

# **The Longitudinal Australian Defence Force Study Evaluating Resilience (LASER-Resilience)**

Final Detailed Report 1: Prior Trauma Exposure and Mental Health

## Authors:

A/Prof Meaghan O'Donnell (Phoenix Australia), Dr Winnie Lau (Phoenix Australia), Dr Nathan Alkemade (Phoenix Australia), A/Prof Virginia Lewis (La Trobe University), Dr Monique Crane (Macquarie University), Dr Andrea Phelps (Phoenix Australia), Dr Lisa Dell (Phoenix Australia), Prof David Forbes (Phoenix Australia)

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### **Chief Investigators:**

Dr Monique Crane (Macquarie University), Associate Professor Virginia Lewis (La Trobe University), Professor David Forbes (Phoenix Australia, University of Melbourne), Associate Professor Meaghan O'Donnell (Phoenix Australia, University of Melbourne).

### **LASER-Resilience Scientific Advisory Committee:**

Dr Stephanie Hodson, Department of Veterans' Affairs; Professor Richard Bryant, University of New South Wales; and Professor Alexander McFarlane, University of Adelaide.

### **Report reviewed by:**

JHC: Nicole Sadler, Helen Benassi, Anne Goyne, Carolina Casetta and members of the Defence Scientific Advisory Committee.

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For additional information about the content of this report please contact:

Associate Professor Meaghan O'Donnell, [mod@unimelb.edu.au](mailto:mod@unimelb.edu.au)

#### Disclaimer

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## KEY MESSAGES

1. Although prior trauma exposure in individuals joining the Australian Defence Force (ADF) is common, overall low rates of posttraumatic stress, depression and anxiety symptoms in General Enlistees (GEs) and Officer Appointees (Officers) were reported up to 12 months after enlistment. Rates for clinical levels of these problems across the sample ranged from 0.9-5.1%.
2. This study showed that while there was a link between higher levels of prior trauma exposure and higher mental health symptomatology reported by GEs and Officers up to 12 months after enlistment, the contribution of prior trauma exposure to mental health symptomatology was small.
3. The study found that GEs and Officers entered the ADF with comparable levels of overall prior trauma exposure to the general community. A sub-group of individuals however, reported experiencing exposure to multiple events (up to 26% experienced four or more potentially traumatic events upon entering the ADF) which is higher than community norms.
4. The coping styles of GEs and Officers upon entering the ADF did not influence the relationship between prior trauma exposure and mental health symptoms. It was concluded that the manner in which GEs and Officers had coped with prior trauma was reflected in their reported mental health status upon entering the ADF, and so mental health upon entering the ADF provides a better indicator of later mental health than coping styles for those with prior trauma exposure.
5. It is important for ADF instructors and ADF mental health service providers to be aware of and understand the link between prior trauma exposure and later mental health problems, but they should also consider what other risk and protective factors exist for both GEs and Officers.

## EXECUTIVE SUMMARY

### Background

The Longitudinal Australian Defence Force Study Evaluating Resilience (LASER-Resilience) project is an ongoing (2009-2016) longitudinal study sponsored by Joint Health Command (JHC) within the Australian Department of Defence. The project aims to identify individual characteristics, cognitions, emotions, behaviours and situational factors that promote and/or erode resilience in military personnel over the early course of their ADF career. In 2014, Phoenix Australia (formerly the Australian Centre for Posttraumatic Mental Health [ACPMH]) was the successful tenderer for the provision of data analyses of the LASER-Resilience dataset. Phoenix Australia was engaged to assist JHC select and operationalise a set of questions that could be answered by this dataset. These questions were derived based on the notable role that adaptive coping played in mental health reported in previous LASER work and the relevance of this construct to resilience training.

In addition, previous research and the ADF Mental Health Prevalence and Wellbeing Study (McFarlane, Hodson, Van Hooff, & Davies, 2011) highlighted the important role that trauma exposure, including military and combat-related trauma, has on mental health. In further exploring this, it was important to determine the pre-military trauma exposure of personnel entering the ADF, and what impact this may have early on in their careers. Hence, this report answers three questions that explore the relationship between prior (pre-military) trauma exposure, coping style, and mental health outcomes (PTSD, depression, anxiety symptoms) reported at two time points. Data was collected at two time points. Time 1 (T1) data was collected at enlistment for GEs and for Officers within two weeks of commencing Officer training. Time 2 (T2) data was collected at the end of training for GEs and 12 months after T1 for Officers. Specifically, the following questions are addressed in this report: (1) Do GEs and Officers enter the ADF with different levels of prior trauma exposure?; (2) What is the relationship between prior trauma exposure and mental health outcomes at T2?; and (3) Do T1 coping styles mediate the relationship between prior trauma exposure and T2 mental health outcomes?

### Approach

A data analysis strategy was employed to answer the three questions. This comprised descriptive data techniques to identify the prior trauma experiences of GEs and Officers and statistical tests to assess differences between GEs and Officers in prior trauma experiences and mental health symptoms. The strategy also included Structural Equation Modelling (SEM) to examine:

(i) the impact of prior trauma exposure on mental health symptoms reported by GEs and Officers at T2, and (ii) the potential influence of various T1 coping styles and strategies on the relationship between prior trauma exposure and T2 mental health outcomes.

## **Key findings**

1. Mental health problems reported at T2: Overall, low rates of PTSD, depression and anxiety symptoms were reported in GEs and Officers at T2<sup>1</sup>. Among GEs, 4.3% reported clinical levels of psychological distress (anxiety and depression) and 0.9% reported clinical levels of PTSD symptomatology. Among Officers, 5.1% reported clinical levels of psychological distress (anxiety and depression) and 1.6% reported clinical levels of PTSD symptomatology.
2. Prior exposure to potentially traumatic events at entry to ADF: While not directly statistically compared, rates of overall prior trauma exposure amongst GEs and Officers appeared comparable to rates observed in the Australian community. There was, however, a larger proportion of members who reported exposure to multiple traumatic event types than found in the general community. Specifically, the study identified a sub-group of members (N=1340, 26%) reporting experiencing four or more discrete/different trauma events prior to entry. The community rate for this sub-group was 8.5%. Statistically significant differences were observed between GEs and Officers, where Officers were more likely than GEs to report no prior trauma exposure, and GEs were more likely than Officers to have experienced a mixture of non-interpersonal and interpersonal trauma.
3. The role of prior trauma in predicting mental health symptoms: Prior trauma exposure in individuals joining the ADF predicted self-reported PTSD, depression and anxiety symptoms at T2, however its impact overall in contributing to mental health problems was small. There were minor differences in the way prior trauma exposure affected mental health for GEs and Officers. In GEs, prior trauma exposure had a small impact on later anxiety and PTSD levels, whereas in Officers, prior trauma exposure had a small effect on the levels of depression at the end of the first 12 months of training, and a very small effect on PTSD.
4. The influence of coping style on mental health symptoms in the context of prior trauma exposure: The previous LASER report (Crane, Lewis, Forbes, & Elliot, 2013) identified that a

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<sup>1</sup> GEs typically spend three months in initial training, whereas Officers completed the LASER survey after the first 12 months of training.

range of coping styles influenced changes in mental health in the period from entry to T2. This report built on the previous findings to examine whether T1 coping strategies influenced the relationship between prior trauma exposure and mental health outcomes at T2, controlling for mental health at T1. The coping strategies (i.e., re-appraisal, acceptance, self-blame, support-seeking, avoidance, risk-taking) that GEs and Officers reported using at T1 were not found to influence the relationship between prior trauma exposure and mental health symptoms reported at T2 when controlling for their mental health at T1. In GEs, while support-seeking was related to anxiety levels, it was not found to alter the relationship between prior trauma exposure and mental health symptoms at T2. In Officers, none of the T1 coping styles influenced the relationship between prior trauma and mental health outcomes at T2. The finding that T1 coping styles used at entry to the ADF did not explain the relationship between prior trauma and later mental health problems was attributed to the strong relationship between mental health symptoms at T1 and at T2. That is, it appeared that any relationship between prior trauma exposure and T1 coping strategies was reflected in the mental health of individuals when they commenced training, and it is this level of mental health symptomatology that subsequently impacted on later mental health symptomatology reported at T2.

## **Conclusions**

Despite some potential constraints on this study, these findings suggest that although prior trauma exposure is common in new entrants to the ADF, and relatively high in a sub-group of individuals, its influence on mental health problems reported up to 12 months later is small. In addition, coping strategies do not significantly influence the relationship between prior trauma exposure and mental health outcomes. In understanding this, it is likely that strategies for coping with prior trauma have been accounted for in the mental health responses at entry to the ADF. While mental health status of individuals is generally good following military ab-initio training, it is more important to focus on those who experience mental health difficulties when they enter the ADF and over the course of initial training, than on the nature and extent of prior trauma exposure at this point. It may be, however, that the influence of prior trauma exposure changes further into an individual's career. This study only looked at the role of T1 coping in the context of prior trauma exposure over the training period (GEs) / first 12 months of service (Officers). Future LASER-Resilience data analysis should examine how coping styles are adapted over longer periods of time to influence mental health over time.

## **Implications**

1. Experiences of prior trauma are fairly common among new ADF entrants, and while mental health problems are relatively low in the early stages of an ADF member's career, it remains important to continue to screen for mental health difficulties at recruitment and to help identify those who may need mental health support during their training.
2. It is important for ADF instructors and mental health service providers to recognise that prior trauma exposure as a single factor may not be sufficient in predicting mental health outcomes following initial training. Awareness and understanding of this link is important, but they should also consider what other vulnerabilities, including existing mental health problems, may also exist for both GEs and Officers.
3. The prior trauma experience of individuals is diverse, ranging from no exposure at all up to 18 different traumatic events and greater than 100 different traumatic incidents, from one-off events to multiple chronic events, and from non-interpersonal to interpersonal trauma. The scientific literature suggests that the level of trauma exposure confers risk to the development of later mental health disorders. While this was not particularly evident over the period of training for new ADF members, in future LASER reports, it will be important to continue to explore this issue over time.
4. Coping strategies employed prior to ADF training do not provide any additional information when attempting to understand whether those with prior trauma exposure are at additional risk of developing mental health problems at the end of training. Future studies, however, need to examine this relationship over a more substantial time period to explore more comprehensively the relationship between coping, prior trauma exposure and mental health.

## **1 INTRODUCTION**

In recognition of the unique challenges to mental health that military personnel within the Australian Defence Force (ADF) face, the Longitudinal ADF Study Evaluating Resilience (LASER-Resilience) was initiated by the Joint Health Command (JHC) within the Department of Defence. Spanning 2009-2016, its main objective is to identify the social, psychological and situational factors that promote or erode resilience in ADF members at entry to the ADF, and up to four years beyond initial training. As part of this overall goal, three detailed reports on different aspects of the LASER-Resilience project dataset were designed by the Department of Defence in collaboration with Phoenix Australia. Each report intends to answer specific research questions to help inform the promotion of resilience and provide practical implications for ADF policies and programs. The current document details the first of these three reports and was conducted between December 2014 and March 2015. This first report explores pre-military trauma event exposure (herein referred to as prior traumatic events/incidents or prior trauma history or prior trauma exposure), coping styles that ADF members enter the military with (i.e., T1 coping styles), and how these factors impact on T2 mental health.

### **1.1 Previous LASER-Resilience findings**

To date, the LASER-Resilience project has produced four reports, including: the LASER-Resilience Pre-enlistment Report (Crane, Lewis, Kehoe, Reid, & Casetta, 2012), the Initial Training Report (Crane, Lewis, Forbes, & Elliot, 2012), the Contributors to Change Following Training Report (Crane, Lewis, Forbes, & Elliot, 2013), and the Early Career Mental Health and Wellbeing Report (Crane, Lewis, Forbes, & Elliott, 2013). Collectively, these reports demonstrated that overall, General Enlistees (GEs) and Officer Appointees (Officers) had good mental health and wellbeing at enlistment which was maintained throughout initial training, but that some small to moderate decreases in wellbeing were observed at the end of initial training. The change in wellbeing was interpreted as reflecting the impact of intense physical and mental demands along with the significant life changes which occur during initial training. The Contributors to Change Following Training Report investigated those factors which may have contributed to the changes observed in mental health and wellbeing. The results demonstrated that the predictors and correlates of greatest note were coping styles, social support, personality, and sleep problems. Coping styles of new GEs and Officers were identified as a specific risk factor, wherein avoidant coping strategies were associated with reports of higher distress at the end of training. Among females and Officers, use of self-blame strategies at entry to the ADF was also associated with reports of greater distress and PTSD symptomatology after training. The report also identified that by the time new entrants had

completed training, different coping styles were associated with distress and PTSD. That is, self-blame and rumination strategies that were used after training were implicated in distress and PTSD reported after training. It was concluded that coping styles are important in influencing subsequent symptomatology (Crane, Lewis, Forbes, & Elliot, 2013). These findings also suggest, however, that adaptive coping styles are not fixed, and that flexibility in the utilisation of coping strategies may be helpful in understanding mental health symptoms reported following training.

## **1.2 Current LASER-Resilience objectives: Detailed report 1**

The present report sought to extend previous LASER work to further consider the role of coping in the context of GE's and Officers' experiences prior to entering the ADF. A factor well-known to influence mental health outcomes is the experience of prior trauma (Brewin, Andrews, & Valentine, 2000). Hence, the main objective of this report is to examine the relationship between prior traumatic event exposure, coping style, and mental health outcomes (posttraumatic stress disorder [PTSD], depression and anxiety) reported at T2. To do this, JHC and Phoenix Australia collaborated to answer the following three research questions:

1. Do GEs and Officers enter initial training with different levels of prior trauma exposure?
2. What is the relationship between prior trauma exposure and mental health outcomes at the end of initial training?
3. Do coping styles mediate the relationship between prior trauma exposure and mental health outcomes at the end of initial training?

Given the use of mental health screening measures in the LASER-Resilience project, mental health outcomes in this document refer to symptoms of or indicative of diagnosable mental health conditions (i.e., PTSD, anxiety, or depression) rather than diagnosis of disorder per se.

## **2 BACKGROUND**

### **2.1 Resilience in the military**

Over the past decade, increasing attention has been devoted to resilience in military personnel (Simmons & Yoder, 2013). Broadly defined, resilience refers to the ability to cope with or overcome adversity or stress, which may include the experience of trauma. For the purposes of this report, resilience is defined as "*the sum total of psychological processes that permit individuals to maintain or return to previous levels of wellbeing and functioning in response to adversity*" (The Technical Cooperation Program, 2008). This definition identifies resilience as a malleable construct, subject to intervention at both preventative stages (before exposure to adversity or trauma) and/or at treatment stages (after exposure to adversity or trauma) (Meredith, Sherbourne, &

Gaillot, 2011). Emerging evidence from international resilience programs suggest attributes associated with resilience include adaptive coping, personal control, and social support (Simmons & Yoder, 2013). Although identifying such risk and protective factors early might help to prepare personnel for a military career, there is little robust evidence that informs the combination of characteristics and skills that ensure optimal functioning through situations that may be experienced as part of an ADF career. The LASER-Resilience project will help to empirically assess those characteristics and skills that lead to resilience in Australian military personnel.

## **2.2 The ADF training environment**

In preparing for a career in military service, new GEs and Officers are necessarily exposed to rigorous military training environments (Crane et al., 2013). For most, this is a new experience requiring adjustment to significant cultural, occupational, and physical change. These changes include: modified sleeping routines that often incur a degree of sleep deprivation and fatigue, working and living closely with a new and diverse group of people, becoming accustomed to handling weapons, and complying with strict training protocols. While some individuals who fail to achieve the demanding standards of initial training will be assessed for discharge, others will be ‘back-classed’ to an earlier stage in the training continuum, resulting in longer exposure to the hardships of the initial training environment. In addition, all new military recruits and appointees are expected to conform to the values and norms of their particular service, and this can result in a degree of identity reformulation. When combined with the physical dislocation from home, and the loss of day-to-day support previously provided by family and friends, many new recruits may experience feelings of homesickness and social isolation. Currently, there is insufficient knowledge about the specific relationships between these stressors (i.e., the experience of military training) and psychological health over this time. Hence, in assessing those empirical characteristics that serve to confer protection or risk, the current LASER-Resilience report focuses on the early phases of an ADF career: at enlistment or appointment/prior to training or in the first fortnight of training for Officers (T1), and after initial training or 12 months into Officer training (T2).

## **2.3 The literature on prior trauma, coping and mental health in military personnel**

### *2.3.1 Prior traumatic events and mental health outcomes*

Exposure to traumatic events is a well-known risk factor for a host of mental health problems, including depression, anxiety, and particularly PTSD (Brewin et al., 2000). Previous studies have also observed that the type of trauma experience (i.e., interpersonal versus non-interpersonal) is an important factor in the development of subsequent psychopathology (Breslau et al., 1998; Galatzer-Levy, Nickerson, Litz, & Marmar, 2013). For example, in a large meta-analysis which combined

studies of military personnel and civilian populations, Brewin and colleagues (2000) found prior traumas such as childhood adversity, including physical and/or sexual abuse, significantly influenced the development of PTSD and other disorders (Brewin et al., 2000).

Among studies which have examined the impact of prior trauma on military-related mental health problems (e.g. Andersen, Karstoft, Bertelsen, & Madsen, 2014; Smith et al., 2008), most have investigated it in terms of pre-deployment status, often tracking the influence of combat exposure in post-deployment mental health outcomes. These studies find that pre-deployment trauma can increase the risk for later onset of PTSD, with some evidence that interpersonal trauma is specifically implicated (Andersen et al., 2014). Data from the 2010 ADF Mental Health Prevalence and Wellbeing Study also suggests a cumulative risk associated with multiple trauma exposures (McFarlane et al., 2011).

Currently, there are few studies which have measured the impact of prior traumatic event exposure and how the impact of trauma experience over time influences mental health at various points of military life including enlistment/appointment and training, post-training, through to pre-deployment, deployment and post-deployment. However, studies that do employ a measure of prior traumatic events to determine their contribution to mental health outcomes have found that pre-military traumas including accidents/disasters, childhood physical abuse, sexual abuse, or physical attack can influence post-deployment depression, anxiety, PTSD and substance use. Such findings also confirm the specific influence of interpersonal (versus non-interpersonal) traumas in the onset or worsening of mental health problems (Clancy et al., 2006). Understanding the pre-military, pre-deployment, military and combat-related, and post-deployment trauma experience may produce a more comprehensive picture of factors that impact on resilience in military personnel.

### *2.3.2 Coping strategies in military personnel*

Adaptive coping, defined as the capacity to adjust to negative stressors and situations, is considered a hallmark of resilience and effective buffering against negative mental health outcomes (Hassija, Luterek, Naragon-Gainey, Moore, & Simpson, 2012). Within the military literature, studies have found an association between certain coping styles and psychological distress in those exposed to trauma (Boden et al., 2014; Pietrzak, Harpaz-Rotem, & Southwick, 2011). Consistently, this research has shown that maladaptive coping mechanisms, such as avoidance, are related to poorer mental health outcomes. While approach- or task-oriented strategies are protective against these outcomes. As these studies mostly sample veterans or active duty personnel exposed to combat through deployment, there are few longitudinal studies which have examined whether coping style

at entry to the military influences mental health outcomes. One exception was a study involving recruits from the New Zealand military, which found coping adaptability was associated with being able to manage well with the demands of basic military training as indicated by higher self-rated performance, and a sense of belonging (Overdale & Gardner, 2012). These findings echo previous LASER-Resilience work which showed that avoidant and self-blaming coping styles prior to entering military training predicted psychological distress after training, and that coping strategies such as acceptance used after training were associated with fewer symptoms of distress (Crane, Lewis, Forbes, & Elliot, 2013).

### **3 APPROACH**

#### **3.1 LASER-Resilience participants**

Participants comprised ADF personnel recruited in the period 2009-2014. GEs and Officers from the three service branches were voluntarily enrolled into the study via a phased enrolment strategy. All GEs with surnames commencing L-Z were eligible for inclusion (those with surnames commencing A-K were recruited for a different ADF study to avoid over-surveying participants). Participants described in this report were GEs or Officers entering the Australian Navy, Army, and Air Force between November 2009 and mid-2013. This report examines data for the GE and Officer participants (N=7943) who completed surveys at Time 1 (T1, enlistment/early training) and/or Time 2 (T2, end of initial training/12 months after T1). The intent in comparing available data from T1 to T2 was to explore mediating roles of T1 coping strategies on mental health outcomes after an arduous training period and during early adjustment to military life.

#### **3.2 LASER-Resilience study design and procedure**

The LASER-Resilience study is a longitudinal panel design, comprising multiple cohorts assessed over a series of five time points: baseline/Time 1 (T1), Time 2 (T2), Time 3 (T3), Time 4 (T4) and Time 5 (T5). T1 data were collected from GEs prior to commencement of initial training, and from Officers within two weeks of commencing initial training. T1 data were collected from GEs who completed their questionnaires on the day of enlistment at one of 12 Defence Force Recruiting Centres (DFRCs). Officers completed questionnaires in a classroom setting (T1) at the relevant initial training establishment.

T2 data were collected at the end of training for GE's and either 12 months into training (for the long courses), or at the end of training for Officers: i.e., after approximately three months for GE personnel, and 12 months for Officers training at the Royal Military College (RMC) and the

Australian Defence Force Academy (ADFA). Officers in training at HMAS Creswell (Navy) and East Sale (Air Force) received the T2 survey between four and six months, which is the end of their Officer training period. With the exception of Special Service Officers (SSO), T2 data were collected in a classroom setting by trained civilian administrators.

### **3.3 LASER-Resilience measures**

LASER-Resilience T1 and T2 surveys included a comprehensive battery of psychological measures evaluating personal and situational characteristics, and psychosocial and mental health outcomes. The following measures were utilised for this report:

The Lifetime Trauma Exposure Checklist (LTEC) – is a standard checklist of potentially traumatic events. It consists of 18 items asking respondents if “they have experienced the event ever in their lifetime”. Traumatic events include: direct combat; life-threatening accident; fire; flood or other natural disaster; witness someone badly injured or killed; rape; sexual molestation; serious physical attack or assault; threatened/harassed without a weapon; threatened with a weapon/held captive/kidnapped; tortured or victim of terrorists; domestic violence; witness domestic violence; finding a dead body; witness someone suicide or attempt suicide; child abuse (physical); child abuse (emotional); any other stressful event; or whether an event(s) happened to someone close to you. Participants were asked to indicate whether or not they had experienced the particular traumatic event, then asked to identify the number of times, or incidents, they had experienced the event (i.e., frequency).

The BRIEF Cope Scale (Carver, 1997) – is a 24-item questionnaire that measures six strategies of coping including: acceptance, re-appraisal, self-blame, avoidance, risk-taking and support-seeking. All six strategies are measured on a Likert scale measuring how frequently this strategy is utilised, from 1 = “Not at all” to 4 = “A lot”.

The Kessler Psychological Distress Scale (K-10): Kessler et al., 2002) – is a brief measure comprising 10 items that assess psychological symptoms indicative of a diagnosis for disorders, including depression and anxiety. Total scores range from 10-50 (Depression 6-30; Anxiety 4-20). A total score above 24 is interpreted as representing the presence of clinical levels of psychological distress, which follows the previously recommended epidemiological cut point (Searle, Van Hoof, Lorimer, Baur, & MacFarlane, 2012). In this report, this scale was used to measure anxiety and depression symptoms separately. This follows the approach of Aarons (2004) who observed reliability in anxiety scores (Cronbach’s  $\alpha = 0.75-0.77$ ) and depression scores (Cronbach’s  $\alpha = 0.87-0.89$ ) supporting this method of analysing K-10 data.

The Posttraumatic Stress Disorder Checklist (PCL-C) – short form (Weathers, Litz, Herman, Huska, & Keane, 1993) – is a 4-item scale used to identify those with symptoms of PTSD. Total scores range from 4-20 with a score above 12 interpreted as representing the likely presence of PTSD, which follows the previously recommended epidemiological cut point (Searle et al., 2012).

### **3.4 Data analysis approach**

T1 and T2 data files for GEs and Officers were merged by JHC staff and received at Phoenix Australia for analysis using IBM SPSS (version 21) and Mplus (7.11). Following data cleansing and recoding of raw data, data concerning the variables of interest were subject to a series of descriptive and frequency analyses, univariate and multivariate analyses, and structural equation modelling (SEM). Data analyses were performed by a PhD-qualified Research Fellow and aided by an expert statistical consultant and the LASER-Resilience Chief Investigators. Prior to analysis, a data analysis plan was approved by the Defence Laser-Resilience team and two LASER-Resilience Chief Investigators.

Prior traumatic events were coded as either ‘Interpersonal’ or ‘Non-interpersonal’. Interpersonal referred to events that were caused by the action of someone known, or a one-off encounter, and that may have been repetitive or chronic in nature (e.g., combat, rape, serious physical assault, torture, domestic violence, child abuse). Non-interpersonal referred to events that were not interpersonal in nature (e.g., life-threatening accident, natural disaster, witness someone badly injured or killed). For the purposes of the present analyses, combat trauma was included as an interpersonal event but may be considered as a separate category in future analyses.

Three total measures of trauma were created for each participant: 1) Total number of prior traumatic incidents; 2) Total number of prior *interpersonal* traumatic incidents; and 3) Total number of prior *non-interpersonal* traumatic incidents. It is important to highlight that these measures were of traumatic incidents rather than traumatic events. They were calculated by summing of the number of incidents (i.e. frequency counts) for each prior traumatic event type. A new variable, ‘Prior Trauma Type Category’, was created which placed each participant into one of four categories which were coded: 0= no trauma history; 1= non-interpersonal trauma only; 2= interpersonal trauma only; 3= both non-interpersonal and interpersonal trauma. The ‘Prior Trauma Type Category’ was designed to investigate how the type of prior trauma history (non-interpersonal, interpersonal, or mixed) was related to mental health outcome measures, independent of the number of traumatic incidents experienced.

The first question, “Do GEs and Officers enter training with different levels of prior trauma exposure?” was analysed in two parts. First, we examined mean scores and frequencies across GEs and Officers on: 1) Total number of prior traumatic incidents; 2) Total number of prior *interpersonal* traumatic incidents; and, 3) Total number of prior *non-interpersonal* traumatic incidents. Second, we tested whether there was a difference in the proportion of GEs and Officers in frequency across the ‘Prior Trauma History Category’, using a Pearson Chi-square test. Standardised residuals were reviewed to determine the direction of difference, if any, between the GE and Officer groups.

The second and third questions were addressed using Structural Equation Modelling (SEM), a statistical method designed to test a conceptual or theoretical model. SEM permits simultaneous calculations of multiple direct and indirect relationships between variables of interest (regression equations). The SEM was performed separately for each of the GE and Officer groups. In the first stage, these analyses helped to assess the capacity of prior traumatic events to predict mental health outcomes after training in both GEs and Officers (i.e., Question 2). In the second stage, the best model that could explain the direct relationship between prior traumatic incidents and mental health outcomes (PTSD, depression and anxiety) was defined, while accounting for any potential indirect relationship through the coping styles reported prior to training. Analyses of indirect relationships can help in understanding possible mechanisms which may impact on mental health reported after training. The regression coefficient ( $\beta$ ) measures the strength of a relationship between variables. A standardised beta weight ( $\beta$ ) can be interpreted as an effect size measure. The value of 0.1 is a small effect size, 0.3 is a medium effect and 0.5 a large effect. The models defined controlled for gender and differences in length of training required by GEs and Officers. Additionally, scores for mental health outcomes reported after training (i.e., depression at T2, anxiety at T2, PTSD at T2) were controlled against the mental health scores reported prior to training (i.e., depression at T1, anxiety at T1, PTSD at T1). The influence of ‘age’ was reviewed but removed because it was found to be a statistically non-significant influence.

Prior to interpreting an SEM, it is important to ensure that the model defined adequately represents the data by reviewing multiple fit indices (Brown, 2006; Vandenberg & Lance, 2000). Model fit was assessed by reviewing the Comparative Fit Index (CFI: Bentler, 1990); the Root-Mean-Square-Error-Approximation (RMSEA: Steiger, 1989); and the Standardized Root Mean Square Residual (SRMR: Joreskog & Sorbom, 1981). If the CFI falls below .90 then the model will be rejected, and there is a preference to find a model at >.95 (Hu & Bentler, 1999). An RMSEA value near .06 and an SRMR near .08 supports the model as fitting the data well (Hu & Bentler, 1998). Therefore, the

present analyses was looking for a model that met all these fit criteria. Model results were estimated using robust maximum likelihood (MLR) estimation. MLR uses a sandwich estimator, which provides accurate standard errors, even in non-normally distributed data (Wu & Kwok, 2012).

## 4 FINDINGS

### 4.1 Sample characteristics of GEs and Officers

A general description of the LASER-Resilience sample is shown in Table 1. This table shows that although the study participants were mostly male, there was a higher proportion of females among Officers compared with GEs. Officers also tended to be several months older than GEs. Coping strategies that were reportedly used at T1 also differed between GEs and Officers. That is, Officers tended to use higher levels of self-blame strategies, avoidance and risk-taking, while GEs used higher levels of support-seeking, acceptance and reappraisal coping strategies. Across the sample, estimated rates of symptomatology indicative of clinical distress and disorder at T2 (i.e., reached cut-off scores for PTSD, anxiety and depression) were low, ranging from 0.9% PTSD in GEs, 1.6% PTSD in Officers; 4.3% Clinical Distress in GEs, and 5.1% Clinical Distress in Officers. Comparisons of mental health symptoms (PTSD, depression, and anxiety) reported by GEs and Officers at T2 show that there were no differences between GEs and Officers on depression symptoms. However, GEs tended to report higher anxiety symptoms than Officers, and Officers reported higher levels of posttraumatic stress symptoms. Although the focus of this report is on GEs and Officers, for descriptive purposes only, scores on measures of coping style and mental health symptomatology broken down by service branch and gender are displayed in Annex A.

### 4.2 Question 1: Do GEs and Officers enter training with different levels of prior trauma exposure?

Table 2 presents the proportions of endorsement, by GEs and Officers, for each of the 18 potentially traumatic event types. Table 2 shows the three most frequently endorsed traumatic events were the same for Officers and GEs: a natural disaster; witness someone else being badly injured or killed; and, being threatened without a weapon. The average number of total prior traumatic incidents across the whole sample was 11.2 events ( $SD=35.7$ ). This average was based on the total number of trauma events endorsed by GEs and Officers (i.e., includes multiple experiences of a single event). In GEs, the average number of traumatic incidents experienced was 11.71 ( $SD=29.81$ ) and in Officers, the average number of traumatic incidents experienced was 10.37 ( $SD=43.92$ ). The average number of interpersonal incidents experienced by GEs was 7.93 ( $SD=24.59$ ) and the average number of interpersonal incidents experienced by Officers was 6.08, ( $SD = 31.62$ ). The average number of non-interpersonal incidents experienced by GEs was 3.78 ( $SD = 11.68$ ), and the average number of non-interpersonal incidents experienced by Officers was 4.29 ( $SD = 19.07$ ).

Table 1

Age, gender, mean coping strategy scores, and mean mental health symptom severity scores for GEs (N=5276) and Officers (N=2667).

	GEs		Officers	
	Female 13.1% ( n=691)	Male 86.9% (n=4576)	Female 20.3% (n=541)	Male 79.7% (n=2126)
Age at T2	22.6 <sup>b</sup>	21.8	22.4	22.4
Coping style at T1				
Support-seeking	2.85 <sup>b</sup>	2.56	2.66 <sup>a</sup>	2.49
Self-blame	1.49	1.50	2.15	2.09
Acceptance	3.57	3.56	3.41	3.48
Avoidance	1.70 <sup>b</sup>	1.63	1.80	1.73
Risk-taking	1.10	1.21 <sup>b</sup>	1.25	1.39 <sup>a</sup>
Reappraisal	3.36 <sup>b</sup>	3.21	3.12	3.09
Mental health at T1				
K-10 Clinical Distress cut-off (yes)	4.0%	5.4%	2.5%	3.7%
PCL PTSD cut-off (yes)	4.8%	5.6%	0.7%	0.8%
Depression severity scores	6.50	6.43	8.46	8.39
Anxiety severity scores	5.60 <sup>b</sup>	5.38	6.50	6.55
PTSD severity scores	4.19	4.13	5.17	5.00
Mental health at T2				
K-10 Clinical Distress cut-off (yes)	6.3%	4.0%	7.5%	4.4%
PCL PTSD cut-off (yes)	1.7%	0.8%	3.2%	1.2%
Depression severity scores	9.26 <sup>b</sup>	8.74	9.42 <sup>a</sup>	8.61
Anxiety severity scores	6.72 <sup>b</sup>	6.35	6.48 <sup>a</sup>	6.09
PTSD severity scores	4.95	4.85	5.55 <sup>a</sup>	4.96

a=sig greater than other gender in Officers; b=sig greater than other gender in GEs; (note: Holmes-Bonferroni correction applied)

When single trauma event exposures were calculated (i.e., multiple instances of a single event were excluded, and only single endorsement of an event type was included; for example, endorsement of the experience of child physical abuse, excluding the number of times it was experienced), a moderate sized group reported no prior trauma exposure (n=1470, 28.5%). In contrast, there were 1002 participants (19.4%) who reported having experienced 1 distinct traumatic event type, 751 (14.6%) who reported having experienced 2 distinct traumatic event types, 588 (11.4%) who reported having experienced 3 distinct traumatic event types, and 1340 (26.0%) who reported having experienced 4 or more distinct traumatic event types. For descriptive purposes, the number and percentage of distinct event type exposures across services and gender can be seen in Annex B. The proportion of respondents reporting 0, 1, 2, 3 or 4 or more trauma event types by service and gender can be seen in Annex C.

To assess for any statistically significant difference between GEs and Officers on type of prior trauma exposure upon entry to training, a Pearson Chi-Square was conducted. This analysis revealed a significant relationship between GE/Officer status and Prior Trauma Type Category, Pearson Chi-Square (3,  $N=5169$ ) = 69.90,  $p<.001$ . A review of the standardised residuals revealed that Officers were more frequently represented in the 'No Trauma' category than GEs (34.4% compared with 25.1%). GEs were more frequently represented in the 'Mixed' (interpersonal and non-interpersonal) category than Officers (42.7% vs 33.7% respectively). **Thus, GEs and Officers entered training with different levels of prior trauma exposure, where Officers were more likely than GEs to report no prior trauma exposure, and where GEs were more likely than Officers to have experienced a mixture of non-interpersonal and interpersonal trauma exposures.**

#### **4.3 Question 2: What is the relationship between prior trauma exposure and mental health outcomes at end of initial training/12 months following appointment (T2)?**

SEM was used to examine the predictive value of prior trauma exposure on T2 mental health outcomes of depression, anxiety and PTSD simultaneously. These analyses controlled for mental health scores at T1, gender, and the duration of training. A latent variable, 'Prior Trauma History', was created using the Prior Trauma Type Category, 'Total number of Prior Non-interpersonal Traumatic Incidents', and 'Total Number of Prior Interpersonal Traumatic Incidents' measures as indicators. Correlational analyses of these three variables found no evidence of excessive multicollinearity which supported their inclusion as separate indicators of the latent variable. Confirmatory factor analysis found that all three indicator variables independently and significantly contributed to the latent variable prior trauma history. This model was assessed separately in GEs and Officers to investigate the relationship between 'Prior Trauma History' and mental health outcomes at T2.

Table 2

Percentage of GEs (N=3240) and Officers (N=1929) who endorsed 0, 1, 2, 3 or 4-plus traumatic event types.

Event	% Yes	GEs					% Yes	Officers				
		0	1	2	3	4+		0	1	2	3	4+
Direct combat	9.6	90.4	1.3	1.6	0.9	5.9	4.1	95.9	0.5	0.7	0.9	2
Life-threatening accident	22.4	77.6	11.4	6.0	2.5	2.5	18.8	81.2	10.5	4.9	1.5	1.8
Fire, flood or other natural disaster	31.9	68.1	13.8	6.9	4	7.2	27.5	72.5	11.9	7.3	3.1	5.1
Witness someone badly injured or killed	33.9	66.1	14.6	8.6	3.4	7.3	27.4	72.6	11.1	7.3	2.8	6.2
Rape	1.1	98.9	0.8	0.1	0.1	0.1	1.7	98.3	1.0	0.1	0.3	0.4
Sexual molestation	1.4	98.6	0.9	0.2	0.1	0.2	1.9	98.1	1.0	0.2	0.1	0.6
Serious physical attack or assault	24.5	75.5	7.5	4.4	2.2	10.3	17.1	82.9	5.7	3	2.1	6.3
Threatened/harassed without a weapon	30.8	69.2	6.8	5.4	3	15.6	23.9	76.1	6.9	5.1	3.3	8.7
Threatened with a weapon/held captive/kidnapped	10.8	89.2	5.7	2.4	1.1	1.6	8.0	92.0	5.2	1.3	0.4	1.1
Tortured or victim of terrorists	0.1	99.9	0.1	0.0	0.0	0.0	0.1	99.9	0.1 <sup>a</sup>	0.0	0.0	0.1 <sup>a</sup>
Domestic violence	7.3	92.7	1.7	1.0	0.9	3.7	3.8	96.2	0.7	1.0	0.2	1.9
Witness domestic violence	16.5	83.5	4.8	2.9	2.1	6.7	9.3	90.7	2.7	1.9	1.0	3.8
Finding a dead body	6.6	93.4	4.7	0.9	0.3	0.7	6.3	93.7	3.5	1.5	0.3	1.1
Witness someone suicide or attempt suicide	9.5	90.5	6.0	1.8	0.8	1.7	10.1	89.9	6.0	2.2	0.4	1.6
Child abuse (physical)	2.4	97.6	0.5	0.3	0.2	1.5	2.0	98	0.3	0.4	0.2	1.1
Child abuse (emotional)	3.2	96.8	0.7	0.3	0.2	2.0	2.9	97.1	0.3	0.3	0.4	2.0
Any other stressful event	3.6	96.4	2.5	0.3	0.3	0.4	4.1	95.9	2.5	0.5	0.3	0.8
An event happened to someone close to you	10.9	89.1	6.3	2.1	0.7	1.8	9.0	91	4.8	2.1	0.8	1.3

<sup>a</sup> rounding add to greater than 100% (n=1)

Table 3

Number and percentage of respondents in each Prior Trauma Type Category among GEs (N=3240) and Officers (N=1929).

	GEs	Officers
No Trauma	814 (25.1%)	663 (34.4%)*
Non-Interpersonal Only	660 (20.4%)	434 (22.5%)
Interpersonal Only	383 (11.8%)	181 (9.4%)
Mixed with both trauma types	1383 (42.7%)*	651 (33.7%)

\* Significantly different from the other group at  $p < .001$ .

In GEs, the model fit the data well, CFI = .977, RMSEA = .029 and SRMR = .027. Prior trauma exposure was a significant predictor of anxiety ( $\beta = .12, p = .011$ ) and PTSD ( $\beta = .15, p < .001$ ), and approached significance for depression ( $p = .063$ ). This is depicted in Figure 1. In Officers, the model fit the data well, CFI = .975, RMSEA = .035 and SRMR = .023. Prior trauma exposure was a significant predictor of depression ( $\beta = .11, p < .001$ ) and PTSD ( $\beta = .07, p = .037$ ), but not anxiety ( $p = .678$ ). This is depicted in Figure 2. The beta values ( $\beta$ ) reported here represent standardised path coefficients and can be used to indicate a magnitude of effect (i.e., strength of the relationship between prior trauma exposure and mental health outcomes). Beta values less than 0.10 are indicative of a ‘small’ effect, values in the 0.30 range represent a ‘medium’ effect, and values greater than 0.50, represent a ‘large’ effect. **Therefore, in GEs, prior trauma exposure had a small effect on anxiety and PTSD levels at T2. In Officers, prior trauma exposure had a small effect on the levels of depression at T2, and a significant but very small effect on PTSD at T2. Prior trauma exposure was not related to depression at T2 in GEs or to anxiety at T2 in Officers.**

#### **4.4 Question 3: Do coping styles mediate the relationship between prior trauma exposure and mental health outcomes at the end of training?**

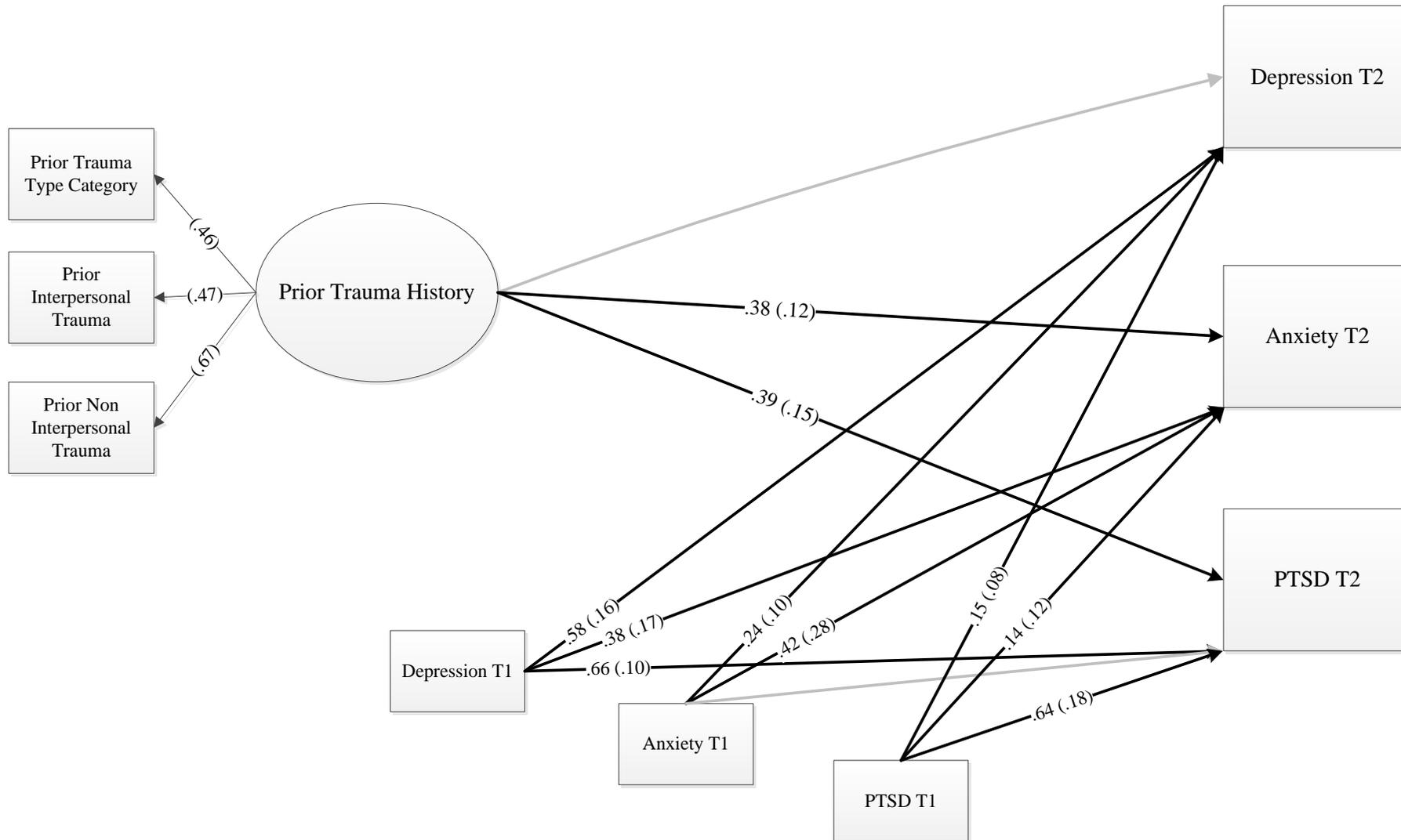
SEM was also used to answer question three. The first objective in the SEM was to define the best model that could explain the direct relationship between prior trauma history and each of the T2 mental health outcomes, while accounting for any indirect effects through coping strategies reported at T1. Studying indirect effects helps to identify mechanisms which may explain the relationships between a predictor and an outcome variable. In this study, this refers to the role of prior trauma exposure on T2 mental health outcomes as influenced via its impact on T1 coping strategies, which subsequently affect the T2 mental health outcomes (i.e., PTSD, depression, anxiety).

To complete this analysis, the T1 coping variables were added as mediators to the model analysed

in Question 2. These variables included the six coping strategies measured at T1: support seeking, self-blame, acceptance, avoidance, risk-taking and reappraisal. The model again controlled for gender, duration/length of training, and initial T1 mental health symptomatology. SEM analyses were again run for GEs and Officers separately.

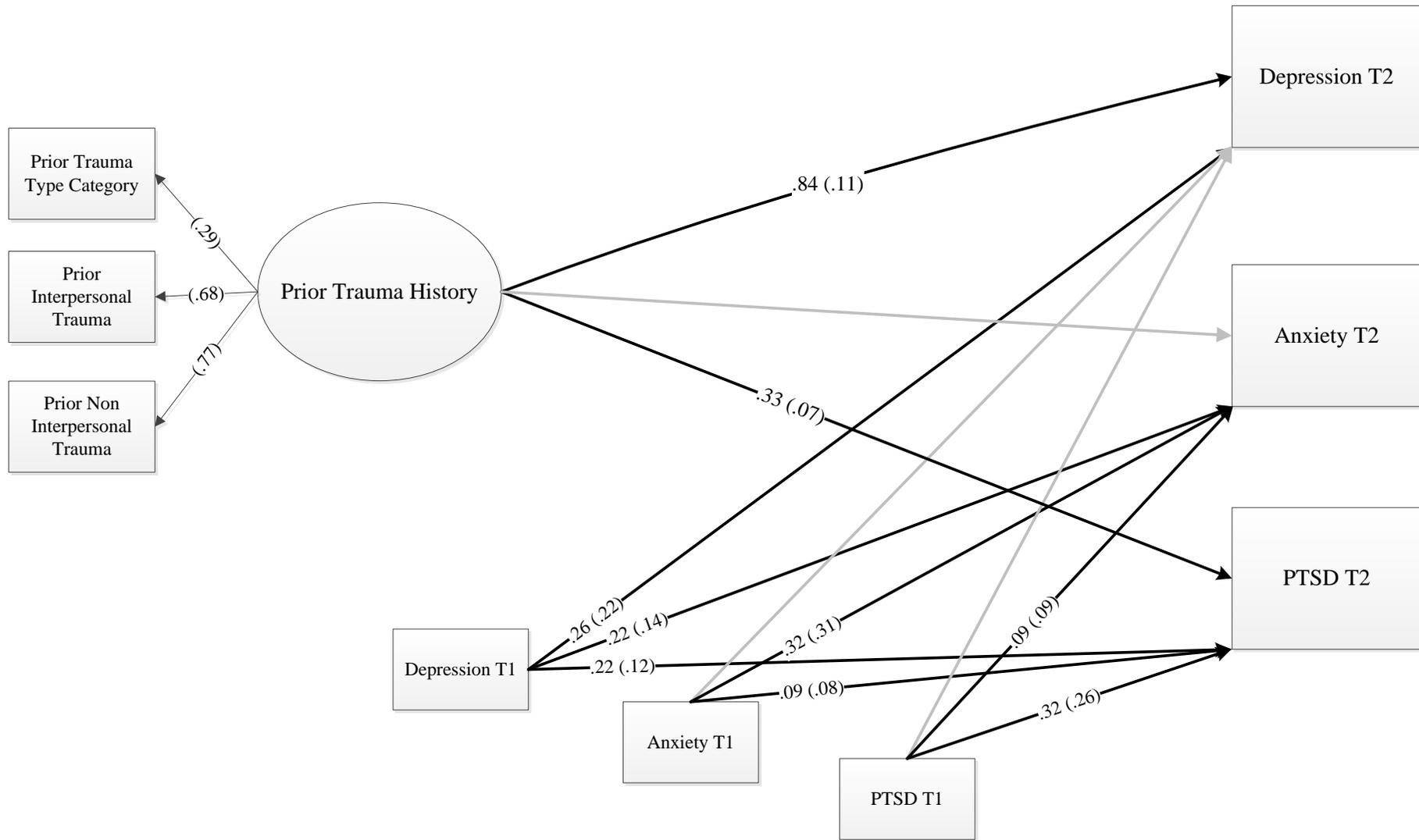
In the GE model, with all six T1 coping strategies included as mediators, the model produced an unacceptable model fit, CFI = .638, RMSEA = .081 and SRMR = .072. To improve model fit, the outputs from the analyses (significance test and modification indices) were used to guide refinement of the model. Modification indices suggest which aspects of the model are not substantially contributing to explain the relationships observed between the data. When refining the model, it is important to remember the question being investigated, which in this case is the potential role for T1 coping strategies to help explain the relationship between prior trauma and T2 mental health outcomes. A step-wise approach with reassessment between each step sequentially removed the T1 coping strategy variables, reappraisal, avoidance, risk-taking, acceptance, and self-blame (i.e., the inclusion of these variables did not enable a good fit with the data). The final mediating model, which included T1 support-seeking, was assessed and met the necessary fit requirement for interpretation, CFI = .980, RMSEA = .025 and SRMR = .026. Figure 3 shows the final mediation model for the GE group. This mediation analysis found that while support-seeking reported at T1 had a very small effect on T2 anxiety levels, this mechanism did not help explain the relationship between prior trauma history and T2 mental health outcomes. That is, there was no mediation effect for T1 support-seeking. The mediation analyses in the GE group suggested that none of the T1 coping strategies helped to explain the relationship between prior trauma and T2 mental health outcomes. However, T1 support-seeking did have a direct relationship with anxiety at T2 in GEs.

The Officer group analysis was similar. With all six T1 coping strategies included as mediators, the model produced an unacceptable model fit, CFI = .595, RMSEA = .096 and SRMR = .092. Following the same modification procedure described above, sequentially removing T1 avoidance, reappraisal, risk-taking, self-blame and acceptance generated a well-fitting model. The final model with T1 support-seeking defined as a mediator met the necessary fit requirement for interpretation, CFI = .959, RMSEA = .040 and SRMR = .027. An important difference between this model in the Officers and the model defined for the GEs, is that T1 support-seeking did not predict any mental health outcomes reported at T2. Again, there was no significant mediation through T1 support-seeking which helped understand the relationship between prior trauma history and T2 mental health outcomes. Therefore, while the mediation model fits the data well, the model demonstrates that T1 support-seeking had no direct or indirect relationship with T2 mental health outcomes reported by Officers. For this reason, support-seeking was removed from the Officer model as represented in Figure 4. It should be noted that in Figure 4, support-seeking was removed from the



*Figure 1*  
The relationship between prior trauma history and T2 mental health outcomes in GEs.

Note - Black lines indicate significant parameters (grey lines are not significant). Unstandardised beta weights (standardised in brackets) are provided for significant parameters. Rectangle boxes are observed variables, and the Ellipse is a latent variable.



*Figure 2*  
The relationship between prior trauma history and T2 mental health outcomes in Officers.

Note - Black lines indicate significant parameters (grey lines are not significant). Unstandardised beta weights (standardised in brackets) are provided for significant parameters. Rectangle boxes are observed variables, and the Ellipse is a latent variable.

diagram as it had no significant relationships with other variables. However as it was included in the statistical analyses some of the beta weights differed from Figure 2 despite the similar pictorial representation.

The SEM models controlled for the influence of T1 mental health scores. Figure 3, representing the GE model, shows that eight of the nine relationships between T1 mental health scores and T2 mental health scores were significant with beta weights ranging from 0.1 to 0.28, indicating a range of weak to moderate relationships between T1 and T2 mental health outcomes. Figure 4, representing the Officer model, shows that seven of the nine relationships between T1 mental health scores and T2 mental health scores were significant, again indicating a range of weak to moderate relationships between T1 and T2 mental health outcomes. By controlling for depression, anxiety and PTSD at T1 on each T2 score, there was insufficient variance remaining in each of the GE and Officer models which could be predicted by the T1 coping strategies. That is, the relationship between T1 mental health scores and T2 mental health scores is sufficient in the SEM for each of the GE and Officer groups, and did not benefit from the inclusion of T1 coping strategies in the model.

## **5 DISCUSSION**

The LASER-Resilience project is aimed at identifying the individual and situational factors which promote or erode psychological resilience. This report was particularly interested in the influence of prior trauma exposure on mental health outcomes (PTSD, anxiety, and depression) reported at T2 for new ADF General Enlistees and Officer Appointees. Additionally, the report was interested in how coping styles reported at the commencement/early stage of training (T1) might serve to mediate the relationship between prior trauma exposure and mental health symptoms reported at T2.

It is known that exposure to prior trauma is an important risk factor in the development of mental health problems, and that this risk increases as the number of exposures increase (McFarlane et al., 2011). Additionally, particular traumas, such as interpersonal traumas, pose greater risk to mental health than non-interpersonal traumas (Forbes et al., 2012). Upon entering the ADF, about a third of personnel reported no prior trauma exposure, while approximately 75% of GEs and 65% of Officers entered training with at least one potentially traumatic event experience. Although these rates were not empirically tested against Australian norms (e.g., age matched) they do appear comparable to trauma exposure rates seen in the general Australian community (Creamer, Burgess, & McFarlane, 2001; Mills et al., 2011). That is, up to a third of the general community, and personnel in this sample, have experienced no trauma event exposure at all, while about 70% have experienced at

least one traumatic event. There was a sub-group (26%) of recruits in this sample who experienced four or more trauma event types (notwithstanding the number of times each traumatic event type was experienced), which is somewhat higher than the proportion of the general community who report four or more trauma event types (8.5%). While the results from this study suggest that prior trauma exposure plays a limited role in the expression of mental health problems after initial training, the scientific literature would suggest that this sub-group may be increasingly vulnerable to mental health problems over time. It could be beneficial to examine this sub-group over time in future LASER reports.

It is important to note that despite any increased vulnerability that trauma exposure may confer, the presence of mental health problems observed at T2 in this sample was relatively low. That is, rates of psychological distress (depression and anxiety symptomatology) and PTSD symptomatology appeared lower than those usually observed within the general Australian community. Following training, 4.3% of GEs and 5.1% of Officers experienced clinical levels of psychological distress, and only 0.9% of GEs and 1.6% of Officers experienced clinical levels of posttraumatic stress symptoms. These rates are also lower than those observed in the ADF Mental Health Prevalence and Wellbeing Study which sampled deployed and non-deployed ADF personnel (McFarlane et al., 2011). Hence, despite trauma exposure prior to entering the ADF, the mental health of new GEs and Officers after arduous military training appears generally good. This could be because recruits enter the ADF with a degree of functioning or resilience that has enabled them to deal with their prior trauma exposure, which helps them to deal with the demands of training/military service. Indeed, these findings could also be a reflection of the effectiveness of stringent ADF selection processes, which admits only those who function at a high standard into the military.

To investigate the role of prior trauma exposure further, three questions were asked of the data. The first related to differences in reported prior trauma between GEs and Officers. GEs were more likely to have experienced a mixture of interpersonal and non-interpersonal trauma, and less likely to have no trauma experiences than Officers. These subtle differences could be interpreted as a reflection of potentially different life experiences in those who join/are selected into the ADF as GEs and those who join/are selected in as Officers. The scientific literature would suggest that increased exposure to traumatic events increases a person's risk for developing later mental health symptoms, but we did not see this risk manifest itself during the training period.

The second and third questions related to the role of prior trauma exposure in predicting mental health (PTSD, depression, anxiety symptomatology) at T2. When pre-training symptoms of PTSD, depression, and anxiety in GEs were controlled, prior trauma exposure was a significant but weak predictor of both PTSD and anxiety scores at T2. Prior trauma exposure did not predict depression

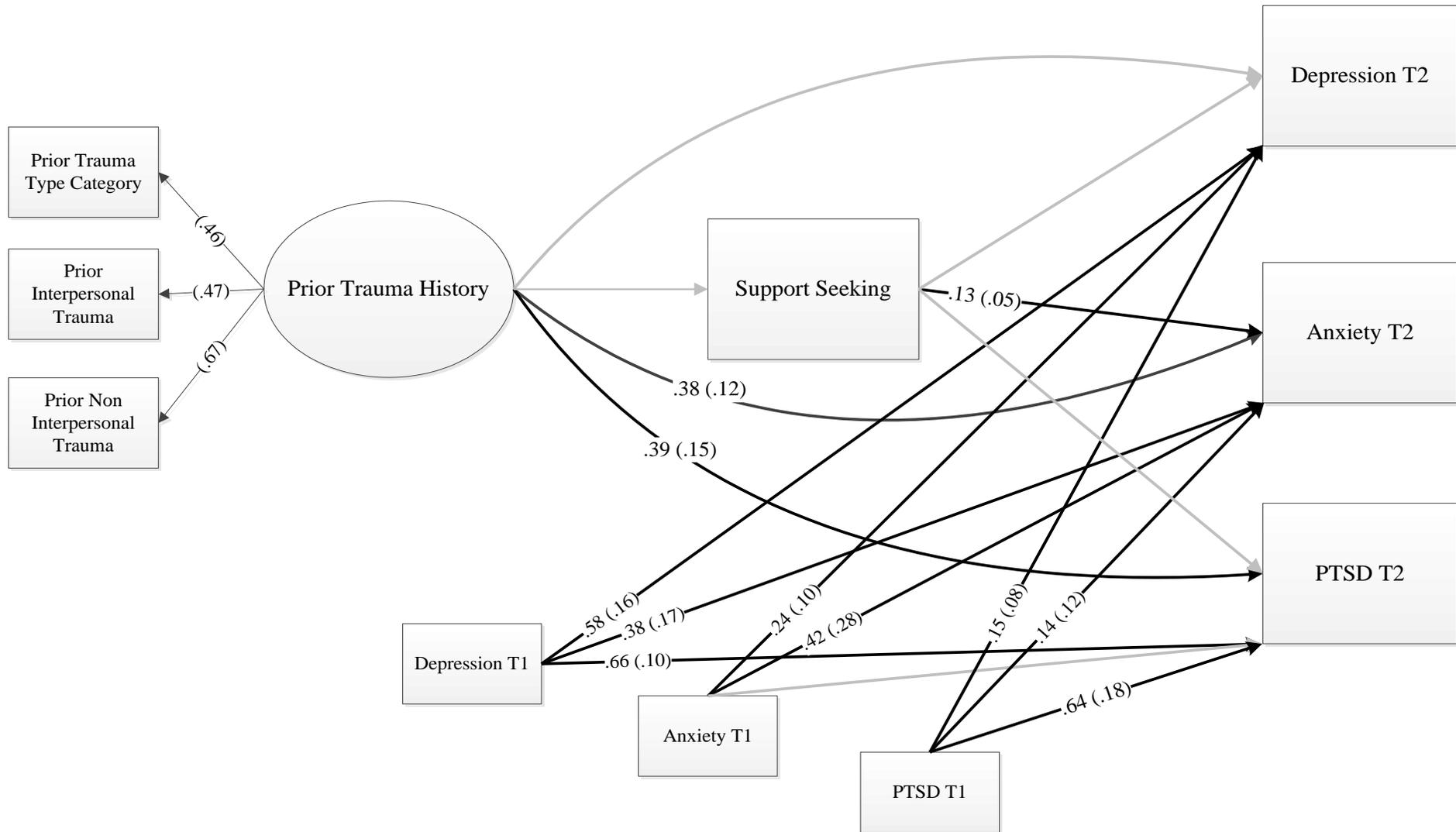
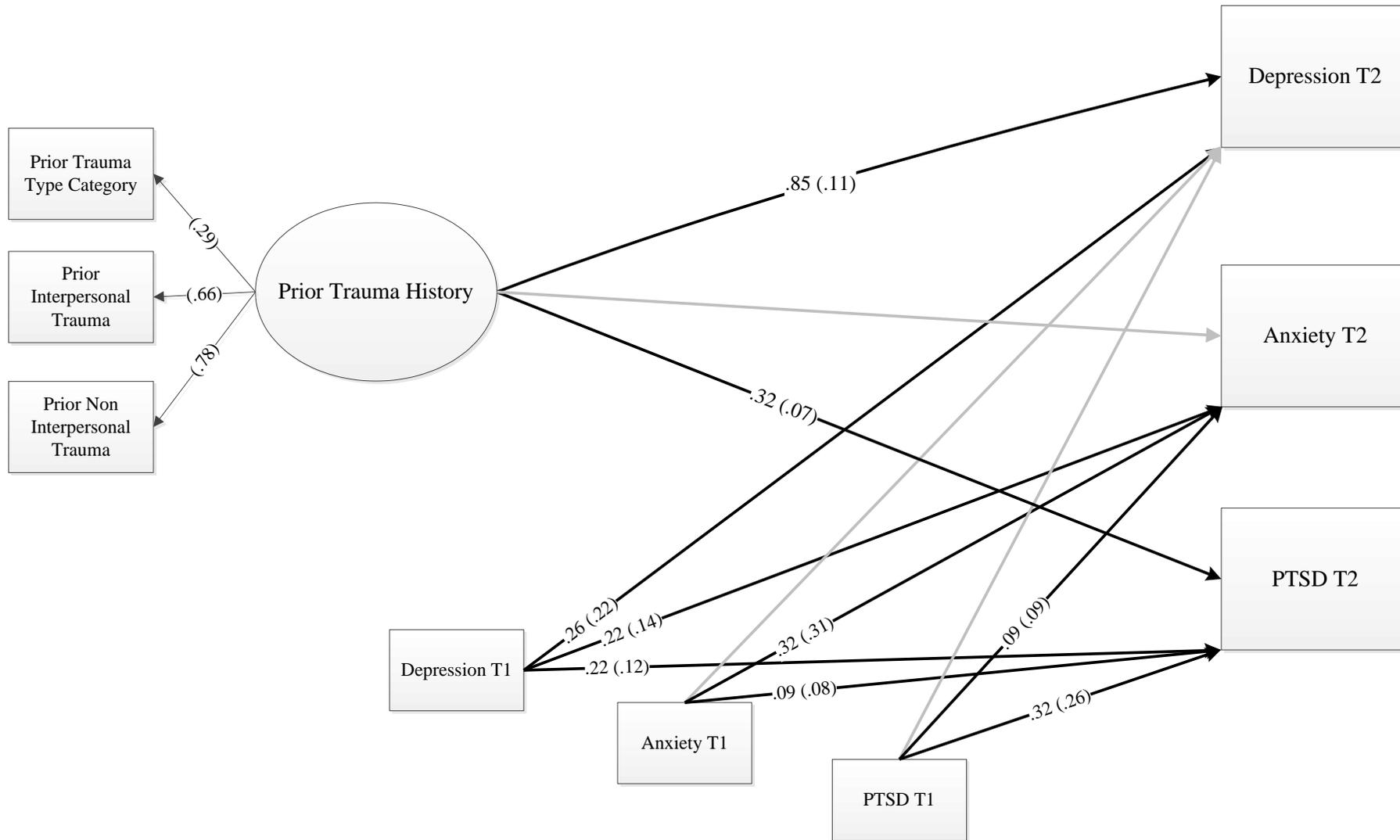


Figure 3

The relationship between prior trauma history, T1 coping strategies and T2 mental health outcomes in GEs.

Note – All other T1 Coping Strategies were removed from the model to improve model fit. Black lines indicate significant parameters (grey lines are not significant). Unstandardised beta weights (standardised in brackets) are provided for significant parameters. Rectangle boxes are observed variables, and the Ellipse is a latent variable.



*Figure 4*

The relationship between prior trauma history, T1 coping strategies and T2 mental health outcomes in Officers.

Note – All Coping Strategies were removed from the model to improve model fit. Black lines indicate significant parameters (grey lines are not significant). Unstandardised beta weights (standardised in brackets) are provided for significant parameters. Rectangle boxes are observed variables, and the Ellipse is a latent variable.

in GEs. In Officers, prior trauma exposure was a significant but weak predictor of depression, and a very weak predictor of PTSD. Prior trauma exposure did not predict anxiety in Officers. These findings support previous research to the extent that while prior trauma is a risk factor, its contribution to mental health problems is small (Brewin et al., 2000). As suggested earlier, it is likely that in this population the impact of prior trauma is limited by virtue of the high standard of functioning required for entry into the military at both GE and Officer levels. These findings also suggest there may be other important factors that contribute, alongside prior trauma exposure, to influence mental health symptoms experienced after training.

In exploring the potential mechanisms or mediators in the relationship between prior trauma and mental health, we investigated the use of different coping styles reported by GEs and Officers prior to training to help in understanding how prior trauma exposure predicted mental health (PTSD, depression, anxiety) symptoms at T2. We found that none of the coping strategies measured prior to training in either GEs or Officers played an important role in mediating the relationship between prior trauma exposure and mental health. That is, coping strategies used by GEs and Officers did not provide additional value to understanding the relationship between prior trauma and mental health at T2, especially once the role of mental health status prior to entering training was accounted for. These results were surprising, particularly given the importance of coping found in previous LASER findings (Crane, Lewis, Forbes, & Elliot, 2013).

It is important to note here that the absence of finding any coping strategy as a mediator is not a suggestion that these strategies are unimportant. Indeed, in earlier LASER reports they have been shown to be significantly related to mental health over time (Crane, Lewis, Forbes, & Elliot, 2013). This is consistent with previous research illustrating that adaptive and maladaptive coping skills are integrally related to mental health and wellbeing (Boden et al., 2014; Hassija et al., 2012; Pietrzak et al., 2011). However, the analyses in this current report were specifically focused on determining whether these skills help better understand the relationship between trauma exposure prior to joining the ADF and mental health problems following training in the ADF.

The finding that coping styles did not play a role in explaining the prior trauma and mental health relationship may be due to the significant relationship between mental health status prior to, and after, training. That is, it is possible that the influence of coping strategies may have been already accounted for by their relationship with mental health symptoms prior to training. It was important to control for mental health symptoms prior to training because the analyses would otherwise not have been able to determine whether coping strategies were true mediators, or whether the model

was simply observing the residual effects of coping strategies on mental health at T1. The fact that coping was not important once we accounted for mental health symptoms at entry to training was unexpected. It may be that coping strategies change during training and these changes may be more informative about how training impacts on mental health. Additionally, as referred to above, it is likely that GEs and Officers would need to have coped adequately with prior trauma exposure to have met entry requirements and been selected into the ADF in the first instance. This would eliminate a considerable portion of the variations we may have otherwise observed in coping responses to prior trauma events. Future analyses that look at changes in coping strategies over time and the relationship between these changes and mental health may be worthwhile.

Finally, it is important to note some limitations in this study. First, it is possible that the variation in T1 and T2 data collection points for GEs and Officers may have impacted on the findings. For example, as T1 data was collected for Officers who had already engaged in up to two weeks of training (compared with GEs who were assessed at the beginning of training), the impact of this training or skills already developed may have influenced the reporting of certain coping styles or mental health outcomes for Officers. Similarly, as T2 data collection points occurred between three and twelve months following commencement of training across the sample, despite controlling for differences in duration of training it is possible that differences in reported T2 mental health outcomes were influenced by unmeasured factors associated with this time. Second, although the purpose of this study was to examine prior trauma exposure and mental health symptoms among new GEs and Officers, potential sub-groups within these groups (e.g., service and gender) may have influenced these findings. For instance, overall distress reported by the sample at T2 may have been influenced by larger increases in symptoms among female personnel. Although it was not the purpose of this report to compare services and gender, it will be important to consider the influencing roles of these factors in future comparisons between GEs and Officers. Third, given that GEs and Officers were tested early in their ADF careers, it is possible that some natural response bias may have impacted on self-reporting (e.g., desirability towards reporting good mental health and wellbeing). Finally, given the retrospective nature of self-reporting, there may have also been some biases in participant recall that impacted on reporting of prior trauma exposure. Continuing to control for these effects in future analyses will be important in minimising their potential impact.

## **6 CONCLUSIONS**

Overall, despite the level of prior trauma exposure among ADF recruits, and subtle differences across GEs and Officers in trauma exposure, low rates of mental health problems following initial training were observed among GEs and Officers. While it is important to recognise the role of prior

trauma history in predicting mental health problems reported after military training in both GEs and Officers, the impact of these experiences on mental health outcomes is small. There are likely to be a range of factors outside of prior trauma exposure that contribute to the reporting of mental health problems after training, including the potential presence of mental health symptoms upon entering the ADF. The implications of the present LASER-Resilience findings are listed in the Executive Summary section of this report.

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## ANNEX A:

Table A-1: *Officers Age, gender, mean coping strategy scores and mean mental health symptom severity scores and across service branch (N=2662).*

	Navy		Army		Air Force	
	Female 24.7% (n=114)	Male 75.3% (n=439)	Female 18.2% (n=273)	Male 81.8% (n=1229)	Female 21.5% (n=124)	Male 78.5% (n=453)
Age at Time 2	21.6	22.8	23.0	22.4	22.4	22.0
Coping strategy at Time 1						
Support-seeking	2.56	2.47	2.68	2.50	2.73	2.46
Self-blame	2.28	2.10	2.12	2.09	2.07	2.08
Acceptance	3.37	3.44	3.48	3.50	3.30	3.47
Avoidance	1.83	1.76	1.78	1.70	1.81	1.75
Risk-taking	1.21	1.39	1.30	1.42	1.17	1.33
Reappraisal	3.09	3.11	3.15	3.10	3.07	3.05
Mental Health at Time 1						
K-10 Clinical Distress cut-off (yes)	2.5%	3.5%	2.7%	4.3%	2.1%	2.2%
PCL PTSD cut-off (yes)	1.6%	0.8%	0.4%	0.7%	0.0%	0.9%
Depression severity scores	8.60	8.32	8.33	8.35	8.57	8.55
Anxiety severity scores	6.80	6.80	6.32	6.53	6.54	6.31
PTSD severity scores	5.36	5.21	5.10	4.92	5.10	4.96
Mental Health at Time 2						
K-10 Clinical Distress cut-off (yes)	10.2%	3.1%	6.7%	5.9%	5.9%	1.9%
PCL PTSD cut-off (yes)	5.1%	0.6%	3.0%	1.8%	1.0%	0.3%
Depression severity scores	9.86	8.29	9.15	8.88	9.36	8.28
Anxiety severity scores	6.69	6.11	6.33	6.12	6.50	6.01
PTSD severity scores	5.95	4.98	5.38	5.02	5.35	4.81

Table A-2: *General Entry Age, gender, mean coping strategy scores and mean mental health symptom severity scores and across service branch (N=5264).*

	Navy		Army		Air Force	
	Female	Male	Female	Male	Female	Male
	20.6% (n=226)	79.4% (n=869)	9.2% (n=329)	90.8% (n=3259)	23.4% (n=136)	76.6% (n=445)
Age at Time 2	21.5	21.7	23.2	21.6	23.4	23.6
Coping strategy at Time 1						
Support-seeking	2.89	2.62	2.80	2.54	2.94	2.61
Self-blame	1.45	1.47	1.49	1.50	1.55	1.59
Acceptance	3.60	3.54	3.58	3.57	3.52	3.54
Avoidance	1.70	1.66	1.69	1.62	1.73	1.60
Risk-taking	1.11	1.18	1.11	1.22	1.07	1.15
Reappraisal	3.40	3.23	3.34	3.21	3.39	3.22
Mental Health at Time 1						
K-10 Clinical Distress cut-off (yes)	1.9%	5.0%	5.7%	5.7%	2.2%	3.9%
PCL PTSD cut-off (yes)	3.9%	4.2%	4.6%	5.8%	6.7%	6.5%
Depression severity scores	6.51	6.46	6.52	6.42	6.43	6.46
Anxiety severity scores	5.57	5.43	5.64	5.36	5.53	5.53
PTSD severity scores	4.20	4.16	4.16	4.11	4.24	4.19
Mental Health at Time 2						
K-10 Clinical Distress cut-off (yes)	9.5%	3.9%	2.5%	3.8%	9.0%	5.9%
PCL PTSD cut-off (yes)	1.6%	1.1%	1.9%	0.8%	1.3%	0.4%
Depression severity scores	9.97	9.18	8.80	8.61	9.08	8.87
Anxiety severity scores	7.13	6.86	6.30	6.19	6.90	6.56
PTSD severity scores	5.11	4.98	4.84	4.82	4.91	4.83

ANNEX B:

Table B-1: Officers number and proportion (%) of respondents who reported traumatic event exposure by service and gender (N=1916).

Trauma event	Navy n=444		Army n=1011		Air Force n=461	
	Female n=119	Male n=325	Female n=101	Male n=360	Female n=101	Male n=360
Direct combat	1 (0.8%)	20 (6.2%)	0 (0.0%)	20 (5.6%)	0 (0.0%)	20 (5.6%)
Life-threatening accident	17 (14.3%)	61 (18.8%)	20 (12.2%)	207 (24.5%)	10 (9.9%)	64 (17.8%)
Fire, flood or other natural disaster	32 (26.9%)	83 (25.5)	48 (29.3%)	264 (31.3%)	23 (23.0%)	105 (29.2%)
Witness someone badly injured or killed	26 (21.8%)	97 (29.8)	32 (19.6%)	303 (35.9%)	19 (18.8%)	91 (25.3%)
Rape	8 (6.7%)	3 (0.9%)	9 (5.5%)	15 (1.8%)	3 (3.0%)	1 (0.3%)
Sexual molestation	10 (8.4%)	7 (2.2%)	8 (4.9%)	17 (2.0%)	4 (4.0%)	2 (0.6%)
Serious physical attack or assault	10 (8.4%)	61 (18.8%)	13 (7.9%)	214 (25.3%)	7 (7.0%)	67 (18.7%)
Threatened/harassed without a weapon	26 (21.8%)	84 (25.9%)	25 (15.2%)	287 (34.0%)	17 (16.8%)	89 (24.7%)
Threatened with a weapon/held captive/kidnapped	5 (4.2%)	31 (9.7%)	11 (6.7%)	94 (11.1%)	5 (5.0%)	23 (6.4%)
Tortured or victim of terrorists	0 (0.0%)	0 (0.0%)	1 (0.6%)	5 (0.6%)	1 (1.0%)	0 (0.0%)
Domestic violence	10 (8.4%)	17 (5.3%)	15 (9.1%)	43 (5.1%)	3 (3.0%)	11 (3.1%)
Witness domestic violence	16 (13.4%)	39 (12.1%)	28 (17.1%)	99 (11.7%)	10 (10.0%)	34 (9.5%)
Finding a dead body	6 (5.0%)	20 (6.2%)	9 (5.5%)	69 (8.1%)	10 (9.9%)	24 (6.7%)
Witness someone suicide or attempt suicide	24 (20.3%)	23 (7.1%)	24 (14.6%)	98 (11.6%)	12 (11.9%)	31 (8.6%)
Child abuse (physical)	8 (6.7%)	15 (4.6%)	11 (6.7%)	20 (2.4%)	3 (3.0%)	10 (2.8%)
Child abuse (emotional)	16 (13.6%)	17 (5.3%)	17 (10.4%)	35 (4.1%)	7 (6.9%)	12 (3.4%)
Any other stressful event	5 (5.2%)	20 (6.7%)	13 (8.8%)	34 (4.4%)	5 (5.7%)	13 (4.0%)
An events happened to someone close to you	21 (18.6%)	35 (11.0%)	29 (17.9%)	86 (10.3%)	10 (10.3%)	37 (10.5%)

Table B-2: *General Entry number and proportion (%) of respondents who reported traumatic event exposure by service and gender (N=3232).*

Trauma event	Navy n=630		Army n=2286		Air Force n=316	
	Female n=120	Male n=510	Female n=161	Male n=2125	Female n=77	Male n=239
Direct combat	5 (4.2%)	96 (18.9%)	2 (1.2%)	229 (10.9%)	1 (1.3%)	23 (9.7%)
Life-threatening accident	22 (18.5%)	122 (24.2%)	31 (19.4%)	513 (24.3%)	9 (11.7%)	53 (22.5%)
Fire, flood or other natural disaster	32 (26.7%)	173 (34.3%)	48 (30.0%)	696 (32.9%)	30 (39.0%)	90 (37.7%)
Witness someone badly injured or killed	31 (25.8%)	177 (34.9%)	42 (26.1%)	807 (38.2%)	22 (28.6%)	78 (32.6%)
Rape	1 (0.8%)	2 (0.4%)	10 (6.3%)	22 (1.0%)	4 (5.2%)	0 (0.0%)
Sexual molestation	9 (7.6%)	10 (2.0%)	15 (9.5%)	25 (1.2%)	5 (6.5%)	2 (0.8%)
Serious physical attack or assault	16 (13.3%)	133 (26.2%)	17 (10.6%)	642 (30.3%)	10 (13.0%)	59 (24.9%)
Threatened/harassed without a weapon	25 (20.8%)	175 (34.4%)	27 (16.8%)	792 (37.5%)	6 (7.8%)	79 (33.1%)
Threatened with a weapon/held captive/kidnapped	7 (5.8%)	69 (13.5%)	8 (5.0%)	282 (13.3%)	0 (0.0%)	25 (10.5%)
Tortured or victim of terrorists	1 (0.8%)	2 (0.4%)	1 (0.6%)	12 (0.6%)	0 (0.0%)	0 (0.0%)
Domestic violence	14 (11.7%)	46 (9.0%)	27 (16.8%)	222 (10.5%)	6 (7.8%)	16 (6.8%)
Witness domestic violence	23 (19.2%)	97 (19.1%)	34 (21.1%)	465 (22.0%)	16 (20.8%)	38 (15.9%)
Finding a dead body	3 (2.5%)	34 (6.7%)	10 (6.2%)	165 (7.8%)	5 (6.5%)	15 (6.3%)
Witness someone suicide or attempt suicide	19 (15.8%)	56 (11.0%)	21 (13.0%)	235 (11.1%)	6 (7.9%)	22 (9.2%)
Child abuse (physical)	8 (6.7%)	14 (2.8%)	11 (6.8%)	86 (4.1%)	4 (5.2%)	11 (4.6%)
Child abuse (emotional)	10 (8.3%)	21 (4.1%)	20 (12.4%)	113 (5.3%)	4 (5.2%)	14 (5.9%)
Any other stressful event	6 (6.1%)	51 (3.5%)	9 (7.3%)	89 (4.8%)	5 (7.4%)	11 (5.3%)
An events happened to someone close to you	20 (17.1%)	48 (10.0%)	24 (15.6%)	277 (13.4%)	14 (18.7%)	35 (15.0%)

## ANNEX C:

*Table C-1: Officers number of traumatic events experienced reported by service and gender (N=1916).*

No. of trauma events	Navy		Army		Air Force		Total	
	Female n=119	Male n=325	Female n=164	Male n=847	Female n=101	Male n=360	Female n=384	Male n=1532
0	39 (32.8%)	123 (37.8%)	69 (42.1%)	241 (28.5%)	46 (45.5%)	140 (38.9%)	154 (40.1%)	504 (32.9%)
1	30 (25.2%)	65 (20.0%)	34 (20.7%)	155 (18.3%)	18 (17.8%)	71 (19.7%)	82 (21.4%)	291 (19.0%)
2	12 (10.1%)	43 (13.2%)	17 (10.4%)	144 (17.0%)	14 (13.9%)	50 (13.9%)	43 (11.2%)	237 (15.5%)
3	10 (8.4%)	23 (7.1%)	15 (9.1%)	117 (13.8%)	6 (5.9%)	34 (9.4%)	31 (8.1%)	174 (11.4%)
4+	28 (23.5%)	71 (21.9%)	29 (17.7%)	190 (22.4%)	17 (16.8%)	65 (18.1%)	74 (19.3%)	326 (21.3%)

*Table C-2: General Entry number of traumatic events experienced reported by service and gender (N=3232).*

No. of trauma events	Navy		Army		Air Force		Total	
	Female n=120	Male n=510	Female n=161	Male n=2125	Female n=77	Male n=239	Female n=358	Male n=2874
0	43 (35.8%)	123 (24.1%)	51 (31.8%)	522 (24.6%)	19 (24.7%)	54 (22.6%)	113 (31.6%)	699 (24.3%)
1	24 (20.0%)	102 (20.0%)	35 (21.7%)	397 (18.7%)	22 (28.6%)	48 (20.1%)	81 (22.6%)	547 (19.0%)
2	15 (12.5%)	74 (14.5%)	19 (11.8%)	300 (14.1%)	12 (15.6%)	51 (21.3%)	46 (12.8%)	425 (14.8%)
3	11 (9.2%)	67 (13.1%)	21 (13.0%)	246 (11.6%)	10 (13.0%)	28 (11.7%)	42 (11.7%)	341 (11.9%)
4+	27 (22.5%)	144 (28.2%)	35 (21.7%)	660 (31.1%)	14 (18.3%)	58 (24.3%)	76 (21.2%)	862 (30.0%)