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**UNIVERSITY OF SOUTHAMPTON**

Faculty of Environmental and Life Sciences

School of Psychology

**Adolescents in Military Families: The Relationship between Stress, Resilience and  
Coping**

Volume 1 of 2

by

**Freya Stephanie Wallington, BSc, MSc**

Thesis for the degree of Doctor of Clinical Psychology

May 2019







# UNIVERSITY OF SOUTHAMPTON

## Abstract

Faculty of Environmental and Life Sciences

School of Psychology

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## **Adolescents in Military Families: The Relationship between Stress, Resilience and Coping**

Freya Stephanie Wallington

Much research on adolescents in military families has taken a deficit approach—that is, it has portrayed these adolescents as a population susceptible to psychological damage from the hardships of military life, such as frequent moves and separation from their parents during deployment. However more recent studies, taking a less deficit approach, appear to show some adolescents cope well, and effectively manage these challenges. There appears to be a limited knowledge around this population and therefore to better serve these adolescents, we must understand the sources of strength that help them cope with adversity and thrive, in other words, their resilience.

On this basis, the empirical study investigated the relationship between perceived stress (both general stress and specific military stress) and coping and the relative influence of resilience, in adolescents from military families. A significant relationship between perceived stress and coping existed and this was moderated by high relationship to caregiver resilience. Additionally, a significant relationship between military stress and coping existed, and this was moderated by high individual resilience and low context resilience. The findings suggest that resilience is playing an important part influencing the way adolescents cope with both general and military stressors. The present study is the first to explore the relationship between perceived stress, resilience and coping with adolescents from military families in the United Kingdom. Further research is essential in order to fully understand the role of resilience and the potential benefit of promoting and enhancing resilience and coping to manage the unique military stressors placed upon them.









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**Research Thesis: Declaration of Authorship**

Print name:	FREYA WALLINGTON
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Title of thesis:	Adolescents in Military Families: The Relationship between Stress, Resilience and Coping
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I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signature:		Date:	
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Finally, I dedicate this research to the memory of my inspiring and wonderful Godmother, Diane. If I can become half the psychologist you were I will be very proud.



## **Chapter 1: A Systematic Review of Intervention Studies that Foster Resilience within the Military**

### **1.1 Introduction**

#### **1.1.1 Psychological Resilience**

Psychological resilience has been defined in a number of ways by several scholars (Cicchetti, 2010; Masten, Powell, & Luthar, 2003; Ungar, 2008; Ungar & Lienbenberg, 2011) in this ever growing and broad-ranging field. Despite the lack of consensus on a definition for psychological resilience (Wald, Taylor, Asmundson, Jang, & Stapleton, 2006), many of the definitions seem to share some common features, including the persons strength to withstand some type of traumatic stress or adverse circumstances. Some also include a person's adaptive coping that results in them 'bouncing' back to baseline functioning levels, while others highlight positive growth (Connor, 2006; Punamaki et al., 2006) or thriving (Fredrickson, Tugade, Waugh, & Larkin, 2003) beyond their baseline functioning.

In examining the past research there appears to have been four waves of resilience research, with an emerging fifth wave. The first wave focused on the individual factors that made a difference, in particular personal traits and characteristics. The second wave took into account context around the individual and how they develop by interacting with this context, and suggesting that resilience can be built. The third wave observed how it is possible to create resilience when it was not likely to occur naturally. The fourth wave reflects the expansion of resilience science due to advances in technology, including both genetic and brain level but also social interaction level analysis. It takes into account higher level systems, such as community resilience and global resilience, and attempts to understand resilience across different levels, examining how different systems contribute to the resilience of an individual (Wright & Masten, 2005). There is an emerging fifth wave which is bringing resilience research and practice development together with activism to explicitly unite resilience work with social justice values. Within this wave, resilience is defined as "overcoming adversity, whilst also potentially subtly changing, or even dramatically transforming, (aspects of) that adversity" (Hart, Gagnon, Aumann, & Heaver, 2013, p.7).

Iacoviello and Charney (2014), when looking at resilience in response to stress and trauma, identified psychosocial factors associated with resilience. These include optimism, cognitive flexibility, active coping skills, maintaining a supportive social network, looking after one's physical well-being, and embracing a personal moral compass. They suggest that these factors can be cultivated even before exposure to traumatic events, or they can be targeted in interventions for individuals recovering from trauma exposure.

### **1.1.2 Models of resilience**

Several models of resilience are currently being used to generate measures and resilience building programs/interventions. Researchers have used different terms for the three resilience models that essentially describe the same mechanisms for the impact of stress on adaptation. Originally developed by Garmezy, Maston & Tellegen (1984), these include the compensatory model, the challenge model, and the protective factor of immunity versus vulnerability model (O'Leary, 1998).

These theoretical models were originally developed within child research. The foundation of these models is an ecological model, where the child is nested in the many contexts of family, community, cultural external systems (Bronfenbrenner, 1986, 2005a, 2005b; Bronfenbrenner & Morris, 2006). However, there are differences in the effects of protective versus risk factors on the child in their varying contexts of development within these models (Ungar, 2004).

The compensatory model sees resilience as a factor that neutralises exposures to risk, and suggests that risk factors and compensatory factors independently contribute to the predicted outcome. In Werner and Smith's (2001) study, four central characteristics emerged for the young adults labelled as resilient: an active approach toward problem-solving, a tendency to perceive experiences in a positive light even when they were suffering, the ability to gain other people's positive attention, and a strong reliance on faith to maintain a positive life view. The compensatory factors identified in Kumpfer and Hopkins' (1993) study included optimism, empathy, insight, intellectual competence, self-esteem, direction or mission, and determination and perseverance.



The challenge model suggests that a risk factor, provided it is not too extreme, can actually enhance a person's adaptation. In essence, the individual uses this experience to prepare them for the next adversity/challenge (O'Leary, 1998).

The protective factor model of resilience suggests an interaction between protection and risk factors, which leads to a reduction in the probability of a negative outcome and then moderates the effect of exposure to risk (O'Leary, 1998). This model of resilience is derived from developmental literature and systems theory. It suggests that these protective factors foster positive outcomes despite adversity (Bonanno, 2004; Ungar, 2004). Some of these protective factors identified included emotional management skills, intrapersonal reflective skills, ability to restore self-esteem, and problem-solving skills (Ungar, 2004).

In summary, the compensatory models describe how a protective factor counteracts or operates in the opposite direction to a risk factor. Protective factor models describe how assets or resources moderate or reduce the effects of a risk on a negative outcome. Challenge models note that moderate levels of risk are associated with less negative or more positive outcomes.

### **1.1.3 Programs /Interventions to improve resilience**

The development and evaluation of interventions that aim to foster or enhance psychological resilience in order to prevent negative stress related mental health outcomes are the focus of the third wave of resilience research (Bengel, 2012; Waite, 2004). Several studies have examined the benefits of resilience training among various specific groups, including intensive care nurses (Mealer, 2014), cancer survivors (Loprinzi, Prasad, Schroeder, & Sood, 2011), and radiologists (Sood, Sharma, Schroeder, & Gorman, 2014).

Resilience-training programmes have been developed for, and conducted in, a variety of clinical and non-clinical populations using various formats, such as multimedia programmes or face-to-face settings, and delivered in a group or individual context (Bengel, 2012; Southwick, Litz, Charney, & Friedman, 2011). However, the empirical evidence regarding the efficacy of these interventions is still unclear.

While the training programmes typically share the common aim of enhancing resilience, they tend to differ greatly in terms of content, delivery and length. An important

limitation in the resilience literature is that there is no single accepted resilience theoretical framework or consensus resilience definition to consistently guide the development or application of these programmes (Leppin et al., 2014).

There is also a significant limitation with the measures used to evaluate and assess resilience. Windle (2011) analysed the validity and reliability of various resilience measures in use at the time, and concluded that while there are a number of valid and reliable measures of resilience, at present, there was no gold standard measure.

In spite of these concerns, a number of recent reviews have highlighted the growing body of research supporting the benefits of resilience training for mental health and well-being despite the poor operationalisation of the construct and great heterogeneity in the studies (Leppin et al., 2014; Macedo et al., 2014). Macedo et al. (2014) found that most of the studies within their systematic review reported some degree of improvement in resilience-like variables among those subjects exposed to resilience-promoting programs. However, they strongly suggest that further efforts should be made to determine the actual effect size of the programs, in order to calculate the cost-effectiveness of resilience promotion strategies.

#### **1.1.4 How does resilience apply to the military?**

Within the UK, the percentage of Armed Forces personnel initially diagnosed with a mental health disorder at specialist mental health services has increased steadily over recent years from a rate of 1.6% in 2008–09, plateauing at 3.2% in 2015–16 and falling slightly to 3.1% in 2017–18. This indicates that the proportion of personnel diagnosed with a mental health condition has nearly doubled over the last decade (Ministry of Defence, 2018). The Ministry of Defence suggests a significant factor in the rise reported may be that, as in the civilian population, more serving personnel and veterans who have mental health issues are seeking help.

In the UK the Government has limited data on the number of veterans with mental health conditions across the UK. For example, NHS England only began to record widely the number of veterans accessing its mental health services from April 2017, while in Northern Ireland mental health services do not record veteran status at all. NHS England reported that the number of veterans in England referred to its Improving Access to Psychological Therapies (IAPT) programme has seen a 50% increase from 16,055 in 2013–14 to 24,390 in

2016–17. The data available also suggests that, apart from young veterans, the rate of suicide amongst veterans is comparable to that of the general public. A 2009 study by Professor Kapur found that the only group of veterans to show higher rates of suicide than the general public were those aged under 24, who have a risk three times higher than their civilian counterparts (Ministry of Defence, 2018).

Whilst deployed, soldiers are often exposed to traumatic experiences. Johnston et al. (2015) reported the amount of psychological and physical problems within the USA military population has increased. He studied the prevalence of PTSD, depression, alcohol use, and drug use among veterans that was collected by the US government's Department of Veterans Affairs (VA) from 2003 to 2006. The study found that the combined rate of mental health disorders among veterans from Afghanistan was about 6 percent. After the conflict in Iraq started, this rate rose to 37 percent (Seal et al., 2009).

The Veterans Health Administration (VHA) is America's largest integrated health care system. They report that PTSD is the third most prevalent psychiatric diagnosis of the veterans that they care for (Stecker, Fortney, Hamilton, Sherbourne, & Ajzen, 2010). Due to stigma and accessibility many individuals with PTSD do not seek conventional mental health services (Hoge et al., 2004). A resilience approach, therefore, feels particularly relevant for military culture due to this stigma. Psychological resilience is vital for the military community with regard to keeping military members and leaders fit for duty and to protecting and enhancing the health and wellbeing of military families.

It is widely accepted that psychological resilience is critical for coping with the cognitive, emotional and social stressors associated with war exposure. Psychological resilience is most critical for military readiness because it also plays an important role for coping with physiological stressors, and because a psychologically stressed soldier (i.e. a soldier that cannot cope with psychological stressors) will not perform well during military operations no matter how physiologically capable he/she is (Nindl et al., 2018).

Specialists also suggest that 'response flexibility' is at the centre of resilience (Graham, 2013). It is described by Graham as a neural platform responsible for our ability to "pause, step back, reflect, shift perspectives, create options and choose wisely" (as cited in Fernandez, 2016, p.5). In the military, applying 'response flexibility' allows personnel to

respond to stressful stimuli with a useful response, activating the logical and rational part of our brains, rather than an emotional reaction.

It must be noted however that rather than causing problems, for many, military service can have a positive effect on an individual's mental health. At the very least, the vast majority of service personnel leave with good experiences of their military career. The structure and social community found in the Armed Forces particularly help those who might have been more vulnerable to mental health issues before they joined, for example, those who were unemployed or socially isolated (Lord Ashcroft KCMG PC, 2017).

### **1.1.5 Military resilience training programs**

Over the past several years, the US Department of Defence has implemented a number of programs and strategies to promote psychological resilience among service members. Although the value of resilience programming is widely accepted, little is known empirically about the programs' effectiveness or their theoretical basis, i.e. the extent to which they are based on factors identified by social and behavioural science as contributing to resilience in individuals or groups.

The US military developed the Comprehensive Soldier Fitness Program (CSF) in 2008. Lt. Col. Daniel Johnston stated that the U.S. Army's CSF Program was born in response to the prevalence of post-traumatic stress disorder (PTSD) and an increase in suicides among army personnel. He defined the CSF as "a structured, long-term assessment and development program to build the resilience and enhance the performance of every soldier, family member, and defence agency civilian" (Building a Resilient Workforce: Opportunities for the Department of Homeland Security: Workshop Summary, 2012, p.96). There were no best practices at the time the CSF was developed, and as a result the CSF was rolled out without being validated.

The CSF is made of many elements, these are; the Global Assessment Tool, the Comprehensive Resilience Modules, the Master Resiliency Trainers, and the Institutional Military Resilience Training, and these all focus on promoting long-term resilience and enhancing performance.

Also within the USA, the pre-deployment Battlemind training program was designed by the [Walter Reed Army Institute of Research](#) within the U.S DoD to build soldier resiliency

by developing his/her self-confidence and mental toughness. The training focuses on soldier strengths, identifying specific actions that soldiers and leaders can engage in to meet the challenges of combat. The post-deployment Battlemind program consists of cognitive and skills based modules that re-frame transition difficulties as a failure to adapt skills learned in combat to the home environment.

Within the UK, the British Army Infantry Training Centre (ITC), developed a similar training program called the 'Mental Resilience Training' (MRT) psychological resilience program. It was originally developed and implemented by the British Army's School of Infantry. The program focuses on goal setting, dealing with negative thoughts, positive thinking skills, emotion regulation, anxiety regulation, pain tolerance, positive imagery and mental rehearsal.

In Australia the BattleSMART (Self-Management and Resilience Training) program was developed in 2009 by the Australian Defence Force. The foundation of the BattleSMART program is the evidence-based approaches of attributional retraining and cognitive behaviour therapy. The aim of the program is to encourage optimal emotional and behavioural outcomes in response to adverse events, focusing on adjusting the soldiers coping strategies to fit the adverse situation.

The above highlights that different countries have used different approaches to fostering resilience within their military personnel and veterans.

#### **1.1.6 Previous systematic reviews**

Joyce et al. (2018) conducted a systematic review and meta-analysis of resilience training programmes and interventions, however this was not specific to the military. Their results highlight that certain types of resilience training appear to be beneficial. In particular, interventions using mindfulness or CBT techniques appeared able to enhance resilience.

The systematic review by Bauer, Newbury-Birch, Robalino, Ferguson, and Wigham (2018), examined the effectiveness of preventative interventions for well-being, which were either not standardised or routinely implemented across services, for veterans and military personnel adjusting to civilian life. Although the studies mainly focused on male veterans, the

review demonstrated some potential to improve indicators of well-being in soldiers and veterans adjusting to civilian life. These included anger, adjustment, resilience and cognitive training interventions.

RAND Corporation (Research and Development) is an American non-profit global policy think tank created in 1948 by Douglas Aircraft Company to offer research and analysis to the United States Armed Forces. To assist the Department of Defence (DoD) in understanding methodologies that could be useful in promoting resilience among service members and their families, the RAND National Defence Research Institute (RAND NDRI) conducted a literature review to identify evidence informed factors for promoting psychological resilience. The study also included a review of a subset of resilience programs to determine the extent to which they included those evidence-informed factors.

RAND firstly conducted a literature search for the specific types of individual, family, unit, and community-level factors of resilience that are based on evidence. Programs that attempt to promote resilience use a number of outcomes to determine whether they are successful. In reviewing selected programs, they sought to understand how these factors are employed to promote resilience, which, in turn, leads to positive outcomes. They found that positive outcomes were operationalised using measures of resilience, such as the Conner-Davidson Resilience Scale (CD-RISC) (Connor & Davidson, 2003), or by influencing other types of outcomes, including clinical, quality of life, and military-specific measures. These were then used to evaluate the effectiveness of programs that promote resilience. They also included civilian programs (for example the Community Stress Prevention Centre program for individuals exposed to high stress) that are not yet adapted to a military setting.

They found evidence in the literature supporting many factors that can help to promote resilience at the individual, family, unit, and community levels. Specifically, evidence was especially strong for positive thinking, positive affect, positive coping, realism, and behavioural control, as well as for positive command climate and belongingness. Many of the programs that were reviewed as part of the study incorporated these evidence-based factors into their core missions. They did, however, find there was a lack of resilience policies directing more rigorous program evaluation, use of standardised measures and comparisons across different programs.

### **1.1.7 Summary**

There is no consensus definition for resilience and there are a range of models that attempt to describe the mechanisms for the impact of stress on quality of adaptation. The theoretical models, while developed from different disciplines, do however use many of the same factors in describing the relationship between risk and compensatory actions. Resilience training programmes/interventions have been developed for a variety of different contexts (both clinical and non-clinical). There is a growing body of research that suggests that building resilience through such programmes helps with mental health and wellbeing outcomes. However, the lack of a gold standard measurement of resilience means that empirical evidence is limited.

Military personnel clearly have above normal exposure to traumatic events that might be expected to impact their mental health. But for some the military provides a social network and a daily structure that provides a significant resilience barrier to deterioration of mental health, and it is the lack of such structures that results in higher levels of mental health issues in veterans.

Resilience training programmes have been extensively used in the United States (e.g. the Comprehensive Soldier Fitness Program), but also more recently in the United Kingdom (Mental Resilience Training Programme) and Australia (BattleSMART).

While in the United States in particular, through the RAND corporation, there have been reviews that have found evidence supporting factors that can help to promote resilience at the individual, family, unit, and community levels. There is not, however, an up to date review that evaluates the current resilience building programmes within the military, and in particular, a review across both active military personnel and veterans.

### **1.1.8 Purpose of review**

Although military resilience training programs have been systematically reviewed previously, no systematic review has included both and exclusively military and veteran resilience interventions. This review aims to provide an up to date picture of the most recent programs targeting resilience within the military. Such a review is important to improve

understanding of the impact of resilience training programs on military and ex-military personnel. It may also offer alternative avenues for interventions including those that target resilience.

The purpose of this study, therefore is to provide an up-to-date systematic review of the literature evaluating military training programs which foster resilience. This review is specifically focused on the theoretical base the intervention is built upon, the type of outcome measures used within the programs, the sample focus of the intervention and the reported effectiveness.

Therefore, the current systematic review aims to identify, appraise and synthesise current literature investigating military programs which foster resilience. The review also aims to identify gaps in the literature, and areas for future research.

## **1.2 Method**

The Cochrane protocol offers a protocol for the stages of a systematic review (Higgins & Green, 2011). In order to minimise potential bias within the review, the stages outlined in this protocol were followed, as detailed in the following sections.

### **1.2.1 Search strategy**

Scoping searches were initially conducted using google scholar and DelphiS, to identify literature reviews, and empirical studies relating to the topic. The searches yielded several review papers on the topic of resilience and military (Highland et al., 2015; Nindl et al., 2018; O'Neal et al., 2018), and resilience and military training programs (Foran, Adler, McGurk, & Bliese, 2012; Reivich et al., 2011; Tenhula et al., 2014). The search identified a number of empirical papers that evaluated programs within the military that were aimed to foster resilience, in both serving and ex-serving military personnel. To allow for inclusion of such studies, the following review question was developed:

- How are resilience training programs being developed and assessed within the military, and how effective are these programs?

A systematic search was then conducted in November 2018, which aimed to search for empirical papers related to the research question. The following electronic databases were



searched to obtain published literature; Delphis, PsycInfo, Web of Science, PubMed and The Cochrane Library, using the terms; ('effect\*<sup>1</sup> ' OR outcome\* OR success\* OR impact\* OR benefit\* OR evaluat\* OR efficacy\* OR assess\*) AND ("cognitive therapy" OR CBT OR "positive psychology" OR relax\* OR "stress inoculation training" OR "stress inoculation" OR "progressive relaxation" OR "diaphragmatic breathing" OR "social skills training" OR psychotherap\*) AND (resilien\* OR "positive psychology" OR "health promotion" OR "cognitive flexibility" OR "post-traumatic growth" OR "stress-related growth" OR hardiness) AND (protocol\* OR program\* OR treatment\* OR promot\* OR interven\*) AND (military OR "military personnel" OR "service members" OR "armed forces" OR navy OR "marine corps" OR "national guard" OR "air force" OR army OR veteran OR "ex-military" or "ex-service member").

Search terms were developed in collaboration with a specialist librarian to ensure efficacy. Experts in the field were also contacted to verify the novelty of this review topic, and to inquire about studies and reviews pending publication. Further to this, a snowball technique was applied whereby the reference lists of all relevant studies and reviews were scrutinised in order to identify further studies. The results were then narrowed by language (English) and publication type (peer reviewed published journals only) and was limited by date, due to the previous identified systematic reviews.

In addition to searches in online databases, manual searches were performed in the reference list of selected articles. The search strategy was repeated until it was felt that all relevant published literature had been obtained.

### **1.2.2 Eligibility criteria**

Given that the scoping searches revealed a limited number of empirical studies on the topic specifically related to resilience training programs, the inclusion criteria for the review

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<sup>1</sup> '\*' is used to denote all words starting with the prefix (e.g., effect\* includes effect, and effective)

was widened to including training programs that targeted facets or constructs of resilience<sup>2</sup>. Table 1 presents the inclusion criteria.

Table 1

*Study inclusion criteria*

<b>Population</b>	Adult (over 18 years old) military or ex-military personnel
<b>Intervention</b>	Strengthen resilience or facet of resilience, in order to prepare the individual to cope with future adverse events. Constructs directly related to resilience, such as hardiness or stress inoculation, were also considered valid
<b>Comparator</b>	Usual, other intervention or none
<b>Outcome</b>	Difference in psychological/emotional well-being and /or resilience
<b>Study design</b>	Randomized controlled designs, non-randomized controlled trials, open-ended or other trials.

The exclusion criteria used for considering the studies for the review were: 1) theoretical articles or reviews, book chapters, theses or dissertations; 2) studies which focused on children or adolescents; 3) studies in which the resilience concept was related to another area of study (e.g., physics or mathematics); 4) animal studies; 5) studies on civilians.

Studies were also excluded if the document was published prior to January 1, 2000 because the majority of the resilience literature relevant to the military was generated in response to the September 11, 2001, terrorist attacks. Due to the robustness of RAND's (2011) systematic review, studies before 2011 were excluded, unless they were not included and evaluated within their review.

### 1.2.3 Screening and selection

The PRISMA tool (Mohar, Liberati, Tetzlaff, & Altman, 2009) was used for reporting the screening process, as presented in Figure 1.

Database searches yielded 598 citations. Once duplicates were removed 260 unique citations remained and were screened for inclusion. Titles and abstracts were then screened

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<sup>2</sup> Examples of constructs of resilience include; hardiness, stress inoculation, self-compassion and adjustment.

using the inclusion and exclusion criteria, resulting in 62 citations remaining for full text screening. Here 42 articles were excluded for not meeting the eligibility criteria the following reasons; seven were group counselling, family based, or parenting interventions, nine were not peer-reviewed journals, fifteen had a physical resilience focus and eleven did not have a measure for resilience. In addition to this, experts in the field<sup>3</sup> were contacted which yielded no further results. During the data extraction phase three articles were excluded due to not having a resilience measure and one due to being a duplicate. Therefore, the total number of papers included within the review was 16.

The screening and selection of full texts was completed by the researcher; however a randomly selected sample were cross checked by a second researcher to ensure consistency and remove potential bias. Disagreements were managed through discussion around the scope of the inclusion and exclusion criteria.

#### **1.2.4 Publication Bias**

It was important to note the grey literature<sup>4</sup> that may not have appeared within the search results that may be of influence to the search question. The current review searched solely peer reviewed journals due to its validity and suitability for publication. However grey literature was searched, and this yielded limited results. The RAND review that has been referenced within the '1.1.6 previous systematic review' section was the main publication that was relevant to the current search question. The current review drew from the main body of grey literature (RAND review). The RAND review influenced the current search strategy and therefore the results as it highlighted studies that had already been systematically reviewed. The review highlighted differences in methods and measures within studies measuring resilience, resulting in difficulties in comparisons across studies.

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<sup>3</sup> The RAND cooperation research team.

<sup>4</sup> The term grey literature refers to research that is either unpublished or has been published in non-commercial form. Examples of grey literature include: government reports, policy statements and issues papers.

It is also important to note that a small number of the studies within the results were not in English and therefore could not be interpreted. These studies may have added information and knowledge to the results of the current search question.

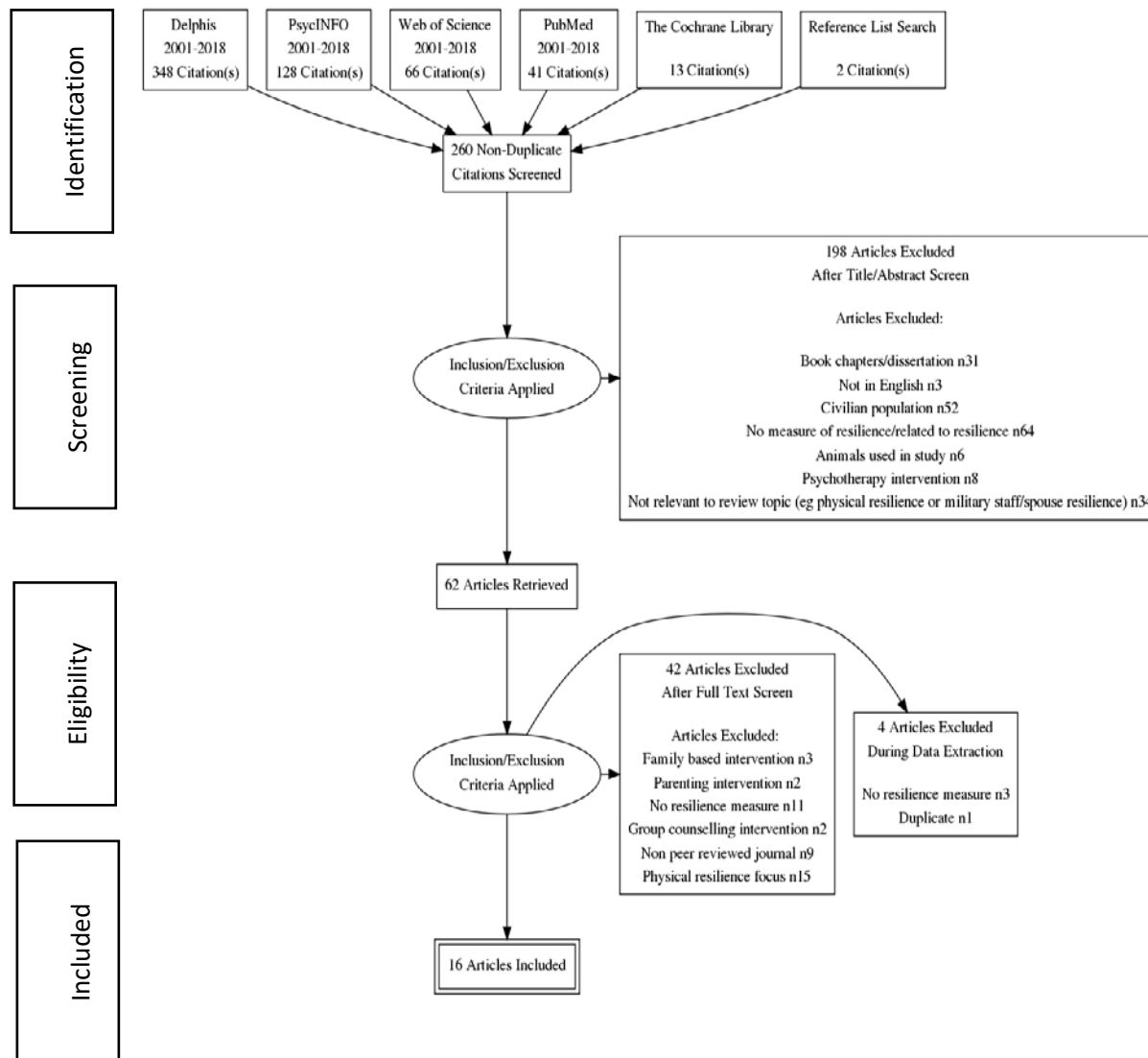


Figure 1. Study Selection Flow Diagram, Mohar et al. (2009)

### 1.2.5 Data extraction

The following information was extracted from the included studies: a) study's authors and year of publication, b) the study design, c) population (demographics) and settings, d) number of participants, e) intervention type, f) resilience specific measurement tools, g) other resilience related measurement tools, and h) key results (see table 2). Data extraction forms

were first pilot tested on a representable sample of the studies to ensure feasibility (Higgins & Green, 2011). Data was extracted by the primary researcher, and then a sample of these were cross checked by a second researcher to minimise errors in extraction (Buscemi, Hartling, Vandermeer, Tjosvold, & Klassen, 2006). Disagreements were managed through discussion about the aims of the review and inclusion/exclusion criteria.

### **1.2.6 Characteristics of Identified Studies**

Of the 16 studies reviewed in this paper, six used an RCT design, randomly allocating participants, administering measures pre and post, with a control group for comparison (Cohn and Pakenham, 2008; Acosta et al, 2018; Roy, Highland & Costanzo, 2015; Kahn, Collinge & Soltysik, 2016; Johnson et al, 2014, Cacioppo et al, 2015). Two used a cross sectional design, administering measures at a single time point, and using self-report techniques through survey or interview (Griffith & West, 2013; Hendricks et al., 2015). One study used a repeated measures design, where veterans and their partners were matched and were measured both before and after receiving the intervention (Collinge et al., 2012). Seven studies employed a quasi-experimental, non-randomised design where participants were measured both before and after receiving the intervention two with a control group (Fitzwater, Arthur, & Hardy, 2015; Lester, Harms, Herian, Krasikova, & Beal, 2011) and five without a control group (Johnston et al., 2015; McGuire, Mota, Sippel, Connolly, & Lyons, 2018; Price, Gros, Strachan, Ruggiero, & Acierno, 2013; Sylvia et al., 2015; Tenhula et al., 2014).

The studies were conducted in three geographical locations including the majority in the USA (n=14), one in Australia (Cohn & Pakenham, 2008), and one in the UK (Fitzwater et al., 2014). Sample size varied greatly across studies, ranging from 22,008 (Lester et al., 2011) to 12 (Johnston et al., 2015).

Six of the 16 studies assessed used an only veteran sample (Acosta et al., 2018; Hendricks et al., 2015; McGuire et al., 2018; Price et al., 2013, Collinge et al., (2012); Tenhula et al., 2014). Seven studies assessed used solely active military personnel samples (Cohn & Pakenham., 2008; Fitzwater et al., 2018; Griffith & West, 2013; Johnson et al., 2014; Lester et al., 2011; Roy et al., 2015; Cacioppo et al., 2015) . Finally the review included

three studies that included both active military personnel and veterans in their samples (Kahn et al., 2014; Johnston et al., 2015; Sylvia et al., 2015). Average age across the studies varied somewhat. Mean age of participants ranged from 21 years (Fitzwater et al., 2015) to 51 years (Johnston et al., 2015).

The majority of the studies included participants who had served or were currently serving in the Army (n=10). One study included both Army personnel and Air force personnel (Sylvia et al., 2015), and one study included solely marines (Johnson et al., 2014). Kahn et al. (2016) recruited army, marine, navy and air force personnel. The remaining three studies did not state what branch of the military their sample was from, stating they were 'military' or 'ex-military personnel', (Johnston et al., 2015; Price et al., 2013; Roy et al., 2015).

The studies measured participants from a range of settings. Six measured military personnel as part of their recruitment training or additional training, for example pre-deployment training (Cacioppo et al., 2015; Cohn & Pakenham, 2008; Fitzwater et al., 2018; Griffith & West, 2013; Johnson et al., 2014; Lester et al., 2011). Three were recruited through the community or veteran websites as an opportunity sample (Collinge et al., 2012; Kahn et al., 2014; Sylvia et al., 2015). Three measured participants that were recruited via clinical or treatment settings, for example, residential substance use clinic or medical centres (Acosta et al., 2018; McGuire et al., 2018; Price et al., 2013). The final four studies did not state what setting the participants were recruited from (Roy et al., 2015; Johnston et al., 2015; Hendricks et al., 2015; Tenhula et al., 2014).

Table 2

*Study Characteristics*

<b>Author, year and setting</b>	<b>Participants</b>	<b>Intervention</b>	<b>Outcome Measures</b>	<b>Design</b>	<b>Summary of findings and follow up</b>	<b>Overall Quality Rating</b>
<b>Price, Gros, Strachan, Ruggiero &amp; Acierno (2013) (USA)</b>	111 OEF/OIF veterans diagnosed with PTSD (n=72) or subthreshold PTSD (n=39)  Veterans recruited through referrals at a large Southeastern VA Medical Center	Part of a larger RCT comparing exposure therapy for PTSD delivered either via telehealth technologies or traditional in-person settings  Eight weekly 1.5-hour individual sessions of exposure therapy.	Beck Depression Inventory Clinician-Administered PTSD Scale PTSD Checklist—Military Combat Experiences Scale Deployment Risk and Resiliency Inventory	Non randomised experimental study	Increased combat exposure was associated with a reduced rate of change in PTSD symptoms but not depression symptoms.	1
<b>Griffith &amp; West (2013) (USA)</b>	N = 441; Army National Guard; participants completing an army resilience training program.	Master Resilience Training: techniques to promote strong relationships, optimism, mental agility, self-awareness, self-regulation, and character strength. 4 modules taught in 1 week.	Online questionnaires devised by the authors measuring resilience competency skills, stress, worry and anxiety.	Cross-sectional	Improvement across measures of resilience. All outcomes negatively correlated with worry and anxiety; regression analyses did not indicate strong stress buffering effects of the training.	2
<b>Sylvia et al. (2015) (USA)</b>	N = 15; Post-9/11 veterans and active duty personnel recruited via adverts, social media and soldier/veteran mail networks.	Resilient Warrior: stress management and resilience program; 4 x 2-hour weekly sessions.	PHQ GAD-7 Perceived Stress Scale General Self efficacy Scale Resilience Scale	Cohort pilot/feasibility study	Significant improvement for symptoms of depression, perceived stress; marginally significant for anxiety and self-	2

					efficacy. No significant change for resilience.	
<b>Lester et al, 2011 (USA)</b>	N=22,008 (experimental group n= 12,529, control group n= 9479  Soldiers across eight Brigade Combat Teams (BCTs)	Resilience and psychological health enhancement training program developed by CSF. Effectiveness of the Master Resilience Training (MRT) program.	The Global Assessment Tool (GAT)	Quasi-experimental	The treatment group had significantly higher rates of growth in resilience and psychological health than the control group on all subscales used. However, the effect size was small.	1
<b>Cohn and Pakenham (2008) (Australia)</b>	N= 174; Army recruits (reserve of permanent soldiers) (intervention group n = 101 or control group (n = 73) Five platoons participated	Brief cognitive-behavioural program in modifying causal attributions, expectancy of control, coping strategies, and psychological adjustment. 45-day recruit training program.	A modified version of the Real Events Attributional Style Questionnaire (REASQ) General Health Questionnaire-12 (GHQ-12) Brief COPE Positive States of Mind (POSM)	RCT 3 assessment points - day 3 of training (time 1), day 20 (time 2), and day 43 (time 3)	Better psychological adjustment compared with those in the control group. Specifically, intervention participants reported greater increases in positive states of mind and greater decreases in distress from the beginning (time 1) to the end (time 3) of training	3
<b>Collinge, Kahn, Soltysik (2012) (USA)</b>	43 dyads (27 Vermont, 16 Oregon).  Veteran subjects were recruited through presentations at post-	Intervention activities were of two types: (1) mind/body practices (meditative, contemplative, and relaxation techniques) taught by audio CD and print instruction and (2) massage for stress reduction	PTSD Checklist—Civilian Version Beck Depression Inventory II (BDI-II) Perceived Stress Scale (PSS-10) Compassionate Love Scale	Repeated measures design	Significant improvements in post-traumatic stress disorder, depression, and self-compassion were seen in both veterans and	2



deployment Yellow Ribbon events and through announcement in FSAP e-newsletters

(taught by video DVD and print/photographic instruction).

Self-Compassion Scale  
Quality of Life Inventory (QoLI)

partners; and in stress for partners. Veterans reported significant reductions in ratings of physical pain, physical tension, irritability, anxiety/worry, and depression after massage, and longitudinal analysis suggested declining baseline levels of tension and irritability.

<p><b>Fitzwater, Hardy &amp; Arthur (2018) (UK)</b></p>	<p>N=222 male British Army Para recruits, 32 Parachute Regiment corporals (<i>n</i> = 83) and control (<i>n</i> = 90)  U.K.-based infantry training establishment</p>	<p>Psychological skills intervention targeting; goal-setting, relaxation and arousal regulation, self-talk strategies, and imagery/mental rehearsal. The control group was not exposed to any psychological skills intervention</p>	<p>The Military Training Mental Toughness Inventory The Test of Performance Strategies A modified version of the Differentiated Transformational Leadership Inventory An objective measure of fitness</p>	<p>Quasi-experimental trial</p>	<p>Significant differences between the treatment and control groups in the use of psychological skills and observer-rated mental toughness, the use of relaxation and imagery and in individual performance.</p>	<p>2</p>
<p><b>Acosta, Possemato, Maisto, Marsch, Barrie, Lantinga, Fong, Xie, Grabinski &amp; Rosenblum (2018)</b></p>	<p>N=162 veterans randomized to either Web CBT (N=81) or Treatment as usual (TAU) (N=81)  Primary care clinics in four Veterans' Administration (VA) facilities.</p>	<p>Web-based self-directed CBT program identifying, evaluating and challenging negative automatic thoughts, relaxation and emotional centering modules. Treatment as Usual (TAU) consisted of the usual VA primary care services,</p>	<p>The Clinical Administered PTSD Scale (CAPS) Substance use measures PTSD Checklist-Military (PCL-M) Quality of life measure Coping Strategies Scale (CSS) – Brief</p>	<p>RCT</p>	<p>Significant treatment effects were found for heavy drinking, but not for PTSD or quality of life. The effect of the intervention on heavy drinking was mediated by</p>	<p>1</p>

(USA)

including medical, behavioural health, pharmacy, weight management and social work services.

Brief Situational Confidence Questionnaire (BSCQ)  
Future Scale  
Readiness to Change Questionnaire (RTCQ)  
The Connor-Davidson Resilience Scale (CD-RISC)

increases in coping, social support, self-efficacy, and hope for the future.

<b>Johnston, Minami, Li, Reinhardt &amp; Khalsa (2015) (USA)</b>	N=12 current or former military personnel with PTSD.	Yoga intervention. Twice weekly 90- min group classes for 10 weeks (20 sessions) including poses, breathing strategies, meditative practices, and an integrative relaxation at the end of each group practice. Additional 15-min daily home yoga practice.	Structured Clinical Interview for <i>DSM-IV</i> (SCID), PTSD module The Clinician Administered PTSD Scale (CAPS) Resilience Scale Five-Facet Mindfulness Questionnaire	A single-arm study	Small increase in resilience; (increase did not reach statistical significance) Significant decrease in PTSD symptoms.	3
<b>Cacioppo, Adler, Lester, McGurk, Thomas &amp; Chen, Cacioppo (2015) (USA)</b>	48 platoons, 29 platoons consisting of N= 688 soldiers were randomly assigned to SRT and 19 platoons consisting of N= 450 soldiers were randomly assigned to CAT.  Two brigades located on two different large Army posts.	Social Resilience Training (SRT) to improve maladaptive social cognition and loneliness (intervention condition) or Afghanistan Cultural Awareness Training (CAT) to improve understanding of and reduce prejudice toward Afghans (active control condition).  2-hr training blocks per day for each of five consecutive days	Beliefs about Social Fitness Empathy Generalized Trust Hostility Loneliness Military Hardiness Perceived Social Fitness Perspective Taking Practiced Social Skills	Double-dissociative randomized controlled study design	Soldiers in the SRT, compared with CAT, showed an overall improvement in social cognition, with follow-up analyses indicating that the SRT condition increased military hardiness, beliefs in social fitness, the use of the social perspectives and skills they were taught and decreased feelings of loneliness.	3

<b>Hendricks, Plummer, Hamner, Glazer, &amp; Kaufman (2015) (USA)</b>	N= 108 Veterans participants in intervention but only 52 respondent to the survey (48.1% response rate).  Military veterans of Iraq and Afghanistan at three sites in 2013	One day peer-led resilience program seminar including physical movement, social support cultivation, self-care, mindfulness and stress management.	Online survey rating usefulness of material covered and rate the content, speakers, and activities presented.	Cross sectional	Participants rated content as “very useful” (82.1%) or “somewhat helpful” (17.9%).  Three themes were regarded as most helpful: health practices, social support, and quality of life or satisfaction.	3
<b>McGuire, Mota, Sippel, Connolly, Lyons (2018) (USA)</b>	N= 29 male veterans.  Male veterans entering a six-week residential day treatment program within a PTSD/substance use disorder clinic. All veterans met diagnostic criteria for both PTSD and a substance use disorder.	Six-week residential day treatment program. Cognitive processing therapy (CPT) for PTSD and CBT for substance use disorders.	Connor-Davidson Resilience Scale PTSD Checklist-Specific Alcohol Craving Questionnaire-Short Form-Revised Beck Depression Inventory-II	Quasi-experimental	Veterans reported a large, significant increase in total resilience scores post-treatment. Also they reported a large, significant decrease in PTSD symptoms and a non-significant decrease in trauma-cued craving post-treatment.	2
<b>Roy, Highland &amp; Costanzo (2015) (USA)</b>	N=44 participants with subthreshold PCL scores (28 to 49), either within five years after their return from Afghanistan or Iraq, or after being affected in some	Resilience enhancement group- cognitive behavioural therapy (CBT) techniques and the use of smart-phone based apps that promote increased resilience.  Control group - abbreviated, introductory session; a description of the	PCL PHQ-9 GAD-7	RCT	PCL scores significantly improved in the intervention group from baseline to post-intervention and from baseline to 3-month follow-up.	3

	significant way by a traumatic incident.	rationale for the study, app accessibility, encouragement to use the apps.				
<b>Kahn, Collinge &amp; Soltysik (2016) (USA)</b>	<i>N</i> = 160 couples. Veterans: 81% still serving 29% PTSD symptoms. OEF/OIF/OND combat deployed veterans and a significant relationship partner, recruited through social media and veteran websites	Mission reconnect (MR): 8 week multi-media self-directed intervention, including; mindfulness, massage, relaxation & for connection in relationships (for a minimum 40 minutes per week). Control: weekend program or <i>MR</i> + weekend program or waitlist control.	Perceived Stress Scale-10 item (PSS) Beck Depression Inventory (BDI) PTSD Checklist-Civilian version (PCL-C) Self-Compassion Scale (SCStotal) Response to Stressful Experiences Scale (RSES) Multidimensional Scale of Perceived Social Support (MSPSStotal) Pittsburgh Sleep Quality Index (PSQItotal) Revised Dyadic Adjustment Scale (RDAS)	RCT 2 & 4-month FU	Participants had significant improvement on all mental health outcomes (apart from sleep quality, social support and dyadic adjustment) compared to participants in other arms of the study.	1
<b>Tenhula et al 2014 (USA)</b>	<i>N</i> = 479 veterans experiencing distress or post-deployment readjustment challenges; 75 VA sites enrolled.	Moving Forward: a resilience/prevention programme for readjustment challenges comprising: problem solving, and regulation of negative emotions; clinician led with a manual; four group sessions.	PHQ-9 Outcomes Questionnaire-30 Brief Resilience Scale Social Problem Solving Inventory-Revised: short form	Cohort entry/exit	Significant improvements pre/post-intervention on measures of depression, social problem-solving and resilience.	1
<b>Johnson et al (2014)</b>	Eight Marine infantry platoons ( <i>N</i> =281) were randomly selected. Four platoons were assigned to receive mindfulness training ( <i>N</i> =147) and four	8 weeks of Mindfulness-Based Mind Fitness Training (MMFT), a program comprising 20 hours of classroom instruction plus daily homework exercises	Response to Stressful Experiences Scale  Physiological measures were heart rate and breathing rate	RCT	Marines who received MMFT showed greater reactivity (heart rate) and enhanced recovery (heart rate, breathing rate after stressful training).	2

were assigned to a  
training-as-usual  
control condition  
(N=134)

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*Note. Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND). PCL - PTSD Checklist for DSM-V VA-Veterans Affairs Health. Care Quality Rating Scale; 1=strong, 2=moderate, 3=weak*

### 1.2.7 Quality rating

Recent systematic review guidelines have suggested that quality assessment tools, that are specific to the needs of the review, should be utilised (Centre for Reviews and Dissemination, 2009; Higgins & Green, 2011). The valid and reliable Quality Assessment Tool (QAT) developed by the Effective Public Health Practice Project (1998) was used to assess the methodological quality of the reviewed studies. This tool was recommended in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins & Green, 2011). The quality of the studies were judged as either strong (1), moderate (2), or weak (3) based on the following eight criteria: selection bias; study design; confounders; blinding; data collection methods; withdrawal and dropouts; intervention integrity; and analyses (see Appendix A).

Outcome of quality ratings (Appendix A) provides a summary of the quality assessment results for the studies included within the present review. Overall methodological quality across the studies varied. Despite many of the studies having large sample sizes, only two of the studies (Cacioppo et al., 2015; Fitzwater et al., 2018) justified their sample size in the context of statistical power and effect size.

The QAT tool revealed that the majority of the included studies (n=10) made appropriate steps to recruit participants that were representative to the target population under investigation, improving the generalisability of the results. Six studies were considered not to recruit a representative sample (Acosta et al., 2018; Price et al., 2013; Sylvia et al., 2015; McGuire et al., 2018; Collinge et al., 2012; Kahn et al., 2016). This was largely due to the participants being sourced from clinics (n=3) or from one particular area (n=3).

The QAT indicated that the majority of the studies showed a small likelihood of bias due to the allocation in the design of the study. Six of the studies had a strong design with an equivalent control group present and an allocation process whereby the investigators were unable to predict the outcome (Acosta et al., 2018; Cacioppo et al., 2015; Cohn & Pakenham., 2008; Kahn et al., 2016; Lester et al., 2011; Roy et al., 2015). Nine of the studies demonstrated a moderate study design (Collinge et al., 2012; Fitzwater et al., 2018; Griffiths & West, 2013; Johnston et al., 2015; McGuire et al., 2018; Price et al., 2013; Sylvia et al., 2015; Tenhula et al., 2014; Johnson et al., 2012), and the remaining study used a survey indicating poor study design (Hendricks et al., 2014).

Six studies did not use comparison groups within their studies (Collinge et al., 2012; Griffith & West., 2013; Hendricks et al., 2015; Sylvia et al., 2015; Tenhula et al., 2014; Johnson et al., 2012). Of the ten studies that used comparison groups, the majority (n=6) highlighted the confounders between groups and the majority of these were controlled for within the study, and were clearly stated within the write up (Acosta et al., 2018; Cohn & Pakenham, 2008; Price et al., 2013; Fitzwater et al., 2018; Kahn et al., 2014; Lester et al., 2011).. The remaining four studies either controlled for less than 60% of the relevant confounders, or the percentage controlled was not stated, or if the confounders between groups were not reported at all (Cacioppo et al., 2015; Johnston et al., 2015; McGuire et al., 2018; Roy et al., 2015).

The majority of the studies (Collinge et al., 2012; Cacioppo et al., 2015; Griffith & West., 2013; Hendricks et al., 2015; Tenhula et al., 2014; Johnson et al., 2012; Acosta et al., 2018; Cohn & Pakenham, 2008; Price et al., 2013; McGuire et al., 2018; Fitzwater et al., 2018; Kahn et al., 2014; Lester et al., 2011)) did not state whether the assessors were blind to which group the participants were in. For a greater protection against reporting bias the participants should also be blind to the research question. This was attempted in the majority of the studies (n=13). The remaining three studies did not state as to whether the participants were aware of the research question (Johnston et al., 2015; Roy et al., 2015; Sylvia et al., 2015).

All but one of the studies were deemed to utilise assessment tools appropriate to the aims of their research, and the majority of the measures used across studies were robustly validated, with reported levels of internal consistency (Cronbach's alpha over 0.7) (Griethuijzen et al., 2014). Exceptions to this were found in one study where the assessment tool was a questionnaire that was developed for the purpose of the study, without prior piloting (Hendricks et al., 2014).

With regards to reporting of drop-out, only three of 15 studies described both the numbers and reasons for withdrawals and drop-outs (Collinge et al., 2012; Griffiths & West, 2013; Kahn et al., 2016). These three studies also reported a follow up rate of greater than 80%. The remaining studies (n=12) either did not provide the numbers or reasons for drop out and/or the numbers they provided were less than 80%. Hendricks et al. (2014) drop out rating was not applicable due to it being a retrospective one time survey.

### 1.3 Results

The studies summarised in table two will be discussed within the context of the present review topic; ‘a review of intervention studies that foster resilience within the military’. As previously discussed the studies varied greatly in regards to their sample, the studies aim, the intervention type, and the measures used to evaluate changes in participants. It appeared that the type of outcome measure gathered depends on the aims of the study and the target population. Therefore reporting solely on the effectiveness of the program would not add value to the review, and reporting on all aspects of the programs with the studies increases the validity of the review.

Therefore, themes regarding how resilience was assessed, the aim of the intervention (preventative or reactive), the theoretical base by which the intervention is underpinned, and tentatively the effectiveness of the intervention, are discussed below.

#### 1.3.5 Assessment of Resilience

The types of measures used to assess ‘resilience’ was diverse. The following sections present the findings of the assessment of resilience intervention studies regarding resilience scales, surrogate outcomes for resilience including the assessment of mental health and stressor load.

**1.3.1.1 Resilience scales.** Of the 16 studies, 7 directly assessed resilience as a construct in its own right using a ‘resilience scale’. The measures most frequently used were the Connor Davidson- RISC (2 out of the 16 studies) measuring a composite of resilience factors to operationalise resilience (Acosta et al., 2017; McGuire et al., 2018) and the Resilience Scale (RS) (2 out of the 16 studies) assessing resilience as a stable personality trait (Johnston et al., 2015; Sylvia et al., 2015).

One of the 16 studies (Tenhula et al., 2014) assessed the ability to bounce back or recover from stress by using the Brief Resilience Scale (BRS). Another study used the Deployment Risk and Resiliency Inventory (DRRI) which assesses pre-deployment, active duty and post-deployment factors in recently returning combat veterans (Price et al., 2013). The final study that used a ‘resilience scale’, relied on a self-developed instrument named the ‘Resilience Competency Scale’ (Griffith & West, 2013).

**1.3.1.2 Surrogate outcome measures.** Although some studies used specific resilience measures, the other studies used ‘surrogate outcomes’ for measuring intervention effects. Some of these studies were defined as evaluations of interventions fostering resilience or that target a facet of resilience.



**Resilience factors.** Four of 16 studies used resilience factors as surrogate outcomes (Cacioppo et al., 2015; Kahn et al., 2014; Lester et al., 2011; Collinge et al., 2012). Although they do not specify that they are measuring resilience, Fitzwater et al. (2018) appeared to group resilience and mental toughness together and assessed this using the Military Training Mental Toughness Inventory. Cacioppo et al. (2015) assessed the resilience factor hardiness, and included assessment of loneliness. Collinge et al., (2012) and Kahn et al. (2014) both assessed for self-compassion. Kahn et al. also assessed adjustment and perceived social support within their study.

Lester et al. (2011) used the Army self-developed Global Assessment Tool (GAT), a self-report and self-awareness tool designed to assess the psychosocial fitness of Army soldiers. Briefly, the GAT assesses positive emotions, meaning, and personal attributes (i.e., optimism) that contribute to a full life (Peterson et al., 2011)

**Mental health diagnosis.** Ten of the 16 studies measured mental health diagnosis, such as PTSD, anxiety or depression as surrogate outcomes, as well as resilience or a facet of resilience (Acosta et al., 2017; Collinge et al., 2012; Griffith & West et al., 2013; Johnston et al., 2015; Kahn et al., 2014; McGuire et al., 2018; Price et al., 2013; Roy et al., 2015; Sylvia et al., 2015; Tenhula et al., 2017).

**Stress perception.** Four of the 16 studies used stress perception as a surrogate outcome for the assessment of intervention effects (Collinge et al., 2012; Griffith & West, 2013; Kahn et al., 2014; Sylvia et al., 2015). Johnson et al. (2012) focused on behavioural characteristics of resilience, assessing the brains response to stress, with the Response to Stressful Experiences Scale.

**Other.** Johnson et al. (2012) was also the only study to measure physiological responses. Both heart rate and breathing rate were measured throughout the intervention. Similarly Acosta et al. (2018) was the only study to measure addiction to alcohol and substances.

### 1.3.6 Preventative vs reactive intervention

Two approach types to intervention were identified among the reviewed studies: preventative and reactive interventions. Preventative interventions were delivered in order to build resilience to manage potential upcoming stressful events. The reactive interventions were delivered in order to improve and build resilience to manage existing difficulties potentially derived from these stressful events.

**1.3.2.1 Preventative.** Five of the 16 studies used a preventative approach to foster and improve resilience within their resilience training program. The training programs in these studies were conducted either at the beginning of military recruits journey into the military or were conducted during active duty.

Cohn and Pakenham (2008) highlighted that recruit training is a critical time for the development and training of soldiers. Both Fitzwater et al. (2018) and Cohn and Pakenham (2008) also targeted their intervention at Army recruits. Johnston et al. (2014) and Cacioppo et al. (2015) targeted their intervention on military personnel who are on active duty. It was unclear within the write up where the participants were in their military journey within the Griffith and West (2013) study.

**1.3.2.2 Reactive.** Ten of the 16 studies used a reactive approach to fostering and improving resilience. The studies targeted: active military personnel returning from tour, active military personnel with a mental health diagnosis, mainly PTSD and/or veterans.

Four of the 10 studies using a reactive intervention recruited military personnel returning from duty. Collinge et al. (2012), and Roy et al. (2015) recruited military personnel who had returned from tour in Iraq and Afghanistan. Sylvia et al. (2015) and Johnston et al. (2015) recruited active duty military personnel. Six of the 10 reactive interventions focused their intervention on active military or ex-military personnel with a subthreshold or diagnosis of PTSD using the PCL checklist. The majority of these studies used a veteran sample (Acosta et al., 2017; Johnston et al., 2015; McGuire et al., 2018; Price et al., 2013; Sylvia et al., 2015). Roy et al's (2015) study was the only to focus on active duty personnel with PTSD.

### **1.3.7 Theoretical and evidence base of interventions**

The studies varied on their theoretical underpinning driving their intervention. The majority had an evidence based approach, however some either did not state or used a mixed approach to their intervention.

**1.3.3.1 Cognitive Behavioural Therapy (CBT).** Studies have demonstrated the efficacy of brief interventions incorporating both cognitive and behavioural components for teaching coping skills (Holloday et al., 1995). In a military context, effectiveness of a brief cognitive-behavioural therapy (CBT) program for anger management has proven to be effective (Linkh et al., 2003). There is empirical support for the efficacy of brief group CBT interventions in improving psychological adjustment; however, few published studies

have examined the efficacy of CBT interventions in the context of military recruit training (Cohn and Pakenham, 2008).

Acosta et al. (2017), Cohn and Pakenham (2008), McGuire et al. (2018), and Roy et al. (2015), specifically stated their theoretical base from which their intervention was formed was CBT. Fitzwater et al. (2018) used CBT principles in their psychological skills program, targeting goalsetting, relaxation and arousal regulation, self-talk strategies, and imagery/mental rehearsal.

Lester et al. (2011), and Griffith and West (2013) training programs are based largely on measures from positive psychology. The resilience training classes have their roots in cognitive behavioural therapy and typically rely on the basics of the ABC model (Ellis, 1957).

Tenhula et al. (2014) use problem-solving therapy (Nezu, Nezu, & D’Zurilla, 2013). This is a psychosocial intervention, generally considered to be under a cognitive-behavioural umbrella that focuses on enhancing one’s recovery from, and resilience to, the negative effects of stressful events (Nezu & Nezu, 2014).

**1.3.3.2 Exposure therapy.** Price et al. (2015) used exposure therapy with Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans with PTSD. Prolonged-exposure therapy was designed to help patients face their fears (Foa, 1998). As part of therapy, participants retell their trauma stories and engage in avoided activities in a safe environment. This treatment has been found to be highly effective in reducing PTSD symptoms, and its benefits often last longer than those conferred by pharmacologic interventions (Foa, 1999).

**1.3.3.3 Third wave CBT – Mindfulness.** The brain is the central organ of stress response and recovery, and essential to these processes is an individual’s awareness of his or her internal physiological state, also known as interoception (Khalsa, 2009). There is growing evidence suggesting that deliberate modification of interoceptive function can be achieved through mindfulness training (MT). The MT programs offer exercises and didactic instruction to help participants cultivate a particular mental mode. This mental mode increases your ability to pay attention to, describe, and act with full awareness of sensations, perceptions, thoughts, and emotions (Kabat-Zinn, 1990).

Hundreds of small clinical trials indicate that mindfulness-related practices may offer significant benefits for a broad spectrum of health and mental health outcomes including stress, depression, and post-traumatic stress disorder (PTSD), including with

military populations (Chiesa, 2010; Rees, 2011). Kahn et al. (2014) used specific methods grounded in the evidence bases of mindfulness-based therapies.

**1.3.3.4 Mind body practises and massage.** Research suggests that moderate pressure massage improves attention and enhances the body's immune response by increasing the activity of natural killer cells. Functional brain imaging studies show that changes take place in many areas of the brain involved in regulating emotions and stress response including the amygdala and the hypothalamus (Field, 2014). Within the studies included in this review two targeted resilience through massage. The study by Collinge et al. (2014) included meditative, contemplative and relaxation techniques, and the use of touch with a partner in the form of simple massage.

Kahn et al. (2014) participants practiced being present with one's partner by providing comfort and relaxation through simple massage techniques, and by receiving massage.

Yoga has been seen to improve resilience in other populations by reducing oxidative stress (Martarelli & Pompei, 2009) and reducing and preventing inflammation (Olivo, 2009), as well as by reducing anxiety (Subramanya & Telles, 2009), perceived stress, and depressive symptoms (Simard & Henry 2006), and by increasing meaning and promoting dynamic coping (Chan, Chan, & Ng, 2009). Resilience may be critical in creating an optimal healing environment (Osuch & Engel, 2004), which includes a multicomponent (i.e., social, psychological, spiritual, physical, and behavioural) approach (Jonas & Chez, 2004) toward optimizing healing. Based on their research, Osuch and Engel explicitly recommend mind/body practices as a means to heal trauma. Frueh, Grubaugh, Elhai, & Buckley (2007) noted the necessity for the U.S. Department of Veterans Affairs to update policies to include empirically supported concepts of resilience.

Within the current review, Johnston et al. (2015) investigated the effects of yoga on posttraumatic stress disorder (PTSD) symptoms, resilience, and mindfulness in military personnel. Yogic practices include components that may reduce, interrupt, or reframe re-experiencing, stress, arousal, and avoidance symptoms of PTSD by eliciting the relaxation response (Benson, Greenwood, & Klemchuk, 1975), which counterbalances the 'fight or flight response' by down regulating the stress system and increasing present-moment non-judgmental awareness and acceptance, which is often challenging for people with PTSD.

**1.3.3.5 Mixed approaches with mixed theoretical bases.** The literature on military veterans provides some illustrative examples of the link between social support and psychological resilience and mental health. Cross-sectional data indicate that veterans

characterised as resilient (i.e., high number of lifetime traumas, low current psychological distress) had more social support, in that they were more likely to be married or living with a partner and scored higher on measures of social connectedness (i.e., secure attachment style, social support) and community integration, than veterans identified as distressed (i.e., high number of lifetime traumas, high current psychological distress) (Pietrzak & Cook, 2013).

In line with this evidence, within the current review Cacioppo et al. (2015) used social resilience training to improve maladaptive social cognition and loneliness. They referred to social resilience as the capacity to foster, engage in, and sustain positive relationships, and to endure, recover from, and grow as a result of life stressors and social isolation (Cacioppo, Reis, & Zautra, 2011). Hendricks et al. (2015) one day workshop also focused on social support cultivation, but also, physical movement, self-care, mindfulness and stress management (Jha, & Kiyonaga, 2010; Libby, Corey, & Desai, 2012).

Similarly, Sylvia et al. (2015) used a mixed approach within their resilient warrior program. Its aims were to teach relaxation response elicitation techniques. In addition, the program also teaches awareness of the stress response and negative thoughts, as well as development of adaptive responses, such as the ability to generate adaptive thoughts, experience pleasure and meaning in life, engage in positive lifestyle behaviours (exercise, nutrition), and enhance a sense of connectedness through social support.

### **1.3.8 Program effectiveness**

The majority of the studies reported an overall positive outcome of the interventions. The studies measuring resilience specifically indicated a significant increase in participant's resilience scores. However, Sylvia et al. (2015) found no improvement to resilience, although reported a lower reported depression and stress score. Johnston et al. (2015) found a small but non-significant improvement in resilience. When clinical data was gathered, frequently included were measures of mental health symptoms, often including measures of depression, PTSD, and anxiety. These outcomes have been used in some cases to monitor the effectiveness of the program. Again the majority of studies found a significant improvement in mental health outcome post study. Acosta et al. (2014) was the only study not to find an improvement in participants PTSD outcome, they did however report an increase in participants coping and self-efficacy scores which improved their substance use outcome. Other mental health/resilience-related outcomes that were

measured among program participants including; mental hardiness, self-regulation, mindfulness, adjustment and cognitive performance, all improved post intervention. All of the studies that used a control group reported significantly positive differences in the experimental group, in all measures (bar Acosta et al- as stated above) compared to the control group

With regards to assessment of satisfaction and usability of the programmes themselves, satisfaction/usefulness were assessed in four of the 16 studies. Griffith and West (2008) Participants were asked about the helpfulness of the training modules and the use of resilience skills after training. Acosta et al. (2018) asked participants for intervention feedback on seven visual analogue scales, ranging from 0 (poor) to 10 (excellent). Hendricks et al. (2015) asked participants to rate the usefulness of the content provided, the presenters, and the activities used within their intervention. Cohn and Pakenhan (2008) went a step further and asked for ratings of program usefulness, personal relevance, and relevance to recruit training.

Very few studies examined the long lasting effects of the resilience intervention. Short follow-up assessments were conducted in only three of the 16 studies. Kahn et al. (2016) conducted a 4 month follow up. Both Acosta et al. (2018) and Roy et al. (2015) conducted a 3 month follow up. Roy et al. (2015) also proposed to intend to conduct a 6 and 12 month follow up, however this data has not yet been published. Many of the studies did not follow up the participants to evaluate the longer term effects on resilience. Sylvia et al. (2015) found no significant change to resilience in the Resilient Warrior program. They reflected that, the 5 core characteristics of resilience (meaningful life, perseverance, self-reliance, equanimity, existential aloneness) could take ongoing reflection and practice of skills over time to change. This suggests that it may be that resilience requires more time to change and follow up is vital to capture these changes.

## **1.4 Discussion**

### **1.4.5 Summary of results**

The types of measures used to assess 'resilience' were diverse. Some studies used specific resilience measures. Within these studies the measures most frequently used were the Connor Davidson- RISC measuring a composite of resilience factors to operationalise resilience and the Resilience Scale (RS) assessing resilience as a stable personality trait.

Whilst others studies opted for ‘surrogate outcomes’ for measuring intervention effects on resilience, such as measuring multiple facets of resilience, measuring a mental health diagnosis score or stress perception.

Two approach types to intervention were identified among the reviewed studies: preventative and reactive interventions. Preventative interventions were delivered in order to build resilience to manage potential upcoming stressful events, for example commencing their military career or deployment. The reactive interventions were delivered in order to improve and build resilience to manage existing difficulties potentially derived from these stressful events, for example a PTSD diagnosis. Many of the reactive interventions were with veteran samples however some were also targeted toward active military personnel returning from deployment.

The studies varied on their theoretical underpinning driving their intervention. The majority had an evidence based approach, for example CBT, exposure therapy or third wave CBT techniques. Some studies used specific methods grounded in the evidence bases of mindfulness-based therapies, massage therapy and other mind-body practices such as yoga. Some either did not state their theoretical bases of their intervention or used a mixed approach, for example, focusing on physical movement, social support cultivation, self-care, mindfulness or stress management.

#### **1.4.6 Limitations and considerations for future research**

Several limitations were noted in the systematic review of the literature. Firstly the homogeneity of the participants. The studies covered in this literature review included military and ex-military populations with participants which were majority, or entirely, male, and are in the Army branch of the military. Therefore the homogeneity of the sample limits the generalisability of the findings. There is mixed evidence of gender differences in regards to how males and females attain resilience (Bezek, 2010; Bonanno, 2008; Sneed et al., 2006). Research investigating resilience in the military has usually included a majority male sample, and predominantly all male sample. Research is needed to clarify what, if any relationships exist between levels of combat exposure, protective factors (e.g., pre-/postcombat social support), risk factors (e.g., sexual trauma), and long-term psychological health outcomes in female service members. Similarly, dissemination of resilience training programs to other branches of the military (e.g. Navy or the Air Force) is vital in order to broaden the picture and generalise the findings.

The review included studies on both current serving military personnel and veterans. The majority of the studies on veterans were aimed at improving resilience after a mental health diagnosis, for example, PTSD. The aims and the resilience measures of these studies were greatly contrasting to the studies fostering resilience in for example Army recruits who had no mental health diagnosis. This difference makes comparisons across the studies more complex. Future research would benefit from further clarity around the aims of the resilience intervention and whether it is a preventative resilience program or a reactive one.

Consistent with the many different resilience programs, there was great variability in the measures they used to gauge their effectiveness. In the absence of a universally accepted definition of resilience and ways to measure this, a review of resilience-promoting interventions relates to the way people measure outcomes; that is, how they define resilience. The current review found that the types of measures used to assess resilience were diverse and the use of multiple measures was common. Most studies in this review focused on the impact of interventions on people's behaviour, emotional functioning, or presenting issues. A substantial number of studies assessed psychiatric symptoms (most commonly PTSD and depression, followed by anxiety), the absence or reduction of which seemed to serve as a proxy for measuring resilience. However, others included measures of well-being, positive affect, self-regulation, and mindfulness, reflecting a focus on strengths, rather than deficits.

A large number of 'resilience scales' assess several resilience factors. By assessing resilience factors, however, valid conclusions about the efficacy of resilience interventions cannot be drawn. Within future research it is therefore important to clearly distinguish between resilience factors and resilience as an outcome and use separate outcome measures for their assessment. Studies interested in assessing resilience factors should rely on specific instruments developed to assess those factors. Measures of resilience factors, mental health-related constructs and stress perception may then be included as secondary outcomes to gather additional information.

If developed robustly, a standardised resilience measure could be applied to a variety of populations (e.g. military and ex-military) in different contexts or branches (e.g. Navy or Air Force) and allow for a comparison across programs. Such measures would incorporate the evidence-informed factors and could build on or adapt existing metrics of program effectiveness to achieve consensus about what factors comprise resilience, which measures are most valid and reliable for assessing resilience, and their relevance for



military populations. This would entail reviewing resilience measures and developing a new resilience measure, based on the overall conceptual structure and list of factors, that is reliable and valid for military populations and their families. The Global Assessment Tool being developed as part of the CSF program for the Army is a step in this direction, although no data on reliability or validity is currently available.

A minority of the resilience programs gathered feedback in order to refine and improve their programs. Some had based their programs on years of documented scientific evidence from other studies, which guided the programs' development. Therefore there is limited evidence available as to how well the programs are working or would work if they were implemented elsewhere in the military. Future research should consider formal assessments of effectiveness in order for more robust findings and clearer conclusions to be made.

Finally, the studies varied in their design, some being RCT's, others cross-sectional or repeated measures, and so inferences of causality cannot be made. There is a distinct lack of longitudinal studies within the literature. Longitudinal research on the effectiveness of the resilience programs is thus required to enable more robust conclusions to be drawn. Furthermore, assessment of the stability of individuals' resilience over time is clearly warranted. Further to this there was an over-reliance on retrospective and self-report measures, however a minority of the studies in the review used brain imaging and other physiological measures. Future research may benefit from the inclusion of other assessment tools like these to more effectively measure resilience.

#### **1.4.7 Limitations of the Systematic Review**

The review was conducted according to a pre-defined and published protocol. To accumulate a high quality body of evidence, inclusion criteria was re-defined and only peer reviewed journals were considered. Authors and experts were contacted to identify unpublished work. Still, this review has a number of limitations. First, the criteria for determining whether an intervention was a resilience training program relied on our interpretations of the authors' descriptions. Firstly the lack of a consistent definition for resilience and secondly a lack of a valid and reliable measure of resilience made it difficult to have a strict inclusion criteria. Therefore studies that had a weaker connection to resilience but may have a facet of resilience may have been disregarded.

Both military and ex-military samples were included within the review. It is possible that including both populations had an impact on the focus of the review. Studies with active military participants appeared to have a different aim compared to the studies using veteran participants. It is assumed that this is due to the resiliency needs to these populations being different. For example, military recruits at the start of their military journey were included in the studies to build up their resilience in order to cope with potential future trauma. The majority of veteran populations within the studies had already been exposed to trauma and due to a mental health diagnosis such as PTSD or depression were included in the study to build their resilience to cope with the distressing symptoms of their diagnoses. There were a limited number of studies already which matched the inclusion and exclusion criteria acceptable for this review, therefore the numbers would be even lower if one population had been evaluated. Future research, if focusing on one population (i.e solely active military or solely veterans) would need to broaden the inclusion criteria in regards to defining 'resilience'.

#### **1.4.8 Clinical Implications**

Clinicians, researchers, health policymakers, and governments are intrigued by the concept of resilience and the role it may play in promoting health and well-being. Finding reliable and effective ways to bolster resilience in individuals within the military is thus a key area of investigation.

To date, most studies related to resilience have been observational in nature. This may be an appropriate approach to further define the resilience construct and purposefully and scientifically design interventions to impact it. Research should focus on identifying a consistent and specific strategy for targeting resilience and a corresponding approach to measurement. When programs have a clear scientific and theoretical rationale for effectiveness, they should be evaluated in larger, randomised controlled trials. In the future, comparative effectiveness studies will be needed to assess the specific and incremental value of resiliency training as compared to alternative programs (e.g. traditional cognitive behavioural therapy, mindfulness-based interventions, etc.). These trials should also have longer durations of follow-up to fully evaluate their effectiveness.

### **1.4.9 Conclusion**

This systematic review aimed to critically evaluate the current empirical literature related to training programs that foster resilience in the military. The issue of resilience and the possible benefits of resilience training are particularly relevant to high risk industries, such as the military. Results suggest that resiliency training programs seem to have benefit in improving areas of resilience including mental health and well-being in military populations, although the quality of the randomised trial evidence precludes conclusions based in high confidence. There is no specific or consistent format, structure, or theoretical basis that defines a resiliency training program. In addition, no gold standard method of evaluation or measurement exists. Significant stakeholder interest in the potential of resiliency training programs warrants further study in this area. Such study should be rationally and scientifically organised, however, to achieve maximum value and fill key gaps in knowledge.

## **Chapter 2: Adolescents in Military Families: The Relationship between Stress, Resilience and Coping**

### **2.1 Introduction**

Adolescents belonging to military families in the United Kingdom (UK) are disproportionately likely to experience extended parental absences, frequent relocations, anxiety relating to the safety of their parents, and other challenges as a result of their parents' service. The combination of these stressors are unique to military life. Such adolescents are also faced with the more usual adolescent stressors such as change in friendship groups, parents divorcing and school exams. Both sets of stressors can potentially make them at risk of disrupted developmental trajectories.

Research on children in military families has often taken a deficit approach—that is, it has portrayed these adolescents as a population vulnerable to psychological damage from the adversities of military life. A number of researchers however, observe that most military children turn out just fine (Easterbrooks, Ginsburg, & Lerner, 2013). They argue that, in order to better serve adolescents in military families, we must understand the sources of strength that help them cope with adversity, and beyond that, thrive. In other words, we must understand their resilience.

#### **2.1.1 Prevalence of children in military families**

Although, according to the Department for Education (DfE), service children make up around 0.5% of the total school population in England, there is currently no definitive record of the number of service children living in the UK and/or overseas. DfE data, Ministry of Defence personnel records and other sources of data, have identified anywhere between 38,000 and 175,000 dependants of military personnel in education (Skomorovsky & Bullock 2015).

#### **2.1.2 Deployment and relocation**

Deployment is a military term that, according to the Department of Defence (2014), refers to the “rotation of forces into and out of an operational area.” A deployment is a period of time in which a military service member will be sent to another location in the

world to fulfil their contract of service (U.S. Army, n.d.). Deployment lengths vary depending upon the branch of service and nature of the mission.

In the United Kingdom, operational deployments tend to be for six months. (U.K. Harmony Guidelines, National Audit Office, 2006). Recruitment and retention in the armed forces state that U.K. Army personnel should not be deployed for longer than 13 months in a 3-year period. This means no more than two 6-month deployments in this time with one year's rest in between (Rona, et al, 2007). Permanent Change of Station (PCS) refers to a service member's assignment to a new duty station in a new location for a period of no less than six months. A PCS may often last one to three years.

Parents continue to play a significant role in adolescent emotional well-being during the adolescent phase of development, especially in times of stress, (Steinberg, 1990), therefore it is important to understand how parental deployment and relocation affects the adolescent's relationship with their parents. High quality parenting is the factor most consistently associated with resilient outcomes in children facing stressful events, such as deployment (MacDermid et al., 2008). With one or both parents absent and under increased stress, it may be a challenge for the parents to provide the kind of care that is associated with secure attachment relationships.<sup>5</sup> In fact, when a parent is deployed, the mental health and emotional adjustment of the at-home parent has consistently been shown to have a significant influence on adolescent adjustment (Chandra et al., 2010a; Lester et al., 2010; Wong & Gerras, 2010). The effects of both deployment and relocation on the adolescent will be explored further in later section 'frequent moves and resilience'.

### **2.1.3 Research on adolescents**

Adolescents from military families are much like adolescents from civilian families, experiencing the same biological, cognitive, behavioural, social, and emotional changes (Coulthard, 2011). However, adolescents from military families also experience unique stressors related to the demands of the military lifestyle, such as frequent and

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<sup>5</sup> Children with secure attachment feel protected by their caregivers, and they know that they can depend on them to return. Attachment is a deep and enduring emotional bond that connects one person to another across time and space (Ainsworth, 1973; Bowlby, 1969).

lengthy parental separations and moves, resulting from deployments and relocations (Collins & Wadsworth, 2014; Compton & Hosier, 2011).

Because of the numerous changes that occur as children mature into adults, adolescents experience deployment much differently than, for example, younger children. Parents are now unable to protect their adolescent sons and daughters from many of the realities of the situation. Developmentally adolescents start to think more abstractly and are able to consider multiple perspectives (Harold, Colarossi, & Mercier, 2007), they can cognitively comprehend what it means to have a parent stationed in a war zone, at risk of injury or death (Huebner, Mancini, Wilcox, Grass, & Grass, 2007).

With this information in mind, alongside their increased ability to generate options in decision making and anticipate related consequences (Harold et al., 2007), how much control they believe they have in these stressful deployment-related situations strongly influences their reactions. Some master these situations, whilst others may merely tolerate them (Compas, Banes, Malcarne, & Worsham, 1991). With technology advancing, there is now constant media exposure to the details of combat. This exposure, coupled with their still developing cognitive abilities, can disrupt the adolescents' ability to cope with and adapt to stressful events such as parental deployment (Chartrand & Seigel, 2007; Reed, Bell & Edwards, 2011).

Deployment and relocation are two of the most commonly researched military family stressors (Coulthard, 2011; Westhous, 1999). Previous research has shown mixed results in regards to the effect military life has on adolescents. Pitman and Bowen (1994) found that relocation negatively affects adolescents' psychological well-being, and parental deployment negatively affects both adolescents' psychological well-being and the quality of their child-parent relationships (Chandra et al., 2010; Knobloch, Pusateri, Ebata, & McGlaughlin, 2012; Mansfield et al., 2010).

However, other studies have demonstrated that families with deployed parents sometimes have stronger relationships and that children in these families develop characteristics such as higher independence and responsibility (Defence Manpower Data Center, 2008). One review found that, in comparison to their civilian peers, adolescents from military families function better in a number of domains that help build resilience, including self-regulation, intellectual and academic performance, and emotional wellbeing (Park, 2011). The majority of the research was conducted before many recent conflicts began (pre 9/11); however, more recent studies suggests that adolescents from military families are less likely to involve themselves in risky behaviours and are more accepting of

differences in others (Hutchinson, 2006). Young people can use such strengths when they are faced with the hardships associated with military life. These more positive findings which recognise the strengths within military family members, serve as a counterweight to past research that has focused on problems or psychopathology in military families.

In regards to mental health outcomes, there is again a mixed picture. Williamson's (2018) systematic review found that there was a lack of evidence to suggest that adolescents from military families had poorer mental health (i.e. suicidal ideation, depression, and PTSD) or a lower quality of life (i.e. perceived stress, positive affect, quality of life) than their civilian counterparts. However, there is some evidence for an increase in adolescents' mental health difficulties with deployed parents compared to civilian parents.

Weber and Weber (2005) found that relocation was not detrimental to military adolescent development. They surveyed adolescents from military families from four branches of the U.S. military (Army, Navy, Air Force and Marine Corps). The more relocations the family had was associated with fewer problems experienced by the adolescent. They found that transitions (e.g. school moves) brought about opportunities to grow and engage in new, enriching experiences, thus developing their resilience (Weber & Weber 2005; Bradshaw et al. 2010). One weakness of Weber and Weber's (2005) research however is that the findings were based on the parents' perceptions of their adolescent development. The perceptions of the adolescents were not provided.

Other studies have found that adolescents from military families had a 25% rate of suicidal ideation compared to 19 percent in adolescents with no military association (Cederbaum et al., 2014). The same study also reported that adolescents who experienced the deployment of a parent had a 15 percent increased rate of depressive symptoms compared to civilian peers. Moreover, adolescents who experienced two or more family deployments reported a 41 percent increase in depressive symptoms compared to their civilian peers. The data in this study was collected at a single point in time, cross sectional in design, therefore limiting inferences of causation and is impossible to say whether this was a trend over time due to the limitations of the design.

In summary, multiple frequent moves or relocations are one challenge that has been viewed as potentially stressful for adolescents in military families, but the work in this area has been inconclusive.

We know that not all youth are equally influenced by environmental stressors. The way stress affects adolescents varies according to the individual as much as the nature of the stress and the context (Charney, 2012). Gewirtz and Youssef (2016) report that there is also little understanding of what coping strategies are used by military families in order to cope when faced with these unique stressors and how these coping strategies are modelled for military youth. Coping is not intrinsically positive, Lazarus & Folkman (1984) suggested it is the individual's appraisal of an event and how they then behave which dictates their coping style. They state that military children may be experiencing unique stressors during the school age period when they are developing their personal approach to stress management.

#### **2.1.4 Resilience**

The concept of resilience originates from research with civilian children who experienced hardships such as childhood abuse, death, disease, and other adverse childhood experiences (Felitti & Anda, 1997). Resilience refers to the capacity to successfully adapt, 'bounce back' and grow in the face of adversity (Masten, 2014). Literature from civilian research suggests that resilience is manifested in various ways, including improved physical and mental health (Ahern, Ark, & Byers, 2008), resisting engagement in risky behaviours (Ali, Dwyer, Vanner, & Lopez, 2010), personal growth and strength (Chapin, 2011), and improved family functioning (Saltzman, Lester, Beardslee, Layne, Woodward, & Nash, 2011; Walsh, 1996; Simon, Murphy, & Smith, 2005).

Despite military-related challenges, many military children, adolescents, and families are able to flourish throughout deployment and military life. The ability to adapt, grow and thrive like this during stressful experiences is a defining characteristic of resilience (Masten, 2001). Recent research has started to focus on strengths and the protective factors adolescents in military families possess, such as resilience. It is suggested that childhood resilience may be the upshot of positive factors associated with having a parent in the military such as financial security, health care, subsidised education, and enhanced social networks (Palmer, 2008).

#### **2.1.5 Theoretical Foundation**

Resilience consists of specific character traits and behaviours known as protective and recovery factors that emerge in the face of adversity (McCubbin & McCubbin, 1993;



1996; McCubbin, McCubbin, Thompson, Han, & Allen, 1997). Protective factors are ongoing processes that help an individual adapt to life stressors. Individual and family protective factors may include communication, self-efficacy, openness, traditions, presence of supports, and ability to deal with ambiguity or the unknown (Yorgason, 2010). Protective factors are important for military families helping them work together, increasing family cohesion, when experiencing stress. Recovery factors are processes or skills that an individual or family uses when faced with a stressful event or crisis, such as deployment. Examples of recovery factors include flexibility, hope, family togetherness, and a sense of control. Promoting recovery factors in military families can be beneficial for helping an individual or family to grow and get back to healthy functioning after a stressful experience such as deployment (Black & Lobo, 2008; MacDermid Wadsworth, Samper, Schwarz, Nishida, & Nyaronga, 2008).

In order to promote resilience it is important to identify these family protective and recovery factors. Resilience research proposes that repeated exposure to stress may encourage individuals and families to identify, and effectively utilise, needed resources and support as new challenges and stressors arise (McCubbin & McCubbin, 1993). For example, families that are able to successfully cope with daily stressors and routines are often able to use similar strengths when faced with a new stressor or crisis. However, if daily stressors build up and become too much, then further supports may be needed to avoid potential adverse effects such as a decline in mental health (McCubbin & McCubbin, 1993). Indeed, resilience is a dynamic process, suggesting that protective and recovery factors may be employed differently during varying experiences of adversity. Identifying how protective and recovery factors are associated with resilience and adolescent outcomes will enable the development of evidence-based interventions to build resilience (Ahern, 2006).

It is important to distinguish between resilience and coping: resilience influences how an event is appraised and influences the stress process at multiple stages, an individual's appraisal of stressors, the meta-cognitions in response to emotions and the selection of coping strategies; whereas coping refers to the strategies employed following the appraisal of a stressful encounter.

### 2.1.6 Coping

Coping is a conscious process that an individual engages in to manage a problem and regulate emotions. Rutter (1990) argued that effective engagement with adversity generates protective coping mechanisms. Coping strategies influence how an individual manages a stressful event (Lazarus & Folkman, 1984). Generally, coping strategies fall into three types: problem focused, emotion focused, and avoidance (Endler & Parker, 1990a, 1990b). Using the problem-focused coping strategies, the individual takes action to fix or resolve the problem. Using emotion-focused coping strategies, the individual tries to lessen his/her negative emotions due to stress experienced (e.g., the person watches TV as a distraction). Avoidance coping strategies involve evading both negative emotions and finding solutions to problems, in the hope that the problem will disappear on its own (e.g., the person puts off an important task because it evokes discomfort).

The majority of studies (Dumont & Provost, 1999; Higgins & Endler, 1995; Steinhardt & Dolbier, 2008) have suggested that problem-focused coping strategies are associated with more positive outcomes (e.g., less mental health difficulties), whereas emotion-focused and/or avoidance coping strategies are associated with higher level of mental health dysfunction. However, some studies (Bonanno, Noll, Putnam, O'Neill, & Trickett, 2003; Braverman, 1992; DiPalma, 1994) reported that using avoidance and emotion-focused coping strategies in certain active periods of the stressful situation was more adaptive than using other coping strategies. For example, Worthington and Scherer (2004) reported that using emotion-focused coping strategies (e.g., forgiveness) is the only realistic option when the source of stress is uncontrollable. Here, the individual can use these strategies to reduce health risks and promote health resilience. Likewise, Coifman, Bonanno, Ray, and Gross (2007) reported that repressive coping, one of the emotion-focused coping strategies, served a protective function and actually promoted individual resilience in times of exceptionally negative events such as a death of a loved one.

Central to the development of resilience is learning adaptive coping skills, therefore resilience may relate to coping style (Neill, 2006). Previous research has shown that seeking social support protects adolescents in military families (Cozza, Haskins, & Lerner, 2013). For example, during deployment, adolescents from military families tend to turn to peers who are also from military families for support, because they can relate to the situation (Mmari et al., 2009). Wong and Gerras (2010) also found that, according to the deployed parents, intervention by supportive mentors (e.g., teachers, coaches, chapel workers, youth centre personnel, friends, and parents) was associated with lower levels of

adolescent stress. However, results from the interviews with adolescents indicated that only support received from parents was significantly related with reduced levels of adolescent stress. They found the discrepancy in findings may be due to the deployed parents' wishful thinking, namely, that the 'village' comes together to raise their child when they are absent. Moreover, adolescents from military families said they coped better with relocation when they received support from their old friends (Bradshaw et al., 2010). Further, adolescents have utilised formal support groups during deployment which has provided them with social, psychological, and family support (Huebner & Mancini, 2005; Huebner et al., 2010).

Research on adolescent stress and coping suggests several consistent findings (Seiffge-Krenke, 1995). Firstly, that adolescents' family environment impacts upon their level of stress and coping abilities. Adolescents tend to model the healthy or unhealthy ways their parents behave when dealing with stress. Secondly, the build-up of both major and minor stressors is related to poor adolescent adjustment, especially in the area of depression. Emotional stressors and role strain have both been identified as stressors for military affiliated adolescents (Bird & Harris, 1990; Rosen et al. 1993). Thirdly, adolescents who rely on avoidance through withdrawal as a major form of coping tend to display more depressive symptoms.

### **2.1.7 Frequent Moves and Resilience**

Military families move more often than civilian families do; for example, military connected children in the USA in middle school and high school, on average, move three times as often as civilian youth do (Shinseki, 2003). Some researchers have presumed that these recurrent moves put young people's development at risk (Paris et al., 2011). But from a resilience perspective, changing schools or towns can offer opportunities. Children who move can 'reinvent' themselves; they can try out new activities, explore different social relationships, and develop new interests (Finkel et al. 2003). In one study, 75 percent of military parents reported that moving had a positive impact on their child's development, though it is important to remember that parents' reports may be biased by their own perceptions and wishes.

Another study of 608 Army and Air Force families with children aged 10–17 found that certain individual characteristics and social relationships promoted resilience when a

family had to move. Children who showed the greatest resilient functioning reported an internal locus of control, optimism, good physical and mental health, and a sense of mastery. They also tended to live in families whereby the parents reported greater marital satisfaction and more effective parenting, and when they participated in group social activities (MacDermid et al 2008).

Yet another study found that when military children move, their ability to adapt is related to their mothers' adjustment and mental health (Lester et al, 2010). These findings suggest that relationships with close family members can help military children adapt, just as they can in civilian families. For some adolescents from military families, moving means relocating overseas (Finkel et al, 2003). Families who relocate and have the chance to live abroad, have opportunities where they can travel, learn new languages, and experience new cultures. These opportunities may help adolescents and other family members develop self-confidence, cultural competence, and other skills (Blaisure et al. 2012).

### **2.1.8 Resilience as a moderator for stress and coping**

Protective factors are defined as “influences that modify, ameliorate, or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome” (Rutter, 1985 p. 600). Qualities identified in the resilience literature include self-efficacy, supportive parenting, and involvement in prosocial activities (see, for a review, Luthar, 2006; Masten & Reed, 2002; Rutter, 2000). Rutter (1987) suggests a differential or variable impact of protection on the association between risk and behavioural outcomes. Rutter states that its impact is most evident when protection is high, and its influence is more limited when protection is low. Within the general psychology literature, various studies have found that protective factors buffer, shield, or insulate individuals from the negative effects of stressors (Baldry & Farrington, 2005; Dilorio, Dudley, Soet, & McCarthy, 2004; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). To illustrate, Jessor et al. (1995) found that protective factors served to moderate the relationship between risk and adolescent problem behaviour (e.g., alcohol and drug abuse). Dilorio et al. (2004) also found a moderation effect of protective factors such that adolescents reporting both high risk and high protection were less likely to indicate involvement in sexual behaviours compared with adolescents reporting high risk and low protection.

Similarly, Baldry and Farrington (2005) found that protective factors moderated the negative effects of risk factors on bullying and victimisation.

### **2.1.9 Aim of the current study**

It is of note that most of what is known from the research of the impact of military stressors on adolescents is based on U.S. military families and from the perspective of parents within these military families (Aronson & Perkins, 2013; Chandra et al., 2010; Mmari, Roche, Sudhinaraset, & Blum, 2009). There is a lack of understanding about how military and non-military specific stressors affect adolescents from families in the UK, and if their resilience mediates their coping when faced with these stressors.

Cozza et al. (2013) argue that existing studies of military children focus too much on stresses or deficits, and too little on their strengths, the strengths of their families, or the supports around them. For example, due to military accession standards, every military child has at least one parent with at least a high school education or the equivalent, employment, health insurance, competitive financial benefits, and a wide variety of support and educational programs (Hosek & MacDermid Wadsworth, 2013). Therefore, adolescents from military families may be protected from significant risks faced by civilian adolescents, such as living in poverty, having an unemployed parent or lacking access to health care.

As such, this study aims to investigate how resilience might influence the relationship between the perceived stress experience and coping used by adolescents in military families in the UK.

### **2.1.10 Formulation of current study**

Stressors and coping may be implicated in the pathways to thriving throughout adolescence. To improve our understanding of such pathways, and to offer guidance for prevention and intervention programmes, the current study proposed that the way adolescents of military families cope (e.g. avoidant coping, social withdrawal, anger, use of drugs) may be influenced not only by the stressors they have experienced, but also by the level of resilience they possess. Previous research has not considered the possible influence of resilience in reducing maladaptive coping in adolescents in military families.

Therefore, the aim of the study is to explore the relationship between the perceived stress adolescents encounter (both general and military specific) and coping, and the influence of resilience on that relationship (Figure 1).

Study hypotheses:

- I. Stress is associated with coping. More specifically, I anticipate higher perceived stress will be associated with lower levels of coping, and lower perceived stress will be associated with higher levels of coping (hypothesis i).
- II. Military stress is associated with coping. More specifically, I anticipate high levels of military stress will be associated with lower levels of coping, and vice versa (hypothesis ii).
- III. Resilience is associated with coping. More specifically, I anticipate higher resilience will be associated with higher levels of coping, and vice versa (hypothesis iii).
- IV. Resilience moderates<sup>6</sup> the association between perceived stress (both general and military specific) and coping (hypothesis iv). More specifically, I anticipate that a negative association between perceived stress and level of coping would be weaker for those adolescents that display higher levels of resilience, and vice versa.

## 2.2 Methodology

### 2.2.1 Design

This study employed correlation and moderator models to explore a cross section of the adolescents of military families using questionnaires to assess the following variables:

*Predictor variables (IV):* perceived stress and specific military stress

*Moderator variable:* resilience

*Outcome variable (DV):* coping

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<sup>6</sup> A moderator rather than mediator model was proposed because it was not predicted that resilience would account for the impact of the stressors on coping but that different levels of resilience may influence coping at different levels of stressor.

## 2.2.2 Sample

**2.2.2.1 Sampling Strategy.** Participants were adolescents (male and female) of UK military families, aged 12-18. They were recruited via schools, military organisations (both online and magazines) and through social media platforms (for example the school social media platform) within the UK.

Inclusion criteria: any adolescent individual male or female, living in the UK with a parent/parents in the UK military.

Exclusion criteria: any individual who was believed to not be an adolescent with a parent in the military in the United Kingdom.

The recruitment took place over five months, approximately 136 individuals completed the study, of these 54 fell within the inclusion criteria, resulting in 39.7% recruitment rate.

**2.2.2.1 Anticipated Sample Size.** A priori power analysis<sup>7</sup> (using a Linear multiple regression f-test) indicated a sample size of 77 would enable the detection of a medium effect size ( $r=.30$ /  $f^2=.15$ ), where power is .8 and  $\alpha$  is 0.5 (Cohen, 1992; Faul, Erdfelder, Lang & Buchner, 2007).

## 2.2.3 Participant Characteristics

**2.2.3.1 Demographic Characteristics.** Fifty-four adolescents took part, this included 17 who heard about the study through school (31.4%), six who heard about the study through Facebook (11.1%), and 31 who stated 'other' (57.4%).

Eighty-two were excluded from statistical analysis because either; they did not meet the inclusion criteria ( $N=1$ , 0.7%), had failed to sufficiently complete all questionnaires ( $N= 1$ , 0.7%), or their responses appeared untrustworthy<sup>8</sup> ( $N=79$ , 58%). It was unclear whether the excluded participants did or did not differ considerably in age,

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<sup>7</sup> The main purpose underlying power analysis is to help the researcher to determine the smallest sample size that is suitable to detect the effect of a given test at the desired level of significance.

<sup>8</sup> Responses were deemed untrustworthy if they came from the same computer IP address, or if responses gave suspicion that they did not meet the inclusion criteria.

gender, branch, and rank from those included in the statistical analysis due to the untrustworthiness of their responses.

Table 3 presents the demographic characteristics for the final sample ( $N=54$ ). Of the 54 participants, the majority ( $N=47$ ) had a father in the military (87%), five had a mother in the military (9.3%) and two had both parents in the military (3.7%). Similarly, the majority of the participants parents served within the Army branch of the military ( $n=31$ , 57.4%), 17 served in the Navy (31.5%) five served in the RAF (9.2%) and one participant did not state the branch of which their parent served (1.8%). There was an uneven split between military branches in the sample. This split however appears to be broadly representative of the sizes of the military branches with the Army being the largest, followed by the Navy and RAF (UK Armed Forces Quarterly Service Personnel Statistics, 2019). There was also a relatively even distribution and split of ranking when grouped into low rank (1-8) and high rank (9-17). The participants ranged in age from 12-18 years of age with the average age of 14.85 ( $SD = 2.02$ ). The majority of the participants parents were not currently deployed ( $N=41$ , 75.9%), however the majority of the participants parents had previously had a deployment, ranging from two to 10 deployments ( $N=30$ , 55.6%). For some military branches, lower ranking personnel are sometimes assigned more frequently to deployments in comparison to higher ranking personnel. Within the current sample, although there was a slight trend between the lower the ranking the more deployments, this was not a significant trend. The majority of the participants have moved home due to their parent's military reassignment, moving anything from one to over six times ( $N=39$ , 72.2%). There was no difference in gender within the sample.



Table 3

*Participant Characteristics*

	<b>N (54)</b>	<b>Frequency (%)</b>
<b>Age</b>		
12	12	22.2%
13	6	11.1%
14	5	9.3%
15	9	16.7%
16	9	16.7%
17	9	16.7%
18	6	11.1%
<b>Gender</b>		
Male	27	50%
Female	27	50%
<b>Number of Siblings</b>		
0	8	14.8%
1	23	42.6%
2	16	29.6%
3	8	14.8%
4	1	1.8%
5+	0	0%
<b>Parent in Military</b>		
Father	47	87%
Mother	5	9.3%
Both Mother and Father	2	3.7%
<b>Military Branch</b>		
Army	31	57.4%
Navy	17	31.5%
RAF	5	9.2%
<b>Military Ranking</b>		
High	25	50%
Low	25	50%
<b>Number of Relocations</b>		
0	15	27.8%
1	5	9.3%
2	7	12.9%
3	6	11.1%
4	4	7.4%
5	3	5.5%
6+	16	29.6%
<b>Currently Deployed</b>		
Yes	13	24.1%
No	41	75.9%
<b>Number of Deployments</b>		
0	24	44.5%
1-3	9	16.7%
4-6	10	18.5%

<b>6-10</b>	11	20.4%
<b>Where hear about study?</b>		
<b>School</b>	17	31.4%
<b>Facebook</b>	6	11.1%
<b>Other</b>	31	57.4%

Note. 'Low' ranking = 1-8 rank, 'High' ranking = 9-17 rank (see Appendix L).

## 2.2.4 Measures

**2.2.4.1 Demographic Information.** A demographic form (Appendix B) was devised that elicited information about age, gender, number of siblings, which parent is in military, branch and ranking of that parent, number of deployments the parent has had, number of relocations the adolescent has had, and whether currently deployed.

**2.2.4.2 Assessment of stress.** The Adolescent Perceived Events Scale (APES), by Compas, Davis, Forsythe & Wagner, (1987), is a self-report measure of stressful events that commonly affect adolescents. As outlined in Compas et al. (1987), the short form of the APES is currently used for all ages of adolescents (10 through 18-years-old; see Grant & Compas, 1995). The short form consists of 90 stressful events, ranging from major life events (e.g., death of a relative) to daily events (e.g., household chores) that characterise several domains of functioning. For each item, the adolescent indicates whether or not they have experienced the stressful event in the past 6-months. If so, then the adolescent rates their perceived desirability of that event on a 9-point rating scale (-4 = extremely bad, 0 = neither good or bad, +4 = extremely good). A higher score relates to a higher perceived level of stress. The APES was selected as the most appropriate measure to identify stress in adolescents.

For this research APES was utilised, with the addition of military life related stressors within the measures to target stressors specifically related to military life that were not captured within the APES:

**Parental deployment.** Adolescents were asked how they would respond to their parents' deployment using the Reactions to Deployment scale. This scale was developed by Day (2013). Adolescents rated their responses on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items included, "I wish my parent would not have to be deployed," "I get angry that my parent has to be away on deployment," and "I am sad when my parent is deployed."

A higher score indicates a more negative response to deployment. The internal consistency for this scale was Cronbach's alpha = .69.

**Relocation.** Adolescents were asked about their attitudes toward relocating using the Reactions to Relocation scale, which was designed by Day (2013). They rated their responses to 6-items using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items included "I don't like moving to a new city" and "Relocating to a new home is very stressful for me." A higher score indicated a more negative response to relocation. The internal consistency for this scale was Cronbach's alpha = .67.

**2.2.4.3 Assessment of resilience.** The Child and Youth Resilience Measure (Ungar & Liebenberg, 2011) is a culturally sensitive measure of resilience among adolescents. CYRM-28 has three subscales reflecting the major categories of resilience. Furthermore, each subscale has its own groupings of questions that serve as indicators of the construct's major categories. The first subscale, individual resilience scale, reflects an individual factor that includes personal skills (5 items), peer support (2 items), and social skills (4 items). The second subscale, relationship to caregiver scale, deals with caregiving, as reflected in physical caregiving (2 items) as well as psychological caregiving (5 items). The third subscale, context resilience subscale, comprises contextual components that facilitate a sense of belonging in youth, components related to spirituality (3 items), culture (5 items), and education (2 items). It was designed as a screening tool to explore the resources (individual, relational, communal and cultural) available to youth<sup>9</sup>.

Adolescents rated their responses to the 28-item measure using a 3-point rating scale from 1 (No), 2 (Sometimes) and 3 (Yes). Sample items include "I talk to my family about how I feel," "I know where to go in my community to get help," and "I am aware of my own strengths." A higher score indicated stronger resilience. The internal consistency of this scale was Cronbach's alpha = .88. This measure was used to identify resilience factors in this research.

Based on the work of the Resilience Research Centre, we now understand resilience as a social ecological construct. This ecological perspective suggests that, when providing

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<sup>9</sup> Normative data is from a Canadian sample of youth.

a person with opportunities to realize his or her potential, interventions must involve those mandated to help, such as social workers, nurses and educators, as well as those expected to provide support, namely the person's family, peers and community.

Within this measure resilience is defined as: the capacity of individuals to navigate their ways to resources that sustain well-being; the capacity of individuals' physical and social ecologies to provide those resources; and the capacity of individuals, their families and their communities to negotiate culturally meaningful ways to share resources.

**2.2.4.4 Assessment of coping.** The Adolescent Coping Orientation for Problem Behaviours (A-COPE), developed by Patterson & McCubbin (1987) is a 54 item self-report questionnaire used to identify coping strategies employed by adolescents from ages 11-18. Patterson & McCubbin (1987) used factor analyses for the A-COPE questionnaire and reported twelve subscales, and reported that coefficients for these scale ranged from 0.50 to 0.76, with a median of 0.72. In another study (Jorgenson & Dusek, 1990) the coefficients ranged from 0.45 to 0.92, with a median of 0.76. Adolescents report on a 5-point rating scale (1=never; 5=most of the time) to indicate how often they use each coping strategy when feeling tense or facing a problem or difficulty. The higher the score the more use of adaptive coping strategies. This measure was used to identify coping styles in this research.

## **2.2.5 Procedure**

The study was approved by the University of Southampton, School of Psychology Ethics Committee (Appendix C). All schools and military organisations gave permission to be approached.

**2.2.5.1 Approach.** Schools with high numbers of children in militaries families were identified through government systems and/or councils. They were contacted initially via email and then via telephone to ask for their participation in the research study (Appendix D). Once agreed with the school, the study was advertised on school websites and/or newsletters (Appendix E).

Military organisations were also contacted via email and then telephone to request that they advertise the study. This included military schools and magazines targeted towards military families. An adapted advert was given to these organisations (see Appendix F). In order to reach out to as many adolescents as possible the study was also

advertised on social media (see Appendix G), mainly on the identified school Facebook social media platforms, if it was agreed by the school.

**2.2.5.2 Recruitment.** Actual recruitment lay in the hands of the adolescents motivated to complete the study. A five pound Amazon voucher was given as an incentive to participate.

**2.2.5.3 Assessment.** The study was developed on an online survey system called iSurvey. The participant information, consent form, demographic questions, the three questionnaires (life events, resilience and coping), a mood repair task and a debrief were all entered into the online survey system to create the study. All participants were asked to complete the study online. The study took from 19 minutes to 1 hour 3 minutes to complete (average = 35 minutes).

**2.2.5.4 Debrief.** An online debriefing statement (Appendix H) was provided on the ending page of the study in order to thank the participants for their involvement in the study. It also provided them with information about how their data will add to research, signposting to support agencies (GP, self-help websites) and contact information of the researcher and supervisor if further information around the study was wanted.

## **2.2.6 Ethical Considerations**

A mood repair comic was included at the end of the study (Appendix I). It was important to include this due to the study being an online study and therefore no direct access to the adolescents to support them if necessary. The mood repair was a set of comic strips relating to adolescent life as a form of distraction and in an attempt to improve any lowered mood.

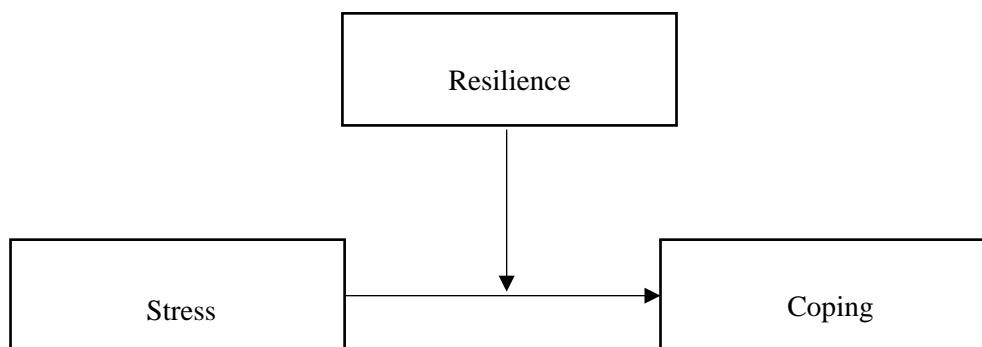
All participants were provided with information regarding the study (Appendix I) and informed consent (Appendix K) from the parent was obtained. Participants were informed of their right to withdraw from the study at any time. All data from the current research was stored according to the University Data Protection policy. Questionnaires were coded to ensure confidentiality and anonymity. All information was entered onto a computer and saved on a password protected file, on a password protected computer. Data was stored according to the Data Protection Act and GDPR. Anonymised data will be

stored in secure University storage for fifteen years, and will only be viewed by the research team.

## 2.3 Results

### 2.3.1 Statistical analysis strategy

Data analysis for descriptive and inferential statistics was conducted using the Statistical Packages for Social Sciences (SPSS) Version 21.0. Preliminary analysis was used to prepare the data, establish descriptive statistics and explore variable distributions to identify assumptions required for inferential statistical analysis. The main hypotheses (i,ii,iii) were tested using correlational and regression analysis to identify the relationships between variables. The final hypothesis (iv) used bootstrapping methodology to examine for indirect effects within moderator models. Bootstrapping is recommended in place of the previously used Baron and Kenny (1986) causal steps and Sobel (1986) test approach. It does not assume normal distribution and has demonstrated greater power when testing for indirect effect with multiple moderator models (Hayes, 2009). In addition to the main hypotheses, further analysis used correlations to investigate the relationship between the stress subscale scores, resilience dimensions and coping. Bootstrapping analysis then examined the potential moderation effects of resilience between stress subscales and coping.



*Figure 2.* The hypothesised moderation model on the influence of resilience on stress and coping.

### 2.3.2 Descriptive Statistics

Internal consistency was calculated for variable total scores and subscales using Cronbach's alpha (Table 4).

Table 4

*Cronbach's Alpha for Variables and Subscales*

Variable	Subscale	$\alpha^{10}$	M	SD	Range
Stress (APES)	Daily Stress	.91	3.85	.98	0-9
	Major Stress	.89	2.35	1.18	0-9
	<b>Total APES</b>	<b>.94</b>	<b>3.38</b>	<b>.99</b>	<b>0-9</b>
Military Stress	Deployment	.31	4.06	.34	1-5
	Relocation	.46	3.97	.41	1-5
	<b>Total Military Stress</b>	<b>.26</b>	<b>4.01</b>	<b>.25</b>	<b>1-5</b>
Resilience (CYRM)	Individual	.80	9.42	1.30	1-3
	Relationship to caregiver	.81	8.73	1.54	1-3
	Context	.50	6.29	.79	1-3
	<b>Total CYRM</b>	<b>.89</b>	<b>8.15</b>	<b>1.08</b>	<b>1-3</b>
Coping (A-COPE)	Venting Feelings	.15	3.05	.54	1-5
	Seeking Diversions	.05	2.84	.43	1-5
	Developing self-reliance	.70	2.95	.71	1-5
	Developing social support	.69	3.06	.72	1-5
	Solving Family Problems	.43	2.86	.75	1-5
	Avoiding Problems	.54	4.07	.69	1-5
	Seeking Spirituality	.87	1.48	.86	1-5
	Investing in close friends	.59	3.23	1.05	1-5
	Seeking Professional support	.30	1.74	.77	1-5
	Engaging in demanding activity	.61	2.93	.87	1-5
	Being humorous	.89	3.63	1.05	1-5
	Relaxing	.39	3.41	.67	1-5
	<b>Overall Coping</b>	<b>.86</b>	<b>3.00</b>	<b>.41</b>	<b>1-5</b>

<sup>10</sup> Cronbach's Alpha over 0.70 indicate good reliability or greater, however minimally acceptable alpha reliabilities should meet or exceed .50 (Cortina, 1993; Kline, 1999).

*Note.* APES- Adolescent Perceived Events Scale, CYRM – Child and Youth Resilience Measure, A-COPE – Adolescent Coping Orientation for Problem Behaviours.

**Stress.** Highest mean severity scores came from the perceived daily stress subscale, indicating that adolescents did experience daily stressors, they perceived them as a better experience than ‘major’ stressors.

**Military Stress.** In regards to military stress, the Cronbach’s alpha score was low (.26 overall). This indicates there is low internal consistency within the measure. Despite the low internal consistency, it was decided to include the measure in order to gain insights into reactions to deployment and relocation. Participants reported a more negative reaction to deployment rather than relocation, although the difference was minimal.

**Resilience.** The subscale means indicate that adolescents reported a higher individual and relationship to caregiver resilience compared to context resilience. The overall measure had good internal consistency (.89). Liebenberg, Ungar & Van de Vijver (2012) using a 5 point likert scale version of this measure with Canadian youth, who were users of multiple services such as child welfare, or community programs also found they reported higher individual resilience. However, these adolescents reported relationship to caregiver to be their lowest resilience factor.

**Coping.** In regards to coping, the overall measure had good internal consistency (.86). However, some of the subscales showed very low internal consistency, for example, seeking diversions (.05) and venting feelings (.15). Therefore, the decision was made to take the overall coping score through to analysis instead of looking at specific coping styles.

### **2.3.3 Correlations between Stress (general and military specific), Resilience and Coping**

Table 5 illustrates the Pearson correlation coefficients for variables of the main hypotheses, specific relationships are highlighted below:



Table 5

*Pearson correlation coefficients for Stress, Military Stress, Resilience and Coping (N = 54)*

	1	2	3	4	5	6	7	8	9	10	11
1. APES-D	-										
2. APES-M	.79**	-									
<b>3. Total Stress</b>	<b>.97**</b>	<b>.91**</b>	-								
4. Deployment	-.29*	-.22	.28*	-							
5. Relocation	-.10	.37	-.05	-.12	-						
<b>6. Total Military Stress</b>	<b>-.26</b>	<b>-.95</b>	<b>-.21</b>	<b>.54**</b>	<b>.76**</b>	-					
7. CYRM-I	.11	-.18	.01	-.17	-.31*	-.38**	-				
8. CYRM-CR	.01	-.23	-.08	-.19	-.13	-.21	.70**	-			
9. CYRM-C	.13	-.00	.08	-.15	-.09	-.17	.71**	.63**	-		
<b>10. Total Resilience</b>	<b>.08</b>	<b>-.18</b>	<b>-.01</b>	<b>-.19</b>	<b>-.21</b>	<b>-.30*</b>	<b>.91**</b>	<b>.91**</b>	<b>.83**</b>	-	
<b>11. Total Coping</b>	<b>.30*</b>	<b>.12</b>	<b>.25</b>	<b>-.16</b>	<b>-.04</b>	<b>-.13</b>	<b>.58**</b>	<b>.56**</b>	<b>.42**</b>	<b>.60**</b>	-

*Note.* APES-D- Adolescent Perceived Events Scale Daily Stressors, APES-M - Adolescent Perceived Events Scale Major Stressors, *Deployment* -Reaction to deployment, *Relocation* – reaction to relocation, *CYRM-I* – Individual resilience, *CYRM-C* – Relationship to caregiver resilience, *CYRM-C*- Context resilience. *Total Coping* –A-COPE.

\*  $p < .05$  (2-tailed), \*\*  $p < .01$  level (2-tailed)

**2.3.3.1 Stress and Coping (hypothesis i).** The results demonstrated that experiencing greater levels of daily stress was positively associated with coping ( $r = .30, p = .02$ ). Major stress was not associated with coping, however total stress approached significance with total coping ( $r = .25, p = .06$ )

**2.3.3.2 Military Stress and Coping (hypothesis ii).** No significant correlations were observed between military stress (and its subscales) and overall coping.

**2.3.3.3 Resilience and Coping (hypothesis iii).** Associations were found between all resilience scales and coping. Greater overall resilience was positively associated with coping ( $r = .60, p = .00$ ). Individual resilience ( $r = .58, p = .00$ ), relationship to caregiver resilience ( $r = .56, p = .00$ ) and context resilience ( $r = .42, p = .00$ ) were all found to be positively associated with overall coping.

Correlations do not allow for the predictive power of variables to be observed. Thus, regression analysis was used which allows for exploration of the predictive value of one or more variables upon an outcome (Field, 2005).

#### **2.3.4 Regressions for Perceived Stress and Coping, Resilience and Coping (hypotheses i, ii, and iii)**

Multiple simple linear regressions with bootstrapping were used to examine the predictive nature of perceived stress and coping and resilience and coping (hypotheses i, ii, and iii) as shown in Table 6.

Overall perceived stress did not significantly predict coping ( $F(1, 52) = 3.41, p = .07$ ), although the path was in the expected direction. When looking at the stress subscales further perceived 'daily' stressors predicted coping explaining 9% of the variance ( $F(1, 52) = 25.98, p = .02$ ) however there was no significant predictor between perceived 'major' stress and coping. Military stress did not predict coping.

All resilience scales predicted coping. Overall resilience explained 36.1% of the variance ( $F(1, 52) = 29.32, p = .00$ ). All resilience subscales predicted coping, explaining 33%, 32% and 18% of the variance respectively (Individual  $F(1, 52) = 25.75, p = .00$ , Relationship to Caregiver  $F(1,52) = 23.85, p = .00$ , and Context  $F(1,52) = 11.24, p = .00$ ).

Table 6

*Linear Regression models*

PV	DV	Correlation	Variation		Predictor		
		$R^2$	$F(1,51)$	$t(52)$	$b$	SE	$\beta$
APES-D	A-COPE	.09	5.1	2.3*	.11 (.01, .21)	.05	.29
APES-M	A-COPE	.02	.77	.88	.08 (-.10, .26)	.09	.12
APES	A-COPE	.06	3.41	1.85	.06 (-.01, .13)	.03	.25
MilStress	A-COPE	.02	1.22	-.11	-1.05 (-2.94, .85)	.95	-.15
CYRM-I	A-COPE	.33	25.98	5.09**	3.25 (1.97, 4.53)	.64	.58
CYRM-RC	A-COPE	.32	23.89	4.89**	3.99 (2.36, 5.64)	.82	.56
CYRM-C	A-COPE	.18	11.55	3.39**	3.94 (1.62, 6.27)	1.16	.43
CYRM	A-COPE	.36	29.32	5.42**	.23 (-.97, 1.88)	.04	.60

*Note.* 95% bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals and standard errors based on 1,000 bootstrap samples. \* $p < .05$ , \*\* $p < .01$ . PV-predictor variable, DV-dependent variable, APES - Adolescent Perceived Events Scale, APES-D - Adolescent Perceived Events Scale Daily Stressors, APES-M - Adolescent Perceived Events Scale Major Stressors, MilStress- Reactions to Military Stress, CYRM-I – Child and Youth Resilience Measure Individual Resilience, CYRM-RC – Child and Youth Resilience Measure Relationship to Caregiver Resilience, CYRM-C – Child and Youth Resilience Measure Context Resilience, CYRM – Child and Youth Resilience Measure.

**2.3.5 The moderating effect of resilience on perceived stress and coping (hypothesis iv)**

As illustrated in Figures 3-6, each overall model with four moderation models within were proposed to test the hypotheses that resilience (hypothesis iv) moderates the relationship between perceived stress and coping<sup>11</sup>.

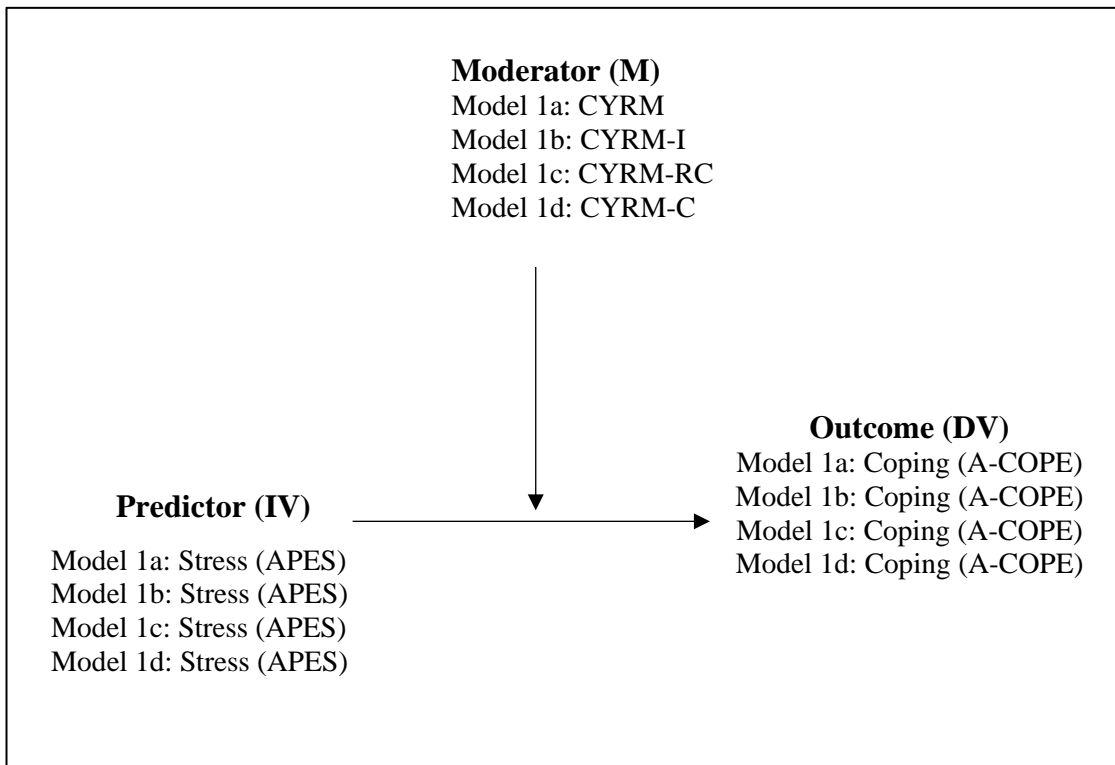


Figure 3. Moderator model 1– Total Stress (IV)

<sup>11</sup> It has been demonstrated that the predictor and outcome variables are not required to be significantly or robustly associated to examine mediation (cf., Hayes, 2013). Therefore, despite some non-significant bivariate correlations between the predictors and outcomes, all possible mediation models were examined to allow for comparison of results relating to the hypotheses.

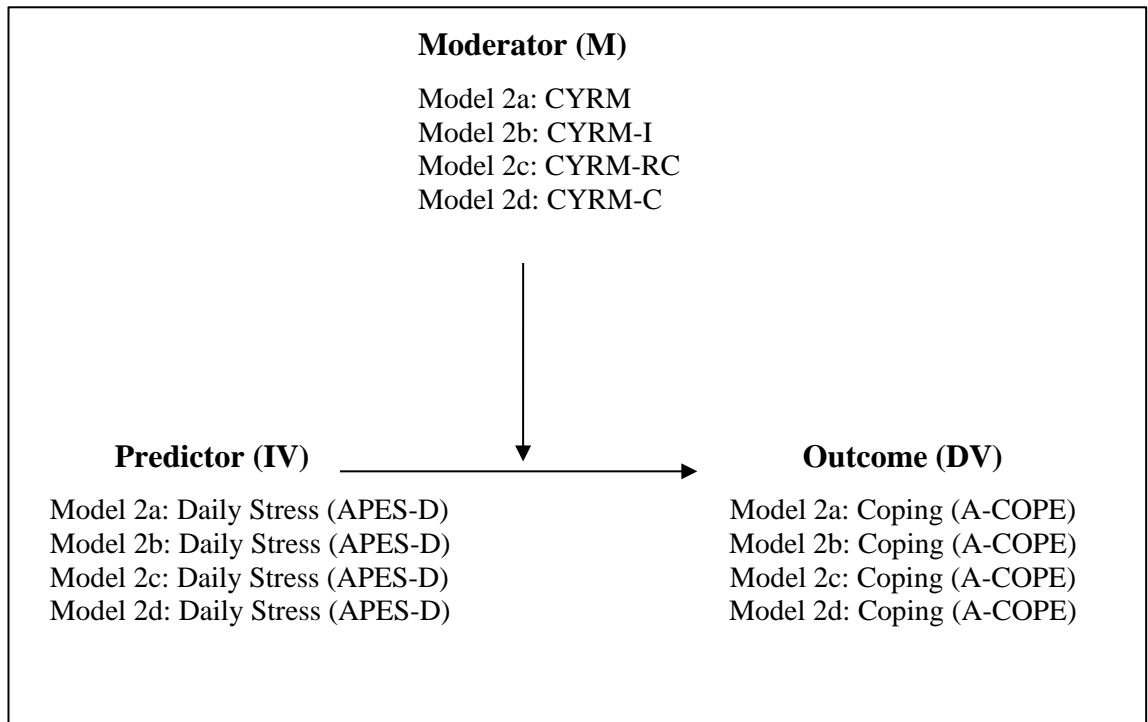


Figure 4. Moderator model 2– Daily Stress (IV)

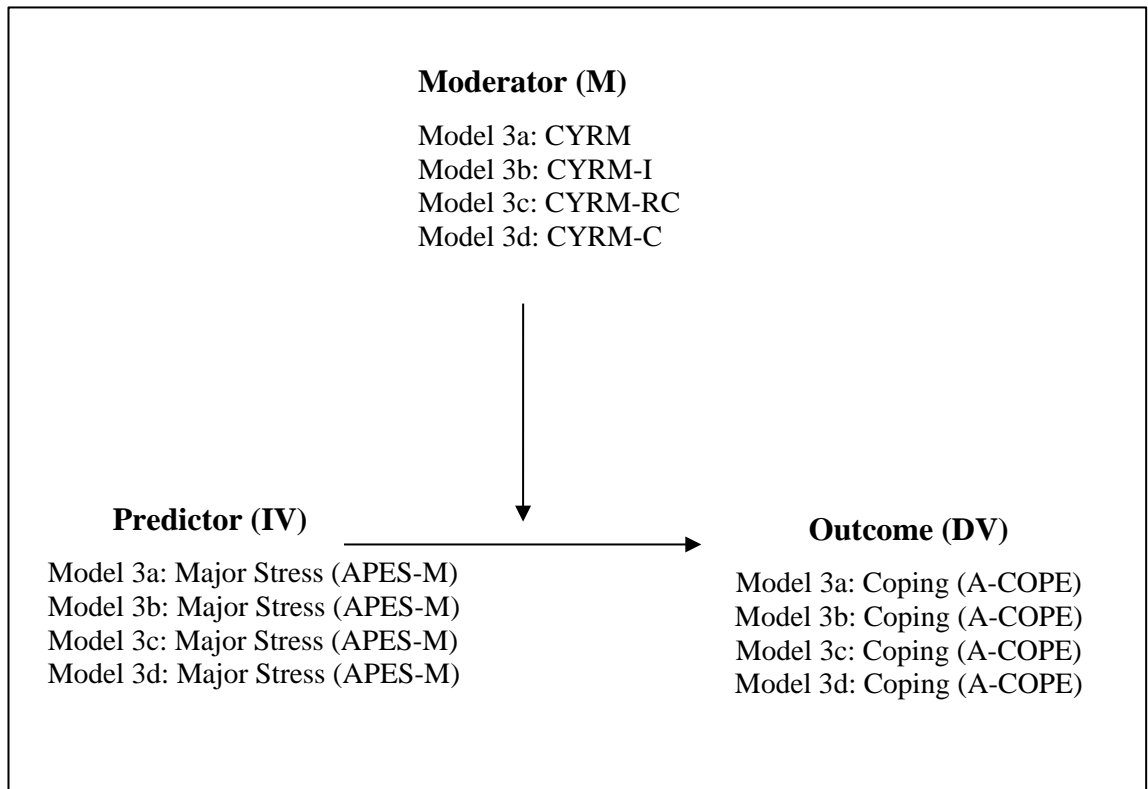


Figure 5. Moderator model 3– Major Stress (IV)

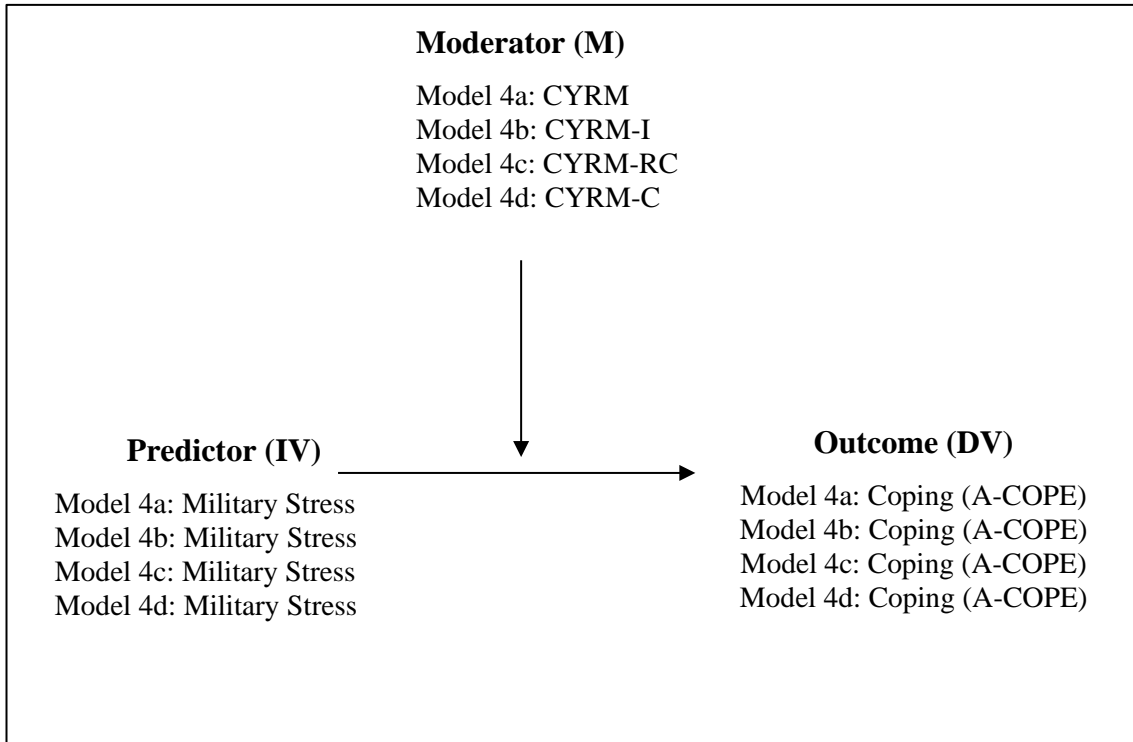


Figure 6. Moderator model 4 – Military Stress (IV)

Figures 7, 8, 9 and 10 show the variables of the four significant moderation models.

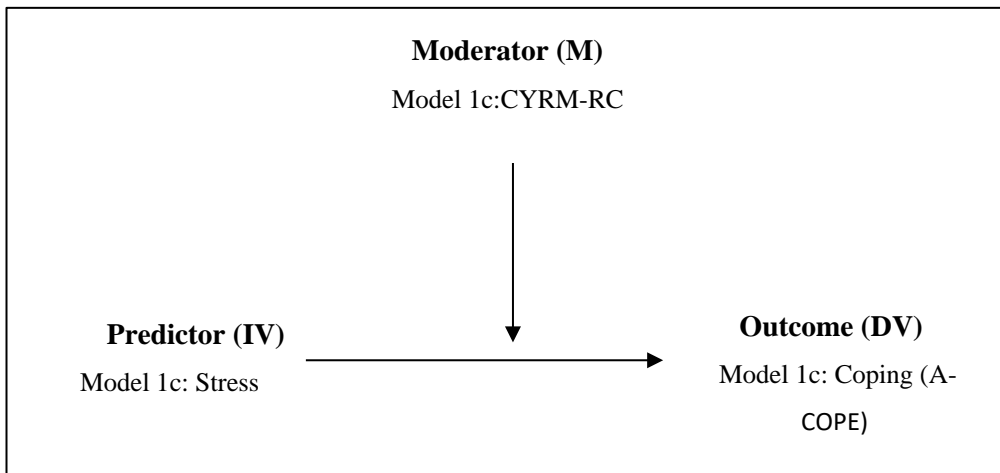


Figure 7. Significant moderation of the relationship between perceived stress and coping influenced by relationship to caregiver resilience (Model 1c).

Relationship with caregiver resilience was shown to significantly moderate the relationship between total perceived stress and coping,  $b = 0.02$ , 95% CI [0.0039, .0364],  $t = 2.49$ ,  $p = 0.162$ .

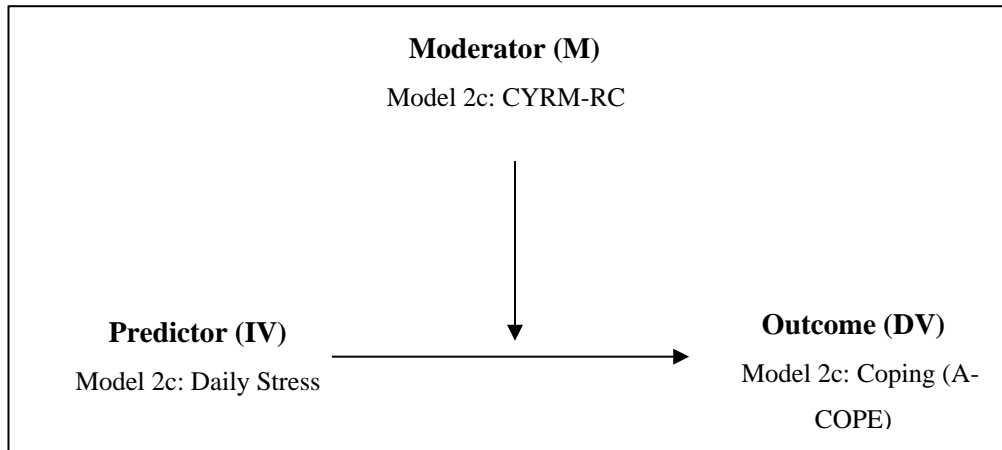


Figure 8. Significant moderation of the relationship between perceived daily stress and coping influenced by relationship to caregiver resilience (Model 2c).

Relationship with caregiver resilience was also shown to significantly moderate the relationship between perceived ‘daily’ stressors and coping,  $b = .18$ , 95% CI [0.09, 0.27],  $t = 2.47$ ,  $p = 0.0169$ .

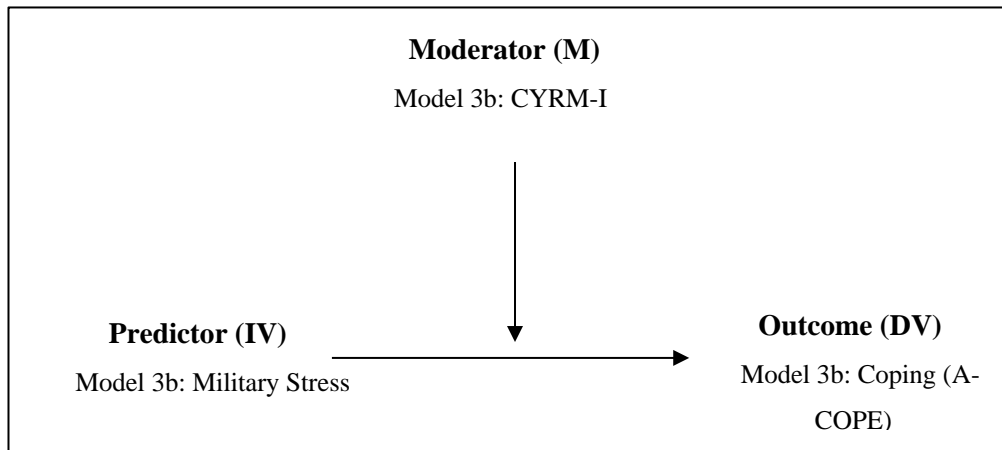
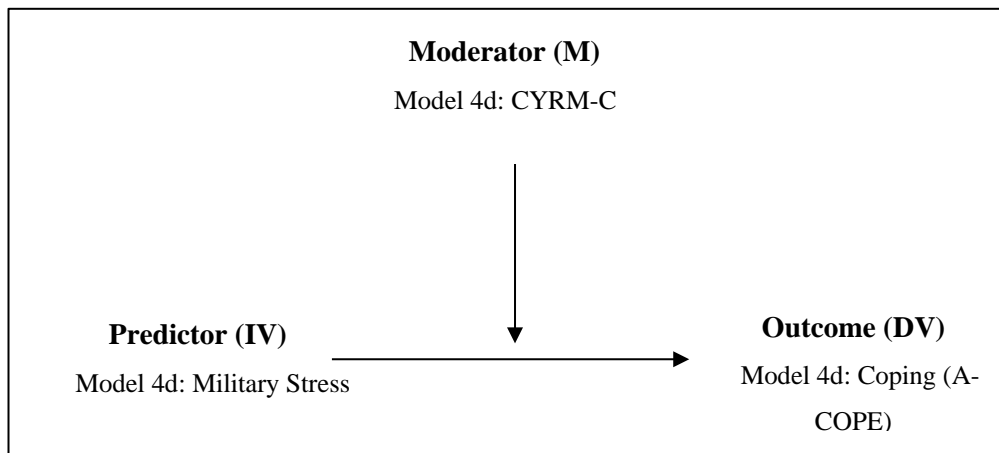


Figure 9. Significant moderation of the relationship between military stress and coping influenced by individual resilience (Model 3b).

Individual resilience was shown to significantly moderate the relationship between military stress and coping,  $b = 0.44$ , 95% CI [0.05, 0.83],  $t = 2.24$ ,  $p = 0.029$ .



*Figure 10.* Significant moderation of the relationship between military stress and coping influenced by context resilience (Model 1c).

Context resilience was also shown to significantly moderate the relationship between military stress and coping,  $b = 1.04$ , 95% CI [0.19, 1.88],  $t = 2.47$ ,  $p = 0.016$



## 2.4 Discussion

Adolescents from military families experience various stressors associated with the military lifestyle (Collins & Wadsworth, 2014; Weins & Boss, 2006). However, minimal research has examined the impact of military life on adolescents from military families in the UK. To address this gap, this study aimed to explore the potential influence of resilience on the relationship between perceived stress and coping. It sought to highlight resilience factors that had the most influence on the adolescents' ability to cope, in order to aid understanding of the specific interventions that could promote and enhance resilience, thereby managing the unique stressors placed upon them.

### 2.4.1 Interpretation of key findings

After exploring relationships between key variables, as hypothesised, a more positive perception of (daily) stress led to better coping. It was also hypothesised that a more positive perception of 'major' stress would lead to better coping, this hypothesis was not supported. Similarly it was hypothesised that a more positive reaction to military stressors would lead to better coping, again this was not supported. Additionally, as hypothesised, higher resilience (on all subscales) predicted better coping. The study further investigated psychological resilience in adolescents from military families using an examination of moderation hypothesis. It was hypothesised that the association between the stressors adolescents encounter and their coping would be moderated by their resilience. Some of the results support this prediction.

Also as hypothesised, some factors of resilience (but not all) influenced the relationship between perceived stress and coping. The results indicated that when adolescents reported their relationship with caregiver resilience around the mean or above, it moderated the relationship between perceived stress (both overall perceived stress and perceived daily stress) and coping. This was not the case if they reported a lower relationship to caregiver resilience. Suggesting that when the adolescents perceived events to be less stressful (both general and 'daily' stress), if they have a greater relationship to caregiver resilience this leads to better coping. Past research and attachment theory also suggests that caregiving factors influence resilience level, especially for young adults (Ungar and Liebenberg, 2011). Thurber

and Walton (2012) found that when individuals enter a new environment and find themselves struggling with adjustment, they initially cope by contacting their families. Individuals who receive support from their family struggle less with adjusting, anxiety, and depression. Also, Newland (2014) found that individuals gain essential traits through the family system. For example, self-esteem and self-worth are two vital contributors to resilience levels. The authors found that individuals develop and strengthen these traits through the family system.

However, no resilience factors had an influence on the relationship between perception of ‘major’ events and how they subsequently coped. It may be that other mechanisms are at play here moderating a potential relationship. The small sample may have an impact on detecting this relationship. McCrae’s (1984) coping research emphasises that the type of stressor experienced by an individual consequently influences the selection of specific coping strategies. Similar to McCrae’s theoretical approach, Bonanno and colleagues (2011) take into account the variability in coping and adjustment demands across different stressor events. They suggest that resilience to a more ‘major’ life event like a trauma is fostered not by one particular type of coping response but, rather, by the ability to flexibly engage in diverse coping responses as needed across different types of potentially traumatic events (Bonanno et al., 2011). It may be that the coping measure used (A-COPE) was not able to capture this.

When looking specifically at their reactions to military stress, the adolescents’ individual resilience played an important role in their ability to cope. More specifically, the higher the adolescents’ individual resilience, the greater their ability to cope with specific military stressors such as deployment and relocation. Findings from past research substantiate that individual factors such as personal skills, peer support, and social skills influence resilience level. Mattingly, Oswald, and Clark (2011) found that an individual’s ability to adapt to a new environment is dependent on their self-construal. Individuals with high relational self-construal are successful in maintaining interpersonal relationships which contribute to their ability to adapt. Given the adolescents developmental stage it is reasonable to expect that they use peer support more so than parental to manage these unique military stressors.

When adolescents reported a low context resilience this influenced their ability to cope with specific military stressors. More specifically, when reporting below the mean context resilience, resilience moderated the relationship between military stress and coping. This

suggests having lower context resilience helps to cope better with military specific stress. It was an interesting and unexpected finding. The participants reported a lower context resilience compared to a previous study (Liebenberg et al 2011), therefore it may be that when their parents are deployed or they are relocated as a family, they do not need to rely on a higher contextual resilience to cope. The current study suggests that developing a higher individual resilience is more vital to ensure better coping, this again could be understood when taking into consideration their developmental stage as adolescents, becoming more independent with age.

It might have been interesting to divide the sample by branch and rank and investigate the influence of resilience on the stress to coping relationship. Research indicates slightly different mobility patterns across the Armed Services, with children in the Navy least likely to experience moves, but more likely to experience long periods of parental separation (MoD Tri-Service Families Continuous Attitude Survey, 2018). Children with parents in the Army or RAF described a highly mobile lifestyle, with multiple school, house and country moves, taking place throughout their entire lives. Different resilience factors may be at play that influence the way the adolescent copes with those unique stressors, and this may vary again depending on the adolescent's age. However, given the sample size, this may lead to further issues of validity of the results becoming decreasingly representative of the entire population.

#### **2.4.2 Theoretical implications**

These findings have important theoretical implications for psychological resilience in the military family life context. Previous research (Barker & Berry, 2009) has suggested that; personality dispositions, parent support, and community support help to ameliorate the impact of stress on children. The current study identified additional resilience variables including: individual resilience, relationship to caregiver resilience and context resilience that can help to further bolster adolescents as they deal with the increased stressors that come with having a parent in the military.

In line with the moderating role of protective factors found in the mainstream resilience literature (Baldry & Farrington, 2005; Dilorio et al., 2004; Jessor et al., 1995), this finding indicates that protective factors buffer, shield, or insulate adolescents from the

negative effects of stressors. Furthermore, it is important that future research on resilience examines whether a matching effect exists between resilience and stressors; that is whether particular resilience factors match best with certain stressors.

### **2.4.3 Practical implications.**

There are a number of practical implications for the findings. The study's results suggest that stressors and some factors of resilience operate synergistically to facilitate adolescents' coping. As such, individuals, such as practitioners and teachers, working in contexts such as schools should carefully manage adolescents immediate environment to optimise the demands they encounter in combination with identifying and monitoring the resilience factors that adolescents need to possess to shield them from negative consequences. In terms of fostering these qualities, they should help adolescents from military families to be proactive in their well-being development, build social support from multiple sources rather than focusing on one particular source, focus on what they control, and take specific steps to obtain the support that they need. To ensure protection from the negative effects of stressors, practitioners and teachers should consider specific training needs to attain the optimum level of these factors (for example, the results suggest a higher level of individual resilience, but a lower level of context resilience is needed to cope with military specific stressors.)

It is unlikely that all risk will be eliminated in adolescents facing the unique stressors of military family life, such as deployment, for example, is a risk factor itself. Perhaps a better approach than attempting to alleviate risk would be to develop a comprehensive program to identify risk factors that could be ameliorated while simultaneously identifying areas in which resilience could be promoted so that additional protections could be implemented. One such program, in the United States, is the Comprehensive Soldier Fitness (CSF) Program.

The Comprehensive Soldier Fitness program developed by the Army in consultation with behavioural health experts, is an educational training program with a holistic approach targeted to develop resilience in soldiers in five dimensions: physical, social, emotional, spiritual and family (Casey, 2011). The program, while in its infancy, has demonstrated initial promise in building soldier resilience (Lester, McBride, Bliese, & Adler, 2011). An extension of this program, The CSF Program for Military Family Members, is currently under development. This program focuses on tailoring specific assessment, training, and

interventions for military family members. Assessment and training program modules are being constructed from a strength-based approach.<sup>12</sup>

#### **2.4.4 Strengths, limitations and future research**

This study has shown that depending on the perception of the stressor experienced, particular resilience influence how the adolescent copes with that stressor. This has added to the current resilience research and more specifically added to limited knowledge around adolescents resilience belonging to military families. However, there are some limitations to the study. First, the cross-sectional design precludes any inference of directionality or causality among the variables. It is important for future research to examine the proposed models using longitudinal methods to better capture the dynamic nature of resilience especially in light of Rutter's (1981) observation that "if circumstances change, resilience alters (p. 317)". The process conceptualisation of resilience (see, for a review, Fletcher & Sarkar, 2013) recognises that the effects of the coping will vary contextually (from situation to situation) and temporally (throughout a situation and across an individual's lifespan). Therefore, although an individual may react positively to stressors at one point in his or her life, it does not mean that the person will react in the same way to stressors at other points in his or her life (Rutter, 2000). The importance of developing and utilising differing factors of resilience may vary over time e.g. context, individual.

Secondly, the data was based on self-report measures, which introduces the possibility of bias due to common method variance. This systematic source of measurement error can inflate associations among constructs (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To address this limitation, future research should consider adopting a triangulation strategy, which incorporates multiple methods (e.g., self-reports, observations, physiological indices) into a study design so that the drawbacks of one method can be attenuated by the strengths of another. Additionally, the psychometric measures used had limitations in regards to

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<sup>12</sup> Strength-based practice is a social work practice theory that emphasises people's self-determination and strengths. It is a philosophy and a way of viewing clients as resourceful and resilient in the face of adversity (McCashen, 2005)

availability of their means. This made it difficult to interpret the current sample means, to understand where the current sample fell, as there were limited comparisons that could be made. Future research should consider measures that have stated their means in order to gain a better understanding of the sample data within the research.

Due to the sample population being a hard to reach minority group the target sample size of 77 was not reached. The likelihood of a Type II error may be greater, skewing the results, decreasing the power of the study. The limited moderation findings reported may be attributed to small sample size and difficulty detecting a small interaction effect (Frazier et al., 2003).

As with most psychological research, replication of the current study should be carried out with a larger, diversified population to increase the external validity and generalisability of findings. Future replications should seek to gain a large number of adolescent with parents from each branch of the military, in order to represent each branch individually as well as the military as a whole. If replicated further consideration of the use of measures is vital. It is essential that the measures capture valid stressors, factors of resilience and coping styles that are in line with the current culture in which adolescents live. They also need to be generalisable to the military population and have comparable means available in order to develop a deeper understanding in this area.

It is important to highlight the limitations of the study based on the demographics of the sample used. Therefore, when interpreting the results, this must be done with caution as the results may not be generalizable to each branch/rank of military adolescent given the potential difference between them. Deployment activities and experiences are also unique to each military service and to each branch. As discussed previously different branches have different patterns of deployment, for example, Air Force and Navy service members historically have had fewer deployments and are deployed for shorter durations. Additionally, members of the Army and Marine Corps usually experience more combat exposure and are deployed more frequently than personnel in the other services (Gubata et al, 2013). It also may be the case that experience to combat exposure also varies with military rank.

It is important to note that the majority of deployed military personnel who return home will return and readjust successfully to either civilian life or life on a military base

(Tanielian & Jaycox, 2008). However combat exposure and other stressors can increase the risk of physical and psychological trauma and, as a result, a substantial proportion of those returning from deployment to military operations abroad face the real risk of adverse effects to their mental health and social functioning (Hoge, Auchterlonie, & Milliken, 2006). Information around the experience of the deployments within the current research is unknown. Within the current sample although there was a slight trend that lower rank service members had been deployed more times, this was not significant and the data did not capture their experience of those deployments. This impacts on the interpretation of my results as they have been generalised across branch and rank. It is important that future research has a greater understanding of both the frequency and experience of deployment for both branch and rank of the parent and how this subsequently may impact on the adolescent.

Finally, there is still no consensus on a consistent definition for resilience. There is also no gold standard measure that has been developed based on a consistent definition. This leads to difficulties comparing findings across studies. Future research needs to build on developing a consistent definition and a subsequent measure.

#### **2.4.5 Conclusion**

The aim of the study was to explore the relationship between the perceived stress adolescents encounter (both general and military specific) and coping, and the influence of resilience on that relationship. The findings highlight that relationship to caregiver influenced the relationship when adolescents experienced a better perception of stressors (both general and 'daily' stressors). However when looking specifically into the unique military stressors, high individual resilience, and low context resilience appeared to play the most important role in the adolescents' coping abilities.

The study has added to the small but growing body of resilience research with adolescents in military families. While adolescents have previously demonstrated good overall resilience, additional research would help to identify and further understand resilience processes, build necessary skills and develop interventions to improve the likelihood of overall positive outcomes for military families.

Despite the issues in resilience research, the construct remains a worthwhile pursuit. Unlike other health promotion research, resilience looks at the utility of protective factors within the context of risky situations and potentially vulnerable individuals. Resilience also refocuses the researcher to ascertain what is working in the midst of adversity, rather than a deficit model of only establishing the pathways to poor outcomes. However, to move forward, the field of resilience requires greater clarity in terminology, definitions, measurement, and a greater acknowledgement of context.



## Appendices

### Appendix A

Table A1.

#### *Quality Assessment*

	Selection Bias	Study Design	Confounders	Blinding	Data Collection and Method	Withdrawals and Dropouts
Acosta et al. (2018)	2	1	1	2	1	2
Cacioppo et al. (2015)	1	1	3	2	2	2
Cohn & Pakenham (2008)	2	1	1	2	1	3
Collinge et al. (2012)	2	2	n/a	2	1	1
Fitzwater et al. (2018)	2	2	2	1	1	3
Griffiths et al. (2013)	2	3	n/a	2	2	1
Hendricks et al. (2015)	3	3	n/a	2	2	n/a
Johnston et al. (2105)	3	2	3	3	1	3
Kahn et al. (2016)	2	1	2	2	1	1
Lester et al. (2011)	2	1	2	2	1	2
McGuire et al. (2018)	2	2	3	1	1	2
Price et al. (2013)	2	2	1	2	1	2
Roy et al. (2015)	2	1	3	3	1	3
Sylvia et al. (2015)	3	2	n/a	1	1	2
Tenhula et al. (2014)	2	2	n/a	2	1	2
Jonhson et al. (2012)	3	2	n/a	2	1	2

## Appendix B

## Demographic and additional information sheet

1. Your Age: \_\_\_\_\_
  
2. Your Gender:  Male  Female
  
3. Number of Sibling(s): \_\_\_\_\_
  
4. Which of your parents/guardians currently work in the military?  
 Mother  Father  Both  Other guardian (please explain): \_\_\_\_\_
  
5. Ranking of your parent:  
Mother \_\_\_\_\_  
Father \_\_\_\_\_  
Guardian \_\_\_\_\_
  
6. How many times have you moved? \_\_\_\_\_
  
7. Is your military parent(s) currently deployed?  Yes  No
  
8. How many deployments have your military parent(s)/guardian had?  
Mother (if applicable): \_\_\_\_\_ Father (if applicable): \_\_\_\_\_ Guardian (if applicable): \_\_\_\_\_

## Appendix C

### Ethical approval

The screenshot shows a web interface for managing ethical submissions. At the top, there is a navigation bar with 'Home' and 'Submissions'. The main heading is '41625.A1 - Adolescents in military families: The relationship between stress, resilience and coping style. (Amendment 1)'. Below this, there are four tabs: 'Submission Overview' (selected), 'Submission Questionnaire', 'Attachments', and 'History'. The 'Details' section shows the following information:

<b>Status</b>	Approved
<b>Category</b>	Category <span style="color: green;">C</span>
<b>Submitter's Faculty</b>	Faculty of Environmental and Life Sciences (FELS)

Below the details, a message states: 'The end date for this study is currently 15 July 2019'. There is a blue button labeled 'Request extension'. A note below the button reads: 'If you are making any other changes to your study please create an amendment using the button below.'.

The 'Latest Review Comments' section shows a single entry: '29/11/2018 20:05:07 - Committee: Approved' with 'No comments' below it.

The 'Amendment History' section lists two entries:

- Latest Version 41625.A1** (Created 11/07/2018)
- Original Submission 41625** (Created 18/05/2018)

## Appendix D

## Letters to schools for recruitment

Initial letter to schools: (version 2, 7/5/18)



Initial letter to schools:

Dear.

**An online study on resilience in adolescents of military families**

My name is Freya Wallington and I am a trainee clinical psychologist at the University of Southampton. I would like your help with a research study that I am conducting. My research study will investigate how resilience might influence the relationship between experiencing stressors and the type of coping strategies used by adolescent's in military families in the UK. The research has been approved by the university ethics board and I have attached the ethics forms for your information.

If specific resilience factors are shown to be mediators for positive coping in adolescents the results of this study could be used to provide recommendations of the most effective resources that can be directed towards adolescents who may be struggling to cope.

I am looking for participants aged 12-18 who have a parent/parents in the military to take part in the online study. I will need consent from the participant and their parent. I will be asking them to complete some demographic questions and 3 questionnaires online; a questionnaire on stressors they experience, a questionnaire on resilience and a questionnaire on coping styles. This will take around 1 hour to complete. Participants will receive a £5 amazon voucher to thank them for taking part in the study.

I would be very appreciative of your assistance in any way possible. The next stage would be for me to give you further information if you think this may be possible to advertise within your school. If you would like further information about the study I would be more than happy to speak with you either via telephone or email.

Thank you for your help.

Yours sincerely,

Freya Wallington

Email: [freya.wallington@nhs.net](mailto:freya.wallington@nhs.net)

Telephone: 07810887009

## Appendix D continued.

### Second letter to schools

Dear...

#### **An online study on resilience in adolescents of military families**

Thank you for expressing interest in my research study, I appreciate you taking time to find out more about the study.

I have attached relevant documents that will be helpful for you to read over before agreeing for me to advertise the research within your school. The research has been approved by the university ethics board. I have attached the ethics forms for your information.

I am looking to recruit adolescents from military families aged 23-18 from your school. I will need to advertise the study in your school, whether this be through your school website, newsletter etc, whichever way is best to disseminate this information. Any child and parent who express interest can follow the link from the advert to the online study. They will be asked to read an information sheet about the study and sign a consent form to participate. After consent has been given they will be asked to complete three questionnaires, which are attached for your information.

There will be no risk of harm to participants, however there will be a debrief and information of support services will be available to them at the end of the study. There is slight potential risk of the children becoming upset when filling out the questionnaires, however the risk of this is low. Their distress will be measured before and after the study and a mood repair task will be delivered in order to alleviate any distress caused.

Participating pupils will be informed that their responses are anonymous and will not be traced back to them. The only personal information taken will be the age, gender, ranking of their parent/s, and number deployment moves. They will also be informed at the outset that they have the choice not to respond to any items or aspects of the task which they may find difficult, or that make them feel uncomfortable. Contact details or signposting to relevant agencies for anyone who might like to discuss any concerns or queries after the experiment will also be provided. Your school will also be offered a copy of the finished project.

I would be very happy to answer any queries you may have, or to provide further information to help you decide whether or not your school should take part in this project. I will of course also be happy to provide a copy of my criminal records check. All data will be collected and stored in accordance with the Data Protection Act 1998.

Best Wishes,

Freya Wallington

Trainee Clinical Psychologist

Email: [freya.wallington@nhs.net](mailto:freya.wallington@nhs.net)

Telephone: 07810887009

Appendix E  
Advert for study (school)



24<sup>th</sup> March, 2018

Dear Parent/Guardian

Your child's school has agreed to take part in some innovative research with the University of Southampton and we would really appreciate you and your child's participation.

The study is investigating resilience factors that may influence how your child copes with stressors they experience. The study needs adolescents in military families to take part. The study involves your child completing 3 online questionnaires.

The study that the students will be participating in has been granted ethical approval by the University of Southampton Ethics Committee.

If you and your child would be willing to participate in the study please contact (\*contact at schools name and email\* - to be identified) and more information with details of the questionnaires will be provided.

Thank you.

Freya Wallington, Clinical Psychologist in Training

Clinical, Educational and Health Psychology  
University of Southampton

## Appendix F

## Advert to Military Organisations (non-school)



Dear Parent/Guardian,

Would you and your child like to take part in some innovative research with the University of Southampton?

The online study will investigate how adolescents within military families demonstrate resilience (ability to bounce back) after experiencing stressful life events (both normal adolescent stressful events and events specific to military life). The study involves your child completing 3 online questionnaires and your child will receive a **£5 amazon voucher** to thank them for their time.

The study that your child will be participating in has been granted ethical approval by the University of Southampton Ethics Committee.

Please hold 'Ctrl' and click the link or type in the link:  
<https://www.isurvey.soton.ac.uk/29131>

Thank you very much in advance.

Freya Wallington, Clinical Psychologist in Training

Clinical, Educational and Health Psychology  
University of Southampton

Appendix G  
Social media advert

Would you and your child like to take part in some innovative research with University of Southampton?

The online study will investigate how adolescents within military families demonstrate resilience (ability to bounce back) after experiencing stressful life events (both normal adolescent stressful events and events specific to military life). The study involves your child completing 3 online questionnaires and your child will receive a **£5 amazon voucher** to thank them for their time.

The study that your child will be participating in has been granted ethical approval by the University of Southampton Ethics Committee.

Please hold 'Ctrl' and click the link or type in the link:  
<https://www.isurvey.soton.ac.uk/29131>

Thank you very much in advance.

Freya Wallington,

Trainee Clinical Psychologist



Appendix H  
Debrief Form

**Debriefing Statement** (version 2, 07/5/18)

Thank you for participating in the study. The aim of this research was to explore how your ability to recover quickly from difficulties (resilience) might influence the relationship between the stressors you experience and the type of coping strategies you use. This study hopes to provide further justification for psychological support for children within military families. By understanding the relationship between stress and coping, and the influence of resilience, this study may offer some direction as to how services such as schools can target the clinical needs and build upon the strengths of children/teens in military families. Your data will help our understanding of this.

Once again results of this study will not include your name or any other identifying characteristics. The research did not use deception. You may have a copy of this summary if you wish.

If you are distressed following this study and would like further support please contact your GP or visit [www.moodjuice.scot.nhs.uk/](http://www.moodjuice.scot.nhs.uk/)

If you have any further questions please contact me Freya Wallington at [freya.wallington@nhs.net](mailto:freya.wallington@nhs.net) Or Research supervisor, Dr Kate Whilloughby, [K.willoughby@soton.ac.uk](mailto:K.willoughby@soton.ac.uk).

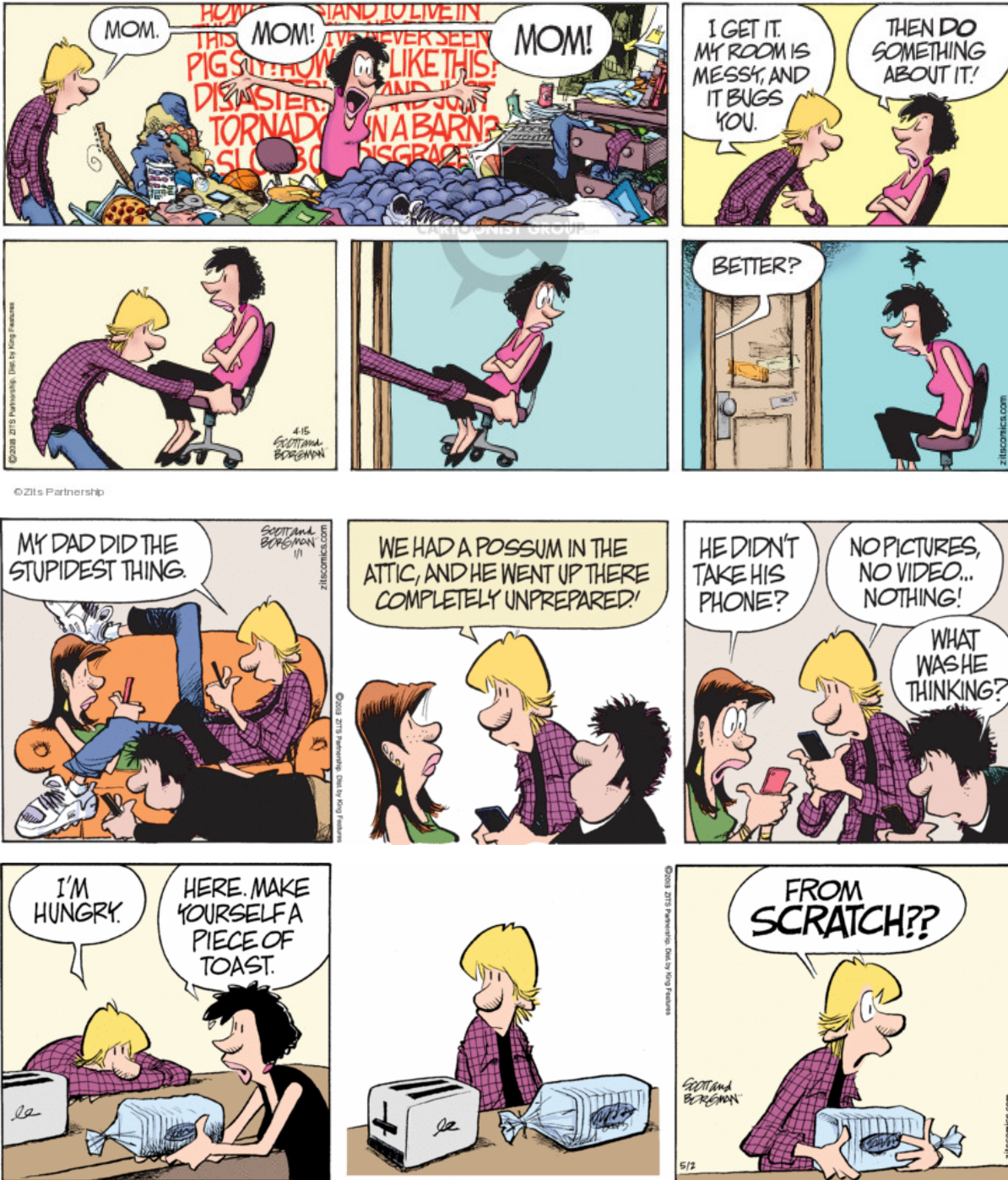
Thank you for your participation in this research.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Name

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: +44 (0)23 8059 3856, email [fshs-rso@soton.ac.uk](mailto:fshs-rso@soton.ac.uk)

Appendix I  
Mood Repair Comic



Appendix J  
Information Sheet for Participants



Participant Information Sheet for Adolescent and Parent (version 2, 7/5/18)

Study Title: Impact of Military Life on Adolescents from Military Families

**AIM:**

I am conducting a study on the impact of military life on adolescents from military families. There is some evidence that military life poses challenges for adolescents growing up in military families; however, most adolescents are capable of overcoming these challenges. The aim of this study is to examine the main risk factors associated with the military lifestyle and the factors that can protect adolescents against the negative impact of stress. The topics of the study focus on stressors you experience, coping strategies you use and your ability to recover quickly from difficulties. The results of this study will be used to provide recommendations of the most effective support that can be directed towards adolescents from military families.

**PARTICIPATION:**

The study is intended to be completed by adolescents only. The study is expected to take around an hour to complete. Participation in this study is voluntary. However, maximum participation is crucial in order for us to obtain an accurate picture of the different factors related to your well-being. You may withdraw from the study at any time. If you no longer wish to take part after you have provided information, we cannot remove the information from consideration as we are not collecting any personal information that would allow us to segregate your responses from others.

What if you are not sure what a certain question means? If you are not sure about the meaning of a particular question, you can ask your parent or please give this your best guess. We encourage you to complete the survey independently, to ensure your true opinions are expressed.

Are there any risks involved in participating?

There are minimal risks involved in participating in this study. Because you volunteer or share personal information which may cause you to experience some slight discomfort, you will be provided with a list of support services (GP and self-help websites) for your personal use that you may contact for support during or after the survey. An exercise will also be provided to help with any discomfort.

**CONFIDENTIALITY:**

The responses that you provide will remain confidential. No identifying information will be collected.

#### INFORMED CONSENT:

Please fill out the consent form attached with your parent (see attached form) if you chose to participate. Any data from this research will be stored according to the University Data Protection policy. Your anonymised data will be stored in secure University storage for fifteen years, and will only be viewed by the research team.

If you have any questions or concerns regarding this study, please contact, myself, the researcher Freya Wallington, [Freya.wallington@nhs.net](mailto:Freya.wallington@nhs.net). Or Research supervisor, Dr Kate Whilloughby, [K.willoughby@soton.ac.uk](mailto:K.willoughby@soton.ac.uk).

Appendix K  
Consent Form for adolescent and parent

UNIVERSITY OF  
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**CONSENT FORM** (version 2, 7/5/18)

Study title: A study of resilience in adolescents of military families

*Please initial the box(es) if you agree with the statement(s):*

Myself and my child have read and understood the information sheet  
and have had the opportunity to ask questions about the study

Myself and my child understand that my child has a choice to take part in the study  
and that they can stop at any time (without giving a reason).

Myself and my child have agreed to take part in the study

Appendix L  
Military ranking for the study

<b>RANKING</b>	<b>ROYAL NAVY</b>	<b>RAF</b>	<b>BRITISH ARMY</b>
17	Admiral	Air Chief Marshal	General
16	Vice-Admiral	Air Marshal	Lieutenant-General
15	Rear-Admiral	Air Vice Marshal	Major-General
14	Commodore	Air Commodore	Brigadier
13	Captain	Group Captain	Colonel
12	Commander	Wing Commander	Lieutenant-Colonel
11	Lieutenant-Commander	Squadron Leader	Major
10	Lieutenant	Flight Lieutenant	Captain
9	Sub-Lieutenant	Flying Officer	Lieutenant
8	Midshipman	Pilot Officer	2nd Lieutenant
7	Warrant Officer 1	Warrant Officer	Warrant Officer 1
6	Warrant Officer 2	N/A	Warrant Officer 2
3	Chief Petty Officer	Flight Sergeant	Staff Sergeant
4	Petty Officer	Sergeant	Sergeant
3	Leading Hand	Corporal	Corporal
2	N/A	Senior Aircraftman	Lance-Corporal
1	Able Rate / Marine	Aircraftman	Private

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