repeated similar jobs in similar locations, can also cause extreme discomfort.

Avoidance and emotional numbing are the second category of symptoms. Avoidance is when people with PTSD avoid encountering scenarios which may remind them of the trauma. Emotional numbing generally begins very soon after the event. A person with PTSD may withdraw from friends and family, they may lose interest in activities they previously enjoyed and have difficulty feeling emotions, especially those associated with intimacy. Feelings of extreme guilt are also common.

The third category of symptoms involves changes in sleeping patterns and increased alertness. Insomnia is common and some people with PTSD have difficulty concentrating and finishing tasks. Increased aggression is not unusual or feeling as though you have a 'short fuse' or are just generally 'on edge'.

Other illnesses may accompany PTSD

People with PTSD may develop a dependence on drugs or alcohol. They may become depressed. It is not uncommon for another anxiety disorder to be present at the same time as PTSD. Dizziness, chest pain, gastrointestinal complaints and immune system problems may be linked to anxiety or PTSD. These are often treated as self-contained illnesses, as people sometimes find it easier to ask for help for physical rather than mental issues; the link with PTSD will be revealed only if a patient volunteers information about a traumatic event, or if a doctor investigates a possible link with psychological trauma.

PTSD is commonly treated with a combination of medication and therapy. Research shows that PTSD is treatable and our current treatment options are effective in most cases.

Will experiencing trauma always lead to PTSD?

Following a stressful event, most people will experience some stress and then return to their prior level of functioning. This is called a resilient ('bounce up') reaction. Following a stressful event, some people will experience some stress and then approach an increased level of functioning ('step up'). For example, Viktor Frankl is renowned for surviving life in a concentration camp and later reporting high functioning in life. We also often hear stories of cancer survivors reporting having increased enjoyment and appreciation for life following their treatment.

It is important to remind ourselves that being exposed to 'trauma' does not automatically mean that a person is 'traumatised'. It can be useful (and more accurate) to think of situations as 'Potentially Traumatic Events', rather than as 'traumas' or 'traumatic events'. PTSD is not the only, or even the most likely outcome following a potentially traumatic event. However, we don't often hear about resilient outcomes or thriving (i.e. post-traumatic growth).

Using strong MAPS is likely to maintain resilience. Research has shown that people who do develop PTSD are not likely to have utilised all the components of strong MAPS, including taking a moment with mindfulness, assessing the situation and their responses, planning a course of action and utilising supports.

An infamous 'Potentially Traumatic Event' was the attack on the World Trade Centre on September 11, 2001. Research shows that of the 3,271 civilians who were evacuated from the Twin Towers at the time of the attack, 15% met the criteria for PTSD two to three years later. This means that 85% of people who were in the building at the time of the attack, had a resilient response. This reinforces the message that not all stressful events are traumatising and not all 'traumatic events' are traumatising.

DFES is aware of the nature of your job as a career fire fighter and supports are in place.

If you would like to know more about PTSD and stress reactions, or have concerns for yourself or a colleague, please use the following resources.

- Wellness Co-ordinator Phone (removed)
- Wellness Officers Phone (removed)
- Fit for Duty Coordinator Phone (removed)
- DFES Chaplain Pager (removed)
- EAP: (removed)
- EAP: (removed)

Module 1: Introduction to MAPS

Facilitator Notes & Session Outline

Session 1: Introduction to MAPS		
<p>Aim of the session: The aim of this session is to provide a brief recap about typical stress responses (especially resilient responses) so that recruits can correctly identify and interpret their own reactions following stress.</p> <p>Information concerning typical stress responses and PTSD is provided during recruit training, it is intended that this module emphasises resilience as a common outcome and raises awareness about post-traumatic growth.</p> <p>The second part of this module covers coping style, and aims to raise awareness about different ways to cope and how to choose coping options.</p>		
<p>Session learning outcomes: By the end of this session recruits should:</p> <ul style="list-style-type: none"> ▪ Understand physical, mental and emotional stress responses. ▪ Be familiar with typical responses to stressful events (resilient, diminished, succumbed and thriving) ▪ Be familiar with trauma outcomes (PTSD, resilience and Post-Traumatic Growth) ▪ Be familiar with helpful and unhelpful coping strategies ▪ Be able to identify their own typical coping strategies. 		
Time	Content	Materials
15 minutes	<p>Overview of MAPS</p> <ul style="list-style-type: none"> - How to create strong MAPS - Introduce the physical fitness/ mental fitness analogy <p>Extend the analogy: mental fitness also requires ongoing practice, sometimes will need professional assistance (E.g. trainer, physio/ psych, counselor) and both mental and physical should be attended to for overall fitness and wellbeing.</p>	PowerPoint slides
10 minutes	<p>Discussion: coping style</p> <p>Show a PowerPoint slide/ overhead listing a number of different coping strategies.</p> <p>Possible discussion questions:</p> <ul style="list-style-type: none"> - Do you use any of these strategies? - What are your favourite strategies? - Is this strategy usually helpful/ unhelpful? Why? 	Discussion
10 minutes	<p>Helpful vs. unhelpful coping styles</p> <ul style="list-style-type: none"> - Approach & avoid - Aim of approaching styles (E.g. to address the problem) - Aim of avoidant styles (E.g. to avoid 	PowerPoint slides, discussion

	<p>uncomfortable thoughts and feelings)</p> <ul style="list-style-type: none"> - Go back to the coping styles slide and classify each strategy as helpful or unhelpful 	
15 minutes	<p>Activity: Choosing your response Present a scenario or ask recruits to think of a recent stressful event. Fill out the worksheet, identifying the event, coping strategies used and then working through the MAPS model to explore alternative outcomes. Allow time to discuss as a group, or if time is limited complete the worksheet together using a relevant scenario.</p>	<p>Choosing your response worksheet (worksheet 2.1 in participant manual)</p>
Conclude	<p>Recap the importance of knowing about stress and typical stress responses and choosing strong coping styles to promote mental fitness.</p>	

Module 1

Introduction to MAPS

In this module, we will explore the second and third steps to creating strong MAPS- making an assessment of the situation and your experience, choosing your desired outcome and planning a response. We will talk more about the other two parts (Taking a Moment and Supports) in the other modules.

Creating strong MAPS:

1. Moment- Take a moment to choose the strongest option.
2. Assess- Make an assessment of what the situation is, what is happening for you (internally and externally) and what outcome you would like.
3. Plan- Plan your course of action
4. Support- what support might you need to follow through with the strongest possible response?

In order to assess internal and external events accurately, you need to have the correct information. A common source of distress, which can lead to poor psychological outcomes, is the misinterpretation of stressful situations and the misinterpretation of your own responses to stress.

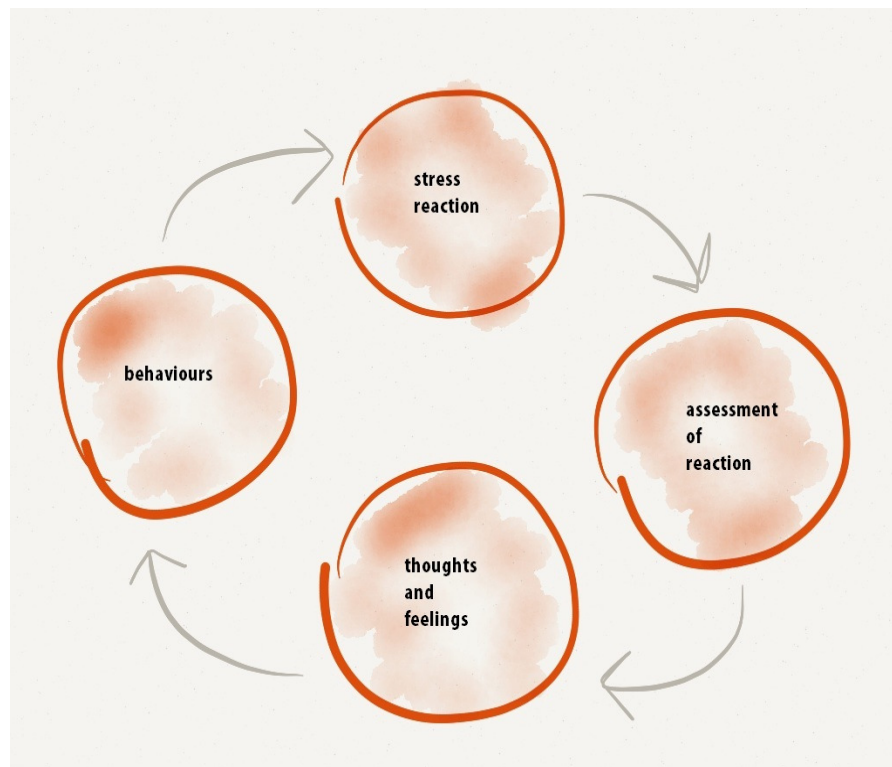
▪ **What happens when you are under stress?**

You don't need to be physically strong to carry out day-to-day tasks, such as lifting a water bottle. However, more strength is needed when you need to lift a small weight for a very long period of time, or when heavy lifting is required. Similarly, Mental Agility and Psychological Strength often go unnoticed in day-to-day life, until there is a major stress event or you have an accumulation of smaller stressors.



Unhelpful behaviours that can undermine mental strength include withdrawal and avoidance. Your mind revisits the event via thoughts, images and dreams for a reason- it needs to process the event. Research shows that thought suppression (trying to not think about something) directly increases the frequency and intensity of that thought. It can seem normal to feel like keeping to yourself or stepping back from your usual activities, and for brief periods (E.g. a couple of days) this can be useful. However over extended periods of time, withdrawal is unhelpful and can make recovery more difficult.

Helpful behaviours are behaviours that encourage processing of the event and utilise all available supports to maximise mental strength. This can include using your available supports, working on your self-care (such as exercise, nutrition, mindfulness, meditation and sleep) and addressing any uncomfortable thoughts or feelings. In some cases this may include formal counselling or psychological support.



All parts of your stress response are important, so it is useful to be familiar with the entire stress cycle. The way you assess and respond to a stressor can increase stress, making your stress reaction worse, or break the stress cycle, providing relief.

Following a stress reaction, your assessment of your reaction can alter your interpretation of thought and feelings and lead to helpful (or unhelpful behaviours). This in turn can fuel or defuse the stress reaction.

For example, Joe is a first year fire fighter who witnessed his first critical incident in which a 39-year old woman and her 7-year old child died in a terrible car crash. Joe has just come back to the station from the accident scene and is struggling with his emotional reactions to the incident. Joe decided that people would think he was incompetent and foolish if he said anything, so he avoided talking about the incident to anyone. Following this event Joe found that he had trouble sleeping, was jumpier than usual and had frequent thoughts about the accident. Joe assessed these

reactions as a sign that he was not coping and decided that he should not tell anyone about what was happening for him. He used alcohol to get to sleep at night, but this left him feeling seedy and unable to function as well the next day. Joe was worried that people would notice he was not coping so he stopped socialising with colleagues after work and withdrew from his wife. He started to call in sick so he would not have to face his colleagues or the general public. In this example, Joe's assessment of his reactions as abnormal and his resulting behaviours undermined Psychological Strength.

If Joe was well informed about what might happen to him following stress, he could have assessed his situation differently. He could have accurately assessed his normal physiological reaction to stress and his mind's attempts to process and integrate the information. Joe would have also known that talking about the event and using the support of people around him would facilitate this process and promote mental strength. Joe would have also been aware of appropriate self-care strategies that he could use following such a strong stress response, to manage his physical reaction and promote healthy sleep.

You have many protective factors that counteract stress. The stronger your protective factors the less likely you are to get knocked down. These factors can include biological or physical factors, such as healthy sleep routines, good nutrition and regular exercise. Other factors such as humour, strong self-esteem, good time management, prioritising and family or social support can also build and maintain mental strength.

When you build on your protective factors, you build your mental strength. This MAPS training will cover biological processes that feed into and maintain mental Strength, different psychological strategies you can use to build mental strength and the role of social support and utilising personal resources.

Make a Plan

So far we have covered how you assess your situations and your response (such as thoughts, feelings, physical responses). In this section, we will cover how you can make a plan for a strong response, to maintain and enhance resilience.

If you do not stop to choose your response, then you are not able to create strong MAPS. Choice is critical at every level. Once you have made the choice to take a moment, assessed the situation and your response, you then need to plan your desired outcome and how you will respond.

When you are planning your response, it is important to choose the most appropriate coping style for the situation. Coping style may influence your assessment of an event, your reactions and your plan for action. It can influence thoughts, feelings and behaviour.

Approach-oriented coping (a coping style incorporating active attempts to deal with stress) has been associated with building and maintaining mental strength while avoidance-oriented coping (e.g. mental escape, distraction, thinking over and over about the same scenario) has been linked with reducing mental strength.

Approach-oriented coping happens when efforts are directed at solving or managing the problem that is causing distress. It includes strategies for gathering information, making decisions, planning and resolving conflicts. This type of coping effort is usually directed at finding resources to help deal with the underlying problem and includes instrumental, situation-specific and task-oriented actions (E.g. making a plan for action, identifying positives, accepting the situation).

Avoidant-oriented coping is coping that is directed at managing or reducing emotional distress, rather than the underlying problem. This coping style includes cognitive strategies such as 'looking on the bright side' (denying the problem) or behavioural strategies such as complaining, having a drink or using drugs.

Stress is a matter of perception. What is stressful for you may not be stressful for someone else. For example, being handed a box full of kittens may be delightful for one person. However this event can be distressing for someone who is allergic to cats, has had negative experiences with or a fear of cats.

Approach oriented coping is linked to high resilience, less stress and less illness. It is direct action, doing something to get the stressor to stop. With ongoing marketing of 'happiness' programs. We can develop a belief that we are supposed to be happy all the time. In fact, humans are designed to experience a wide range of emotions, including happiness, sadness, anger and fear. Being resilient is not about always feeling happy and on top of things, but rather is about being willing and able to experience some degree of distress or discomfort some of the time.

People who lift weights are familiar with this. They experience the ‘distress’ or ‘discomfort’ of lifting a heavy weight time and time again, followed by muscle soreness, with an understanding that by tolerating this distress they will become stronger in the long term. People who avoid discomfort by never going to the gym and never lifting heavy weights will not build up physical strength and will not be physically strong when put to the test.

The more you practice using this coping style the less stress and illness you will have in your life. You will create a foundation of resilience for yourself. Creating strong MAPS is an example of an approach oriented coping style.

Avoidant-oriented coping strategies are typically viewed as less helpful. They can be used in the short term when you feel overwhelmed or as though you don’t have any control over the situation, but if used repeatedly, these strategies can chip away at mental strength and general wellbeing.

Examples of avoidant-oriented coping strategies are denial (if I ignore this problem it will go away), disengagement (reduce effort or give up), self-distraction/mental disengagement (watch TV, sleep, drug or alcohol use), self-blame (negative self-talk), venting and complaining. When used long term this coping is linked to more stress and more illness. It doesn’t solve the problem.

When lifting weights or going for a jog you purposely overload your muscles so that they can grow physically. Psychological growth is the same, some stress can be helpful. Both overtraining (too much stress) and under training (too little stress) is not useful. It is the relaxation in recovery that is important. Psychological growth is just like lifting weights or exercising. Stress is lifting the weights and loading up your mind so that then you can relax or recover.

Approach oriented coping is closely linked with taking responsibility. When you cope in this way you take responsibility for your own behaviour and for choosing your coping style. People who do not take responsibility more commonly use an avoidant-oriented style, including blaming and denial.

Taking responsibility is owning your power to choose and create. Coping style and other reactions can feel ‘automatic’, as though you do not have a choice. One of the most important steps is to find the time and space to make a wise choice about how you will react. The more often you practice making this choice and exercising your mind, the easier and more ‘automatic’ the process will become.

Take this time to complete the worksheet ‘Choosing your response’ on the next page.

Many people give their power and control away. When you give your power away you aren't resilient. You can take responsibility and also prefer that someone behaved differently. Responsibility is linked to acceptance- even though the situation looks bleak there is always something you can do.

There are some things you don't have control over, but you probably have more control than you realise. It's ok to be frustrated at someone else's role in a situation, but ultimately you can't control others' actions so it's not helpful to stay focussed on this.

You can be in control of your reaction even when you have no control of the situation. You can adapt and adjust and your response may impact opportunities you have in the future.

We have now covered steps 2 and 3 of creating strong MAPS. In Module 2, we will explore ways in which you can 'take a moment' and in later modules we will cover how you can choose your supports and set up your own self-care plan.

If you don't know what to do you make a plan. Here are some examples of approach-oriented coping strategies:

Positive reframing- trying to think about the stressor differently, think about it from a different perspective.

Acceptance- accepting the reality of the situation. Based on this reality what action can I take, how can I think about it differently? Choosing the most appropriate support is also a key aspect of strong coping- this will be discussed in our next session.

Seeking Support- think about what kind of support might be useful for a strong response in this situation. The right support could be professional, informal, practical, someone to 'just listen', someone to provide solutions/ideas. Think about what you need and choose the support person to match.

Face the problem- identify what uncomfortable thoughts and feelings might be coming up. Remember that avoiding thoughts and feelings will increase their frequency and intensity, it is important to process what is bothering you.

Move the spotlight- practice moving your 'spotlight' around to different aspects of the problem (this will be covered further in Module 2).

Use the MAPS process- go over the MAPS process to help you remain mentally strong.

WORKSHEET 1.1: Creating strong MAPS

Think of a recent stressful event. Write it down and work through your response before applying the MAPS process to see if you could have responded differently.

Situation	Response- <i>circle the responses you utilised</i>	Creating MAPS
<i>What happened that was stressful or frustrating for you?</i>	Action	1. Moment- Take a moment to slow down so that you can effectively create your MAPS.
	Denial	2. Assess- What was it about the problem that was difficult, stressful or frustrating?
	Planning	What thoughts did you have? What feelings did you have?
	Avoid thoughts and feelings	<u>Thoughts-</u>
Positive Reframing	Alcohol/ substance use	<u>Feelings-</u>
Acceptance	Self-distraction	<u>Behaviours-</u>
Support Seeking	Blame	3. Plan- what outcome would you have liked?
Utilising Resources	Complaining	4. Seek support- what kind of support or resources might you need to implement your plan in the strongest possible way? Do you need instrumental support, emotional support, training, information or any other resources?
Other (Specify)		

Summary

Stress and trauma can influence your body, thoughts, feelings, brain and behaviour. These responses are what your body is supposed to do under stress and are normal, but can be misinterpreted and mismanaged. Following stress, most people show a resilient response ('bounce up'), but some show a diminished or succumbed response (remaining at a lower level of functioning; 'put up' or 'give up') and others will thrive ('step up'). You can choose your responses to put yourself on the path to resilience and thriving and correctly identifying and managing stress. Using helpful coping strategies rather than avoidance and other damaging tactics is recommended.

Module 2: Taking a Moment

Facilitator Notes & Session Outline

Session title: Taking a Moment		
Aim of the session:		
The aim of this session is to introduce recruits to MAPS training and to introduce and practice defusion and mindfulness.		
Session learning outcomes:		
By the end of this session recruits should:		
<ul style="list-style-type: none"> ▪ Be familiar with the MAPS model ▪ Be familiar with the analogy between physical strength and mental strength ▪ Understand mental strength as one component of overall fitness ▪ Have participated in one defusion/ mindfulness exercise 		
Time	Content	Materials
5 minutes	Recap of MAPS model Introduce mindfulness/ taking a moment.	PowerPoint slides
Activity 5 minutes	What might be features of people who are mentally strong? <ul style="list-style-type: none"> - What things do they say? - What things do they do? - How do they behave? Draw out common threads that are consistent with mindfulness, such as thinking before they speak/act, staying in control, living in line with values etc.	Record brainstorm responses on whiteboard
15 minutes	Step 1: Take a Moment Introduce concept of defusion. Explore different defusion methods, ways of changing your relationship with your thoughts and feelings. What is it like to be fused with thoughts and feelings? (Use ACT in a Nutshell metaphor- see Appendix A)	PowerPoint slides/ discussion
20-25 minutes	Defusion exercise (Thinking vs. observing self) Use 10 minutes to conduct the guided defusion exercise, and 10-15 minutes to discuss as a group. Discussion questions: <ul style="list-style-type: none"> - How was that exercise for you? - Are there any times when it might be 	Defusion script (Appendix B)

	useful to return to your observing self?	
Conclude	Emphasise the need for daily practice. Invite recruits to refer back to their workbook and to practice brief mindfulness & defusion activities throughout the day.	

Module 2

Moment- Take a Moment to create strong MAPS

The first step in building a strong response is taking the time to choose this pathway.

Before lifting a heavy object, you need to prepare. Place your feet correctly, engage your core muscles and lift safely. At first you will need to think through each step carefully to avoid injury, but as you practice, you find that all of these steps happen automatically and you can quickly lift safely and with ease. Learning to take a moment, especially when under stress, can at first seem difficult and inconvenient. However, with daily exercise this also becomes an automatic and protective practice.

First, we need to outline how we choose to take a moment to consider the situation and to make a decision about our response. This is often ‘easier said than done’, especially when under pressure. When we are stressed it is very easy to react automatically and quite difficult to slow down and think things through.

You may become fused with your thoughts, feelings, reactions or experience. We are going to take some time to learn how to defuse, so you can take a moment. Defusion means learning to step back or detach from unhelpful thoughts, feelings, worries, memories or experiences. Instead of getting caught up in your thoughts and feelings, or pushed around by them, or struggling to get rid of them, you can learn how to let them come and go- as if they were just cars driving past outside your house. You can learn how to step back and watch your thinking, so you can respond effectively.

It can be useful to think of your life as being like a stage show. Sometimes when you are under stress you have the spotlight on your thoughts (“I can’t do this”) or feelings (frustrated, overwhelmed), and the rest of the stage is dark. This means that you may not be attending to things like your goals, how you would like to behave and whether your actions will build or undermine mental strength.

It takes daily practice to be able to choose to create strong MAPS. The good news is that you can take a moment at any time to do so. Sometimes you can be so swept up in a reaction, so fused with your thoughts and feelings, that you have gone down an action path before you know it. It is ok to stop at any time, take a moment, think about your assessment, make a plan and seek support.

Sometimes, you will find it useful to create strong MAPS in hindsight. Perhaps a situation occurred that you have already responded to, but afterwards you are not satisfied that you responded in the strongest way.

It can be useful to go through the MAPS process at a later time to identify what you may have done differently if you had taken a moment. You may even identify different supports that can build your strength for next time! Perhaps you will identify an area you need more practice or training in, something you would like to know more about or a person that could have been a strong support. Going through this process and following through to build Psychological Strength will give you the best chance of responding in the way you would like in the future.

Summary

Learning how to 'take a moment' takes daily practice, just like any other new skill. Taking a moment allows you to take a step back from your thoughts, feelings and reactions, so you can gain perspective. Practising daily mindfulness and defusion is a good training exercise for stepping back from judgement and choosing the best action for your long term physical and mental wellbeing.

Brief Defusion Exercises

- **I'm having the thought that** pick a painful thought, and buy into it for a few seconds. Then replay it in your head with this phrase in front of it - and to notice what happens. Do the same again, but this time with a longer phrase: *I notice I'm having the thought that ...*
- **Computer screen** pick a painful thought, and buy into it for a few seconds. Imagine it on a computer screen. Change the font, and colour. Alter the formatting: space the words out, bunch them together, run them vertically downwards. Animate the words, like the cartoons on Sesame Street. Then put them back in their original form on the screen. Finally imagine a 'bouncing ball' jumping from word to word, as in a karaoke 'sing-along'. Then notice what happens.
- **Naming The Story** *'If we turned all these painful thoughts, memories, feelings into a movie or novel, and we called it 'The Something Something Story' – what title would you give it? See if you can cut it down to 2 or 3 words – e.g. the 'loser story' or the 'life sucks story'. Whenever any thought, feeling or memory that is connected with that story shows up, silently say to yourself, 'Aha! Here's the ___ ___ ___ story.'*
- **Thanking your mind** Treat your mind like it's an annoying teenager, trying to get a reaction from you. Whatever it says, no matter how scary or nasty, reply, with a sense of humour, *Thanks mind!* Then notice what happens.
- **Silly voice** pick a painful thought, and buy into it for a few seconds. Then replay it either in your head, or out aloud, in a silly voice. Then notice what happens.

(From Act in a Nutshell, 2011)

Module 3: Seeking Support

Facilitator Notes & Session Outline

Session 3: Seeking Support		
<p>Aim of the session: The aim of this module is to raise awareness about different types of support for different needs or situations. It covers instrumental support, emotional support and available resources. The importance of using support to promote mental strength is emphasised, and recruits are asked to identify a range of supports across different areas of their lives.</p>		
<p>Session learning outcomes: By the end of this session, recruits should be:</p> <ul style="list-style-type: none"> - Familiar with instrumental support, emotional support and resources. - Have identified people or supports that are available across these 3 types of support, in 3 settings (work, personal and other). - Be aware that support is a protective factor that protects mental fitness. - Be aware that withdrawal and isolation are risk factors that undermine mental fitness. 		
Time	Content	Materials
5 minutes	Recap of MAPS model and what has been covered so far.	
10 minutes	Brainstorm different kinds of support (instrumental support, emotional support and resources). Use group discussion to identify what kinds of support are appropriate for different scenarios.	PowerPoint slides
15 minutes	Present short vignettes for group discussion. Identify the problem and appropriate supports for each vignette.	Whiteboard
10 minutes	Activity- complete the identifying supports worksheet. Briefly discuss as a group, and recap stress responses and the usefulness of having a record of available supports (e.g. we are often not able to think as clearly when under stress, so having a list of supports to refer back to can be very useful/ sometimes when under stress we feel as though we are alone or do not have many options)	Identifying supports worksheet (Worksheet 3.1 in participant workbook)
5 minutes	Discuss meaningful connections- sometimes not everyone around us will be supportive and we need to adjust.	
10 minutes	Activity- meaningful connections worksheet Recruits are asked to identify the people around them, and whether these people have a positive or negative influence on their	Meaningful connections worksheet (worksheet 3.2 in

	wellbeing. Discuss as a group.	participant workbook)
Conclude	Recap the importance of knowing your support options and how this fits into the MAPS model.	

Module 3

Seeking Support

Over the past two modules you have covered appropriate assessment of situations and reactions, and learnt about how to plan in a way that will encourage mental strength.

Creating strong MAPS:

1. Moment- Take a moment to choose the strongest option.
2. Assess- Make an assessment of what the situation is, what is happening for you (internally and externally) and what outcome you would like.
3. Plan- Plan your course of action
4. Support- what support might you need to follow through with the strongest possible response?

In this module we will talk about Seeking Support, how to identify what kind of support you need, what support is available and how you can utilise your resources for a strong outcome.

When we talk about social support, we often have a distinct idea about what this means. Many people think of social support as the ‘warm fuzzy’ feeling you get from friends and family. For some people using social support is about sharing every detail of their day with a loved one or having a deep and meaningful conversation about stressful situations or relationships. For others it is about practical help, finding solutions to problems or pleasant companionship.

In fact, there are several different kinds of social support, and it is important to know what they are so you can choose the best kind of support for each situation.

Instrumental support is practical assistance. Maybe you need help to physically lift something, need to borrow a book/ some tools/ some money, would like some hands on advice or want to talk to someone with expertise or experience in a particular area. When you keep to yourself during times of stress or when trying to solve a problem, you may be trying to ‘reinvent the wheel’. Often other people have been in similar situations, have solved similar problems or may be able to offer a different perspective. Instrumental support is tangible and useful assistance.

Emotional support often takes the form of listening, reflecting and helping you to feel heard. Many people will find this kind of support through friends and family, but sometimes talking to an objective outsider (such as a counsellor or

psychologist) is most useful, as you can talk frankly about your thoughts and feelings without being judged. When problems feel overwhelming or out-of-hand, using emotional supports to 'talk through' or process your thoughts, feelings and behaviours can help to untangle what is happening.

A final kind of support is **resources**, which can include skills building, additional training or education, books and information. This workbook and the MAPS training program are a good example of resources, they are providing skills that you can apply and use and building the depth and strength of your mental fitness.

While emotional support can be found via counselling, a counsellor or psychologist can also be considered a resource, as he or she can assist you to identify problems and target skills and strengths to be built on. Other resources may include internet forums, relaxation or mindfulness audio recordings, gyms, and other training facilities (to improve your professional skills).

It is important to identify these 3 kinds of supports across all areas of your life (professional, personal, financial, physical, intellectual, spiritual, family, emotional etc.). Having more options across support types increases your chance of choosing the best possible support for each situation. For example, your partner or friends may not understand some aspects of your work or may not want to hear about work issues every day. Having a work colleague or mentor who understands your professional circumstances and has an interest in your area of work may be a more appropriate choice for exploring work stressors, but may not be appropriate for discussing personal relationship or financial issues.

Different people have different strengths and will be more or less able to provide some types of support. Sometimes a partner can provide emotional support, but not instrumental support. Some people are very practical and are great for problem solving and instrumental support, but would not be well suited to providing emotional support. Choosing the right person and the right kind of support helps build mental strength and strong outcomes.

Take this time to complete the worksheet 'identifying supports' on the next page, which will help you to identify different supports you have available across

Keep this list and refer to it when under stress. Research shows that when under intense and prolonged stress, most people do not think as clearly as when they are relaxed. Using a record of your support options (like this one) will help you to recognise and utilise appropriate supports, even when under stress.

Part of your mental fitness regime may include looking over and updating this list periodically, as new supports enter your life and old supports become less appropriate or less useful.

Worksheet 3.1: Identifying Supports

Record different types of support you may need to utilise and the names of people that can assist. Do this for both personal and professional resources. If you have more than one aspect of personal or professional resources that you would like to explore, use the third column to do so.

Type of support	Professional	Personal	Other
Instrumental support (E.g. practical assistance, hands on, advice, professional opinions etc.).			
Emotional Support (E.g. people who can listen and be supportive)			
Resources (E.g. people and places to go to for skills building, training, education etc.).			

Creating Meaningful Connections

The kinds of supports you surround yourself with and how you utilise them help you to remain in control of your life. We often don't think about the people around us and how they are impacting on our wellbeing, and we do not always get to choose (such as in family and work colleagues!), but you can consider how to interact with the people around you and who you want to spend time with when you do get to choose.

It is important to notice the people in your life who are supportive, loving, helpful, fun and who make you feel good. It is just as important to notice the people around you who are negative, draining or leave you feeling unsure or bad about yourself.

Social isolation is a risk factor for many physical and mental problems; conversely, rich social support has been shown to act as a buffer against physical and mental stress.

Take this time to complete the worksheet 'Identify meaningful connections', which will help you to identify positive supports in your life.

The goal of the exercise is to have as many people with 'pluses' next to us as possible. If people are not positive we need to work on the relationship or exclude them. It is important to have connections in your life that add value.

NOTE- you might prefer to use initials here, and be mindful of keeping this worksheet private to avoid causing offence.

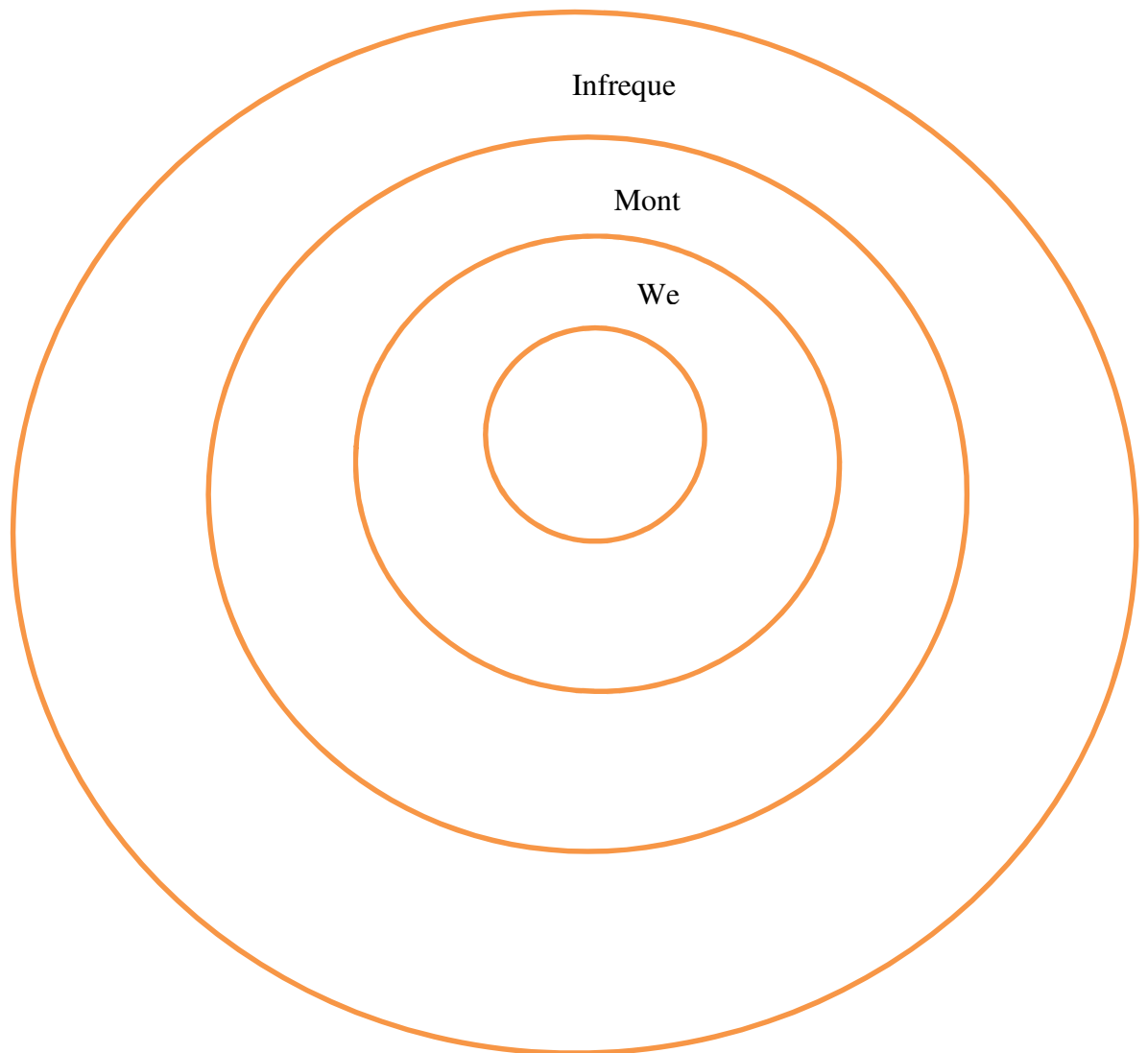
Now that you have identified some of the useful (and not so useful) people in your life, you may like to go back to your support table to update it with any supports you might have missed before.

So far, we have covered Taking a Moment, Assessing situations, Planning a strong response and Seeking Support. In the final module, you will learn about taking care of yourself during day-to-day life to promote ongoing mental strength.

Worksheet 3.2: Identify meaningful connections

Write your name in the middle of the circle below. Then write the names or initials of the people you see on a daily, weekly and monthly basis in the relevant circles. The outermost circle is for people you see infrequently. When you're finished, go back and put a plus sign (+) beside each person that makes you feel good and a minus sign (-) by each person that drains you. The goal of this exercise is to begin to shift people around so that you surround yourself with people that bring you positive energy and brighten up your life.

NOTE- you might prefer to use initials here, and be mindful of keeping this worksheet private to avoid causing offence.



Summary

When under stress, some people prefer to withdraw, push people away or manage things alone; in the past some people have viewed help seeking as a sign of weakness but this is no longer the case. It is widely known now that using different kinds of help and support are important, particularly if you want to flourish personally and professionally. Withdrawal and social isolation are mental and physical health risk factors; using the supports around you for different kinds of help when needed will buffer against stress and improve your chances of thriving.

Module 4: Your Ongoing Strength Program

Facilitator Notes & Session Outline

Session 4: Your Ongoing Strength Program		
<p>Aim of the session: The aim of this session is to provide psychoeducation about self-care for the ongoing maintenance of mental fitness.</p>		
<p>Session learning outcomes: By the end of this session recruits will:</p> <ul style="list-style-type: none"> - Be familiar with the term ‘self-care’ - Be familiar with self-care strategies - Have identified personal stress reactions across 4 domains - Have planned self-care strategies across 4 domains (physical, emotional, mental and professional) 		
Time	Content	Materials
15 minutes	Recap the previous sessions and the MAPS model. Extend this discussion as it is the final session. Allow time to explore whether any recruits have applied any MAPS strategies so far, whether recruits have practiced defusion (and whether they have found it helpful) and how they expect to apply MAPS training in the future.	
10 minutes	Introduce the concept of self-care. Return to the analogy between physical and mental fitness, elaborating on the body-mind connection and the importance of sleep, exercise and a healthy diet.	
10 minutes	Worksheet: Identifying stress In module 2 we talked about stress reactions. Emphasise that while self-care is always important, it is when we start to see hints of stress impacting us that it is crucial. Ask recruits to read through the list of stressors across 4 domains and mark off which symptoms of stress they do or have experienced. Initiate a group discussion about what recruits have noticed. Possible discussion points: <ul style="list-style-type: none"> • what symptoms have you experienced? • Some symptoms are opposite 	Worksheet 4.1 (Identifying stress)
10 minutes	Worksheet: Self-care strategies Ask recruits to complete a worksheet identifying self-care/mental strength	Worksheet 4.2 (Self-care strategies)

	strategies across 4 areas of life. Have a group discussion about the kinds (and diversity) of self-care strategies recruits have identified.	
5 minutes	Group discussion recapping self-care and signs of stress and how to respond if you believe a colleague is not coping. After emphasizing diversity of stress responses and coping styles, first step should be to raise it with your peer	
5 minutes	Conclude- recap MAPS one final time, check in with recruits and answer any final questions.	

Module 4

Your ongoing strength program

This module will cover how to take care of yourself on a day-to-day basis to promote Mental Agility and Psychological Strength.

What is self-care?

Self-care is personal health maintenance. It is any activity of an individual, family or community, with the intention of improving or restoring health, or treating or preventing disease.

Self-care includes all health decisions you make for yourself and your family to get (and stay) fit, both physically and mentally.

Self-care is [exercising](#) to maintain physical fitness and good mental health. It is also [eating well](#), practicing [good hygiene](#) and avoiding health hazards such as excessive [smoking](#) and [drinking](#) to prevent ill health. Self-care is also taking care of minor ailments, long term conditions, or your own health after discharge from secondary and tertiary health care.

What we have covered so far in creating MAPS is part of self-care. When you take the time to sit back, assess the situation, make a plan and utilise your support and resources, you can plan to act in a way that will build Mental Agility and Psychological Strength rather than undermine it. You can choose pathways that will not drain your energy and resources and choose to be around people and situations that are revitalising.

Tips for self-care and ongoing psychological strength maintenance have been included throughout this manual.

Daily practice of mindfulness or mental direction tasks (for example, moving the spotlight of your awareness) is a good way to maintain psychological strength and mental flexibility.

Periodic reflection will allow you to stay on path to your long term goals and to keep your life in perspective.

Times of periodic reflection are also well used to update your list of supports and strategies, so that you are well prepared when stress arrives.

Self-care is particularly important when you are under stress. When you are creating strong MAPS, you can consider including self-care components if you feel that you have had an especially difficult day/week/month, are feeling under pressure, feeling drained or just not feeling quite right. When under stress, your self-care strategies can also act to flush out physiological stress responses (E.g. drinking water, eating nutritious meals and exercising).

Your ongoing physical and mental health relies on a number of approaches. Your mind and body are connected and impact each other, so both need your attention to promote general wellbeing and life satisfaction. Regular exercise, eating a healthy and nutritious diet, maintaining regular sleep (as much as possible), ongoing education, social connections and recreational challenges are all important in maintaining your physical and mental health and wellbeing.

Physical strength has been shown to be related to mental strength and regular physical activity will 'flush out' built up cortisol and other stress hormones that have been produced from daily and work stress. If you find that you are feeling down, have trouble sleeping or eating, are feeling irritable or are otherwise 'out of sorts', check in on your physical activity. It is a great starting place for promoting health and wellbeing, is (relatively) easy to change and can make a real difference for you, physically, emotionally and psychologically.

Providing your body with the right nutrition is also important for the production of neurotransmitters, hormones and for maintaining energy and concentration. Your body is not designed to be overloaded with alcohol and unhealthy processed foods, so be mindful of this when you are feeling 'flat' or under increased stress.

The basics of self-care:

Make a point of exercising – Regular physical activity improves psychological well-being and can reduce depression and anxiety. Joining an exercise group or a gym can also connect you with a new group of people.

Eat well- maintain a healthy diet, even on busy days. You need to give your body the right fuel if you want your body and mind to function well.

Sleep- maintain your sleep as much as possible. Use powernaps, a consistent bedtime routine and good sleep hygiene to stay on track.

Daydream – Close your eyes and imagine yourself in a dream location. Breathe slowly and deeply. Whether it's a beach, a mountaintop, a hushed forest or a favourite room from your past, let the comforting environment soothe you.

Learn ways to cope with uncomfortable thoughts and feelings – Negative thoughts can be insistent and loud. Learn to interrupt them. Don't try to block them (that never works), but don't let them take over- use your observing self to maintain balance and choose your behaviour.

Do one thing at a time – For example, when you are out for a walk or spending time with friends, turn off your mobile phone and stop making that mental "to do" list. Take in all the sights, sounds and smells you encounter.

Enjoy hobbies – Taking up a hobby brings balance to your life by allowing you to do something you enjoy because you want to do it, free of the pressure of everyday tasks. It also keeps your brain active.

Set personal goals – Goals don't have to be ambitious. You might decide to take a walk around the block every day; to learn a new skill or hobby; to call your friends instead of waiting for the phone to ring. Whatever goal you set, reaching it will build confidence and a sense of satisfaction.

Share humour – Life often gets too serious, so when you hear or see something that makes you smile or laugh, share it with someone you know. A little humour can go a long way to keeping us mentally fit!

Volunteer – Volunteering is a "win-win" activity because helping others makes us feel good about ourselves. At the same time, it widens our social network, provides us with new learning experiences and can bring balance to our lives.

Be kind to yourself – Cook yourself a good meal. Have a bubble bath. See a movie. Call a friend or relative you haven't talked to in ages. Whatever it is, do it just for you. If you have had a stressful day, always take care of yourself first.

Finally, sleep provides the foundation for your mental and physical wellbeing. It is during sleep that you rejuvenate and repair, so ensuring adequate and regular sleep is important. Practising good sleep hygiene (such as maintaining a

regular bedtime as often as possible, avoiding caffeine and other stimulants before bed, not using the bedroom as a regular workspace or for activities other than sleep and sex) and regular relaxation or mindfulness can assist with maintaining healthy sleep patterns. When under stress, sleep disruption can be one of the first warning signs. Keep an eye on your sleeping patterns and revise your self-care and supports before stress starts to impinge on your daily life.

As with anything, you do not need to practice your self-care perfectly, but rather practice it more often than not. When you know you have attended a particularly stressful critical incident or are under prolonged stress, ensure you drink plenty of water, exercise, eat well, get plenty of rest and make sure to take special care of yourself. When in doubt, use your MAPS to generate a strong response.

On the following page is a comprehensive list of possible signs of stress. Take a moment to read through the list, and mark off signs of stress that you have noticed for yourself in the past.

Keep this list of stressors in mind; if you notice you are starting to display any of these signs or symptoms, it may be time to revisit your self-care and mental fitness

WORKSHEET 4.1: Common effects of stress

Put a mark next to any symptoms you have experienced when stressed in the past; are any of your symptoms missing from the list? Add them.

Physical	Emotional	Thoughts	Behaviour
- Acne	- Anger	- I should have known/done better	- Aggressive
- Blushing	- Anxiety	- I'll never make it	- Wimpy
- Breathlessness	- Apathy	- Why can't I cope? What's the matter with me?	- Clingy
- Butterflies in stomach	- Bewildered	- Everyone else copes	- Can't say no
- Cold hands & feet	- Bored	- Amnesia	- Clumsiness
- Constipation	- Crying	- Avoiding problems/ pretend they don't exist	- Competitive
- Diarrhoea	- Defeated	- Changing your mind frequently	- Compulsive sex
- Dry mouth	- Deflated	- Confused/muddled	- Continue working when ill
- Exhaustion	- Depression	- Difficulty making decisions	- Destructive
- Feeling cold	- Despair	- Don't plan enough	- Drinking
- Feeling faint	- Emotionally cold	- Dreaming/nightmares	- Gripping things tightly
- Frequent urination	- Euphoria	- Easily distracted	- Handwriting deteriorates
- General aches & pains	- Fear	- Forgetfulness	- Hyperactive
- Heavy	- Hurt	- Hypercritical/bitchy	- Gambling
- Holding your breath	- Insecure & negative	- Imagine the worst	- Impulsive
- Jumpy	- Rejected	- Inflexible	- Insensitive to others
- Lethargic	- 'Losing my mind'	- Irrational	- Isolation
- Menstrual problems	- Inadequate	- Lack of objectivity	- Leave things to last minute
- Migraine	- Stupid	- Make mistakes	- Late
- Nausea	- Unworthy	- Misjudge situations & people	- Look for a scapegoat
- Hungry	- Hopeless	- Missing the obvious	- Loss of interest in things you usually like
- Raised blood pressure	- Frustrated	- Not able to see another point of view	- Non-verbal aggression
- Restlessness	- Full of hate	- Obsession over minor details	- Outbursts
- Shallow breathing	- Guild	- Procrastination	- Over or under eating
- Shivering	- Helpless	- Put yourself down	- Poor time keeping
- Sleeplessness	- Hysterical	- Over-reacting	- Rushing around
- Stomach ache	- Immobilised	- Sluggish thinking	- Shouting
- Sweating	- Lonely (even when with people)	- Suppression of thoughts & feelings	- Silence
- Sweaty palms	- PMT	- Thought blocks	- Smoking
- Tense muscles	- Pretend to be happy	- Try to get others to make decisions for you	- Swearing
- Tight throat	- Sad	- Tunnel vision	- Take on too much
- Tightness in jaw/muscles	- Sorry for yourself		- Talk too much
- Tingling in arms/ back of neck	- Unmotivated		- Wakefulness
- Trembling	- Vulnerable		- Withdrawing
- Visual disturbance	- Withdrawn		- Yawning
- Wind	- Worrying what people think		
- Wobbly knees	- Worrying about stupid things		

MAPS Appendix A

The 'ACT In A Nutshell' Metaphor (Harris, 2008)

Use a large book or a firm clipboard or a thick folder for this. Pick it up and show it to the client

i. 'I want to demonstrate something, if it's okay with you. I want you to imagine that this book represents all the difficult thoughts and feelings that you are struggling with.' (Make it client-specific: e.g. this is all your feelings of depression, worries about the future, bad memories etc.)

ii. 'Now, I'd like you to hold it up in front of your face, right up close, until it's almost touching your nose.' (Demonstrate what you mean: hold the book up in front of you, so that it obscures your entire face - then give it to the client and ask them to do the same.)

v. 'Now this is what it's like to get all caught up in your thoughts and feelings. What's it like trying to have a conversation with me? (Elicit an answer). Do you feel engaged, connected with me? (Elicit an answer.) What happens to the rest of the room when all your attention is centered on these thoughts and feelings? (Elicit an answer.) So when you get all caught up in this stuff, you start disconnecting from the world around you. You cannot be fully present with me when you're all preoccupied with this stuff.

Next stand up – while the client remains sitting down. 'I want to demonstrate something else. I want you to put both your hands on one side here, and I'm going to put mine on the other side, and I want you to try as hard as you can to push it away from you. (As the client tries hard to push the book away you lean into it; the harder they push, the more you lean into it. Check that your client does not have neck or shoulder problems before you do this; if they do, push very lightly! If not, steadily increase the pressure.)

i. Maintaining this interaction – the client pushing and you resting your body weight against the book, say the following. 'So here you are, trying very hard to push away all these painful thoughts and feelings; and are they going anywhere? Sure, you're keeping them at arm's length, but what's the cost to you? How does it feel in your shoulders? (If client says 'Fine' or 'Not too bad' then push harder, and say, 'Okay they're fine now, but how will they be

feeling after an hour of this; or after a whole day of this?')

- ii. Maintaining the struggle, say: 'And if I asked you now to type on a computer, or drive a car or cuddle a baby or hug somebody you love, while you're doing this – could you do it? And what's it like trying to have a conversation with me while you're doing this?'

- ii. Then stop resisting; totally ease off the pressure, and take the book back. Say: Okay, now let's try something else. Just let it sit there on your lap. (Place the book on their lap.) Now isn't that a lot easier? (You now sit down, leaving the book resting on their lap.) How are your shoulders now? If I asked you now to chop vegetables or cuddle a baby or hug somebody you love What's it like to have a conversation with me now, as opposed to doing this (you now mime pushing the book away) or having it up here right in front of you? (you now mime holding the book in front of your face, positioning your hands as if they were the book – i.e. holding them in front of your face to obscure it from the client.)

- x. Then say: Now I'm sure in the ideal world you'd like to do this. (You lean across, grab the book, and pretend to throw it on the floor). But here's the thing: you've been trying to do that for years. (keep hold of the book) You've tried A,B,C,D,E, F, G (list at least 5 or 6 control strategies the clients have used) and it's still showing up (point to the book in your hands).

- . At this point, it's often useful to ask, What's the earliest you can remember struggling with these sorts of thoughts and feelings? (Often the answer is since childhood. You can then respond appropriately, as demonstrated in the following example.) Wow! So this stuff has been showing up in your life since you were fifteen years old. And now you're how old? 36? So for 21 years you've been trying to get rid of this stuff – and yet, it's still here.

- i. Now I don't know any way you can stop this stuff from showing up – at least, not for very long. Even if you push it away for a little while, sooner or later it comes back, right? And there's a good reason for that. It's called being a human being. Life is painful, and as a result, we all experience painful thoughts and feelings. Sure, some people experience more than others; but

that's beside the point. The point is, this stuff will keep showing up in one form or another – you don't have a choice about that. But you do have a choice about what you do when it shows up. Do you do this (hold book in front of your face) or this (hold book out at arm's length) or this (place book back on your lap)? Which is easiest? Which gives you the most freedom, and takes the least effort?

- ii. Then say; Now I want to show you something else. Would you be willing to stand up? Thank you. (You both stand. You place yourself facing opposite the client.) I want you to imagine that over there, behind you (You point in the opposite direction, directly behind them.) lies a rich and meaningful life.. That's the direction you need to move in, if you want to find vitality and fulfilment. Okay? (Then you hold up the book again.) Now I want you to place both your hands on this, and just like before, I want you to try pushing as hard as you can, to get it away from you. (As the client pushes, you allow them to push you backwards, maintaining just enough counter-pressure so that they follow you.) Now I just want you to notice, what direction are you moving in? Are you moving towards vitality or away from it? (Elicit an answer.)

- iii. Then say: Okay. So if you want vitality, and meaning, and wellbeing, where do you need to go? (The client will point behind them.) Okay, so turn around now. And slowly take a couple of steps in that direction. (The client will start to walk off. You immediately shout out!) Whoa! Hold on. You forgot something. (You hand them the book.) You can't leave this behind. This is a part of you. These are your thoughts and feelings and memories. Wherever you go, they go. The question is, how do you want to carry them? (The client will usually tuck the book under their arm.) Great. So you can take it with you, and it doesn't stop you from doing whatever you want to do.

- iv. The point has been well made already, so there's no need to do this next step: it's just an optional extra if you really want to emphasize the point. Are you sure that's the best way? Just try carrying it right in front of your face, and see how that works. (Client will usually laugh.) Okay, now try carrying it in front of you, holding it out as far away from your body as possible, and see how that works. (Again, client may laugh or say something humorous.) Now

try once more, hold it however you like. (Again client is likely to tuck it under their arm, or hold it to their chest). Great. When you hold it like that, you can go wherever you want to go, you can see clearly, and your hands are not tied up.

v. Then say: Thank you for indulging me. I realize that may seem a bit freaky, but I just wanted to get across to you what this work is all about. Mindfulness skills will enable you to handle your difficult thoughts and feelings in a new way – in a way that frees you up to do what you want with your life. Does that interest you? Would you be willing to spend some time learning and practicing these skills, so you can take your life in the direction you want?

Exercise: Thinking Self versus Observing Self (from Harris, 2008)

Close your eyes, and simply notice what your mind does. Stay on the lookout for any thoughts or images, as if you're a wildlife photographer, waiting for an exotic animal to appear from the undergrowth. If no thoughts or images appear, keep watching; sooner or later one will. (PAUSE)

Notice a) where your thoughts seem to be located: out in front of you, above you, behind you, to one side of you, or within you. B) whether they're moving or still c) if they are moving, what direction, and how fast?

As you do this notice there are two separate processes: thinking and observing. One part of you is thinking – i.e. generating a stream of thoughts - while another part of you is observing those thoughts.

Do this again. Step back and observe your thoughts: where are they located?, moving or still?, what direction and speed?

As you do this, your observing self is observing your thinking self. (PAUSE)

Your thoughts change continuously; they come and go throughout the day, but the you that observes your thoughts does not change. (PAUSE)

Now bring your attention to your breath; as you notice your breath be aware that you are noticing it (PAUSE).

There is your breath, and you are observing it. You do not need to change it; you do not need to breathe any more deeply than usual. Notice that your lungs fill with air automatically, and notice the air as it leaves your body (PAUSE)

Your breath changes, air comes and goes, but the you that observes your breath does not change. (PAUSE)

Now turn your attention to what is happening in your body. Scan yourself from the top of your head down to your feet and observed your bodily sensations (PAUSE)

Press your feet into the ground and observe what that feels like. You might be able to feel the chair pressing against your back or your legs. Notice your hands, where are they and what are they touching? (PAUSE)

Here is your body and you are observing it. Your body changes continuously. It's not the same body you had as a baby, as a child, as a teenager, as a

young adult. You may have had bits put in or bits cut out. You have scars, and wrinkles, and moles and blemishes, that weren't there ten or twenty years ago. You get a whole new set of skin every 6 weeks. Over a period of 7 years, every single cell in your body gets replaced by new cells. At the atomic level, 95% of the atoms in your body are replaced by new ones in the space of one year.

The observing self is like the sky, while thoughts, sensations, and images are like the weather.

The weather constantly changes throughout the day. And whatever it is, the sky always has room for it. No matter how bad the weather, no matter how violent the thunderstorm, no matter how severe the sun, the sky cannot be damaged in any way. Even hurricanes and tsunamis, which may wreak death and destruction on the land—even they are unable to hurt the sky. And of course, as time passes, the weather will change again and again, while the sky remains as pure and clear as ever. In the same way, your thoughts, feelings and experiences cannot hurt your observing yourself. You can always return to your observing self to take a moment and observe the weather around you.

When you're ready, notice your thoughts, and your breath, and your body; and then open your eyes and notice what you can see around you as we end this exercise.

Appendix C: Treatment Adherence

Module 1: Introduction to MAPS

Facilitator Notes & Session Outline

Please rate adherence to each learning point on the following scale

1-----2-----3-----4-----5-----6-----7

Not at Completely

All covered Covered

Session 1: Introduction to MAPS		
<p>Aim of the session: The aim of this session is to provide a brief recap about typical stress responses (especially resilient responses) so that recruits can correctly identify and interpret their own reactions following stress.</p> <p>Information concerning typical stress responses and PTSD is provided during recruit training, it is intended that this module emphasises resilience as a common outcome and raises awareness about post-traumatic growth.</p> <p>The second part of this module covers coping style, and aims to raise awareness about different ways to cope and how to choose coping options.</p>		
<p>Session learning outcomes: By the end of this session recruits should:</p> <ul style="list-style-type: none"> ▪ Understand physical, mental and emotional stress responses. ▪ Be familiar with typical responses to stressful events (resilient, diminished, succumbed and thriving) ▪ Be familiar with trauma outcomes (PTSD, resilience and Post-Traumatic Growth) ▪ Be familiar with helpful and unhelpful coping strategies ▪ Be able to identify their own typical coping strategies. 		
Time	Content	Adherence (/7)
15 minutes	Overview of MAPS <ul style="list-style-type: none"> - How to create strong MAPS - Introduce the physical fitness/ mental fitness analogy Extend the analogy: mental fitness also requires ongoing practice, sometimes will need professional assistance (E.g. trainer, physio/ psych, counselor) and both mental and physical should be attended to for overall fitness and wellbeing.	
10 minutes	Discussion: coping style Show a PowerPoint slide/ overhead listing a	

	<p>number of different coping strategies.</p> <p>Possible discussion questions:</p> <ul style="list-style-type: none"> - Do you use any of these strategies? - What are your favourite strategies? - Is this strategy usually helpful/unhelpful? Why? 	
10 minutes	<p>Helpful vs. unhelpful coping styles</p> <ul style="list-style-type: none"> - Approach & avoid - Aim of approaching styles (E.g. to address the problem) - Aim of avoidant styles (E.g. to avoid uncomfortable thoughts and feelings) - Go back to the coping styles slide and classify each strategy as helpful or unhelpful 	
15 minutes	<p>Activity: Choosing your response</p> <p>Present a scenario or ask recruits to think of a recent stressful event. Fill out the worksheet, identifying the event, coping strategies used and then working through the MAPS model to explore alternative outcomes.</p> <p>Allow time to discuss as a group, or if time is limited complete the worksheet together using a relevant scenario.</p>	
Conclude	<p>Recap the importance of knowing about stress and typical stress responses and choosing strong coping styles to promote mental fitness.</p>	
Recruit engagement	<p>Did recruits appear to engage with the presenter and the material?</p>	
Overall delivery	<p>Overall rating of the presenter</p>	

Module 2: Taking a Moment

Please rate adherence to each learning point on the following scale

1-----2-----3-----4-----5-----6-----7

Not at

Completely

All covered

Covered

Session title: Taking a Moment		
Aim of the session:		
The aim of this session is to introduce recruits to MAPS training and to introduce and practice defusion and mindfulness.		
Session learning outcomes:		
By the end of this session recruits should:		
<ul style="list-style-type: none"> ▪ Be familiar with the MAPS model ▪ Be familiar with the analogy between physical strength and mental strength ▪ Understand mental strength as one component of overall fitness ▪ Have participated in one defusion/ mindfulness exercise 		
Time	Content	Adherence (/7)
5 minutes	Recap of MAPS model Introduce mindfulness/ taking a moment.	
Activity 5 minutes	What might be features of people who are mentally strong? <ul style="list-style-type: none"> - What things do they say? - What things do they do? - How do they behave? Draw out common threads that are consistent with mindfulness, such as thinking before they speak/act, staying in control, living in line with values etc.	
15 minutes	Step 1: Take a Moment Introduce concept of defusion. Explore different defusion methods, ways of changing your relationship with your thoughts and feelings. What is it like to be fused with thoughts and feelings? (Use ACT in a Nutshell metaphor- see Appendix A)	
20-25 minutes	Defusion exercise (Thinking vs. observing self) Use 10 minutes to conduct the guided defusion exercise, and 10-15 minutes to discuss as a group.	

	<p>Discussion questions:</p> <ul style="list-style-type: none">- How was that exercise for you?- Are there any times when it might be useful to return to your observing self?	
Conclude	<p>Emphasise the need for daily practice. Invite recruits to refer back to their workbook and to practice brief mindfulness & defusion activities throughout the day.</p>	

Module 3: Seeking Support

1-----2-----3-----4-----5-----6-----7

Not at

Completely

All covered

Covered

Session 3: Seeking Support		
Aim of the session: The aim of this module is to raise awareness about different types of support for different needs or situations. It covers instrumental support, emotional support and available resources. The importance of using support to promote mental strength is emphasised, and recruits are asked to identify a range of supports across different areas of their lives.		
Session learning outcomes: By the end of this session, recruits should be: <ul style="list-style-type: none"> - Familiar with instrumental support, emotional support and resources. - Have identified people or supports that are available across these 3 types of support, in 3 settings (work, personal and other). - Be aware that support is a protective factor that protects mental fitness. - Be aware that withdrawal and isolation are risk factors that undermine mental fitness. 		
Time	Content	Adherence (/7)
5 minutes	Recap of MAPS model and what has been covered so far.	
10 minutes	Brainstorm different kinds of support (instrumental support, emotional support and resources). Use group discussion to identify what kinds of support are appropriate for different scenarios.	
15 minutes	Present short vignettes for group discussion. Identify the problem and appropriate supports for each vignette.	
10 minutes	Activity- complete the identifying supports worksheet. Briefly discuss as a group, and recap stress responses and the usefulness of having a record of available supports (e.g. we are often not able to think as clearly when under stress, so having a list of supports to refer back to can be very useful/ sometimes when under stress we feel as though we are alone or do not have many options)	
5 minutes	Discuss meaningful connections- sometimes not everyone around us will be supportive and we need to adjust.	
10 minutes	Activity- meaningful connections worksheet	

	Recruits are asked to identify the people around them, and whether these people have a positive or negative influence on their wellbeing. Discuss as a group.	
Conclude	Recap the importance of knowing your support options and how this fits into the MAPS model.	

Module 4: Your Ongoing Strength Program

1-----2-----3-----4-----5-----6-----7

Not at

Completely

All covered

Covered

Session 4: Your Ongoing Strength Program		
Aim of the session: The aim of this session is to provide psychoeducation about self-care for the ongoing maintenance of mental fitness.		
Session learning outcomes: By the end of this session recruits will: <ul style="list-style-type: none"> - Be familiar with the term 'self-care' - Be familiar with self-care strategies - Have identified personal stress reactions across 4 domains (physical, emotional, mental and behavioural) - Have planned self-care strategies across 4 domains (physical, emotional, mental and professional) 		
Time	Content	Adherence (/7)
15 minutes	Recap the previous sessions and the MAPS model. Extend this discussion as it is the final session. Allow time to explore whether any recruits have applied any MAPS strategies so far, whether recruits have practiced defusion (and whether they have found it helpful) and how they expect to apply MAPS training in the future.	
10 minutes	Introduce the concept of self-care. Return to the analogy between physical and mental fitness, elaborating on the body-mind connection and the importance of sleep, exercise and a healthy diet.	
11 minutes	Worksheet: Identifying stress In module 2 we talked about stress reactions. Emphasise that while self-care is always important, it is when we start to see hints of stress impacting us that it is crucial. Ask recruits to read through the list of stressors across 4 domains and mark off which symptoms of stress they do or have experienced. Initiate a group discussion about what recruits have noticed.	

	<p>Possible discussion points:</p> <ul style="list-style-type: none"> • what symptoms have you experienced? • Some symptoms are opposite (E.g. lethargy vs. energy, under vs. over eating) 	
10 minutes	<p>Worksheet: Self-care strategies</p> <p>Ask recruits to complete a worksheet identifying self-care/mental strength strategies across 4 areas of life.</p> <p>Have a group discussion about the kinds (and diversity) of self-care strategies recruits have identified.</p>	
6 minutes	<p>Group discussion recapping self-care and signs of stress and how to respond if you believe a colleague is not coping. After emphasizing diversity of stress responses and coping styles, first step should be to raise it with your peer. Following steps outlined in terms of DFES policy.</p>	
5 minutes	<p>Conclude- recap MAPS one final time, check in with recruits and answer any final questions.</p>	