Mental health help-seeking beliefs and behaviours in the Australian Defence Force: Intersections with e-mental health and self-management

Helen Benassi

August 2020

A thesis submitted for the degree of Doctor of Philosophy of
The Australian National University

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university. To the best of the author's knowledge, it contains no material previously published or written by another person, except where due reference is made in the text.

Helen Benassi

August 2020

Dedication

Dedicated to my wonderful Mum, Narelle Margaret Wood (2 February 1949 – 27 August 2018). Thank you for your belief in me and unwavering love and support. I miss you with all my heart and wish you were here.

In June 1916, my Nan's uncle, Joseph Archibald Green (c.1893 – 1939) enlisted in the Australian Army and arrived in France in February 1917, joining the 54th Battalion. Joseph was wounded in April and hospitalised for shell shock in May 1917 before being returned to fighting. He lasted out the war, transferring to the 56th Battalion in October 1918, returning to Australia in June 1919. Joseph died by suicide in Lithgow, NSW, in May 1939 at the age of 46. I dedicate this work to Joseph and the many men and women who have developed and battle mental illness as a result of their military service. Thank you for your service.

Acknowledgements

Thank you to my panel for your continuous support and guidance throughout this PhD.

- Professor Phil Batterham, thank you for sharing your extensive knowledge and for your compassion and dry humour which kept me going throughout this PhD. I always felt reassured and focused after speaking with you and always appreciated your practical and thoughtful advice. I will be forever grateful for all that you have taught me.
- Professor Bryan Rodgers, thank you for your unwavering support from start to finish of this PhD. I greatly valued your astute and insightful feedback, and depth of knowledge. You always managed to pinpoint where I was lost and help me find a solution, for which I am especially grateful.
- Professor David Forbes, thank you for your considered and thoughtful feedback and advice. I greatly appreciate your belief in the work. Thank you for encouraging the use of the findings beyond this thesis and helping me to realise the impact of the work.

I would like to thank the Sir Roland Wilson Foundation for this incredible opportunity and scholarship. I feel extremely privileged to have been given the time and space to deepen my understanding of the issues facing Australia and am committed to sharing my knowledge and experience on my return to the Australian Public Service. Thank you also to the staff at the scholarship office and my fellow scholars who are all amazing.

I would like to acknowledge and thank the Department of Defence, and my colleagues in Joint Health Command, for their support of the scholarship and their ongoing interest in this research. Thank you also to my fellow Transition and Wellbeing Research Programme investigators and the vast number of team members who contributed to this research. Thank you to all the current and former ADF members who participated in the research and for your service.

I am eternally grateful for the amazing support from my family, friends and colleagues. In particular, a huge thank you to my Mum and Dad (Narelle and Steve), and parents-in-law, (Jenny and Sergio), for the many hours of child-minding, ferrying kids to and fro, dinners, coffees, wines, hugs, love and moral support.

Finally, I would like to thank my husband Ben, and our kids Billy and Vincent for their daily love and support. Ben, thank you for keeping *everything* running (you now have it in writing) and for always believing in me. I treasure the joy and love that you all bring to my life.

This research is supported by an Australian Government Research Training Program (RTP) Scholarship.

Abstract

Introduction: One in five Australian Defence Force (ADF) members are estimated to experience a mental disorder every 12 months, and one in two will experience a 12-month disorder in the first five years after leaving full-time service. Yet, half of those with a mental disorder will not receive professional care. The Australian Government is looking towards innovative solutions to address this hidden unmet need. Technology-based mental health resources, e-mental health, are assumed to improve access to mental health care, but there is limited empirical evidence of the impact of these services from a population health perspective. The aims of this thesis were to identify barriers to mental health help-seeking in the ADF community and examine the role of e-mental health resources in help-seeking and self-managed mental health.

Methods: Data for this thesis were drawn from a cross-sectional survey investigating the mental, social and physical health of 11,587 full-time serving and recently transitioned ADF members. Andersen's Behavioural Model of Health Service Use (Andersen, Davidson, & Baumeister, 2014) was used to examine predisposing, need and enabling factors associated with 12-month mental health service use. Reach of e-mental health resources was assessed across multiple technology modalities (information websites, telephone helplines, social media, internet interventions and smartphone apps) and then examined in relation to concurrent professional service use. Lastly, self-reliance and self-management strategies were examined in a sub-sample of participants who had a mental health concern but received no assistance (n=1,539).

Results: Gaps in mental health service use were found for males in the ADF, individuals who had transitioned out of the ADF, and Army and Navy service members. A lack of perceived need, self-stigma, negative attitudes to care and resilience were identified as important barriers to mental health help-seeking. These barriers persisted for more conventional e-mental health modalities such as websites and telephone helplines. Use of websites, helplines and smartphone apps were significantly associated with seeking professional help, but social media and internet intervention use were not. Preferential use of online resources over professional care was more common among those with moderate symptoms and was associated with lower perceived need, higher self-stigma and resilience. Similarly, high self-reliance was associated with lower

depressive symptoms, greater perceived functioning (regardless of reported disability), greater resilience and higher self-stigma.

Conclusion: Whilst e-mental health has been suggested to lessen gaps in mental health services, this thesis demonstrates that the impact of current e-mental health resources provided by Australian Defence and veteran agencies may be modest. Resources with the strongest evidence base are least used, and technologies in which Defence and DVA have minimal engagement are being used by groups at greater risk of mental ill-health in this community. The study highlights the importance of addressing self-stigma and perceived conflict between resilient identity and help-seeking behaviour. Future work needs to identify opportunities for increasing personal agency in military mental health services, to engage individuals across the spectrum of mental health need. Diversification of e-mental health resources will be critical for reaching at-risk groups and is a key consideration for future implementation activities and research.

List of Abbreviations

ADF	Australian Defence Force
AIHW	Australian Institute of Health and Welfare
aOR	Adjusted Odds Ratio
DVA	Department of Veterans' Affairs
GP	General practitioner
JNCO	Junior Non-Commissioned Officer
MEC	Medical Employment Classification
MilHOP	Military Health Outcomes Program
OR	Odds Ratio
PTSD	Posttraumatic Stress Disorder
SNCO	Senior Non-Commissioned Officer
U.S.	United States

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Chapter 1 Introduction

1.1 The research problem

In Australia, more than one in five currently-serving Australian Defence Force (ADF) members, and one in two personnel leaving the service, will experience a mental illness each year (McFarlane, Hodson, Van Hooff, & Davies, 2011; Van Hooff et al., 2018), yet a considerable number will not receive treatment (Forbes et al., 2018; McFarlane et al., 2011). The Australian Government spends approximately $244 million per year on mental health programs and services for ADF members and veterans (Australian Government, 2017) but the ongoing toll of untreated mental health conditions on individuals, families and community (Forrest, Edwards, & Daraganova, 2014; National Mental Health Commission, 2017) represents a long-term public health issue for Australia.

Increasingly, the Departments of Defence and Veterans' Affairs (DVA) are looking towards technological solutions to address these issues, including expansion of mental health screening online for current serving members (O'Donnell, Dell, Fletcher, Couineau, & Forbes, 2014) and creation of e-mental health resources for veterans (Open Arms, 2020). E-mental health refers to mental health resources delivered via information and communication technology systems, such as the internet and telephone. While solutions delivered online offer some potential to address unmet need (Reynolds, Griffiths, Cunningham, Bennett, & Bennett, 2015), there is little guidance as to how e-mental health services can best address gaps in mental health service use. Despite considerable evidence substantiating the efficacy of interventions delivered online (Batterham et al., 2015; Christensen & Petrie, 2013), much of the published research takes an e-services perspective (Meurk, Leung, Hall, Head, & Whiteford, 2016) and often does not assess these services in relation to broader health service systems or policies. Therefore, there is incomplete information for policy-makers implementing e-mental health services, particularly in terms of where and how e-services may best meet the needs of consumers and the strategic intent of Government.

In addition, there is an increasing body of research examining factors influencing mental health help-seeking in military populations (Fikretoglu, Liu, Zamorski, Rusu, & Jetly; Rosen et al., 2011; Sharp et al., 2015), but there are gaps in the application of these findings to the development and evaluation of e-mental health resources. This lack of data impedes policy responses to address unmet mental health need and may reduce the overall impact of e-mental

health implementation efforts. There is also limited information which reflects the Australian context. There are both similarities and differences in mental health prevalence, military health service systems and culture in various countries, and it is therefore difficult to assess which research findings are most relevant in an Australian policy context.

Informed by the existing help-seeking literature in both military and civilian populations, this thesis examines factors associated with 12-month mental health service use by current and former ADF members. The research advances the body of evidence by delineating the role of attitudinal barriers, such as stigma, resilience and self-reliance, in seeking help from professional and e-mental health services, and self-management. This information is applied to an examination of e-mental health resource use within the ADF community to assess the extent to which these resources currently address unmet need and reduce inequity in mental health care access. The intent of this research is to inform policy responses to attitudinal barriers to help seeking and support the foundation for future e-mental health implementation efforts in Australia.

1.1.1 Chapter overview

The current chapter outlines the research problem, then describes the research approach and finally provides an outline of the thesis chapters. This thesis does not contain a literature review chapter, so an overview is provided here with more detailed examination of the literature provided in each analysis chapter. The literature reviewed in the current chapter describes the context in which mental health services are delivered to current and former ADF members, including prevalence of mental illness, comparison to civilian and other populations and military specific risk factors and considerations. This description is followed by an explanation of mental health services in the Australian military context (including e-mental health resources) and an examination of the literature related to mental health service use and help-seeking in military populations. Issues with policies and programs designed to improve access to treatment are discussed, with a focus on policy-relevant research on e-mental health resources.

1.2 Setting the scene

The primary role of Defence is to defend Australia and its national interests. Australians join the Defence Force for a variety of reasons, but collectively they accept the forfeiture of certain freedoms enjoyed, and taken for granted, by all

others in Australian society. Almost every aspect of uniformed life comes with a risk or cost to the member and/or to their families. (Department of Defence, 2018)

1.2.1 Mental health in the ADF

1.2.1.1 Mental health of current and former ADF members

Military service is a unique and challenging occupation that can be associated with increased risk of mental health problems both during and following service. It is estimated that more than half (54.1%) of full-time, serving ADF members will experience a mental illness in their lifetime and 22.0% will experience a mental illness in any 12-month period (VanHooff et al., 2014). Anxiety disorders are the most common 12-month disorder category (14.8%) and posttraumatic stress disorder (PTSD) is the most prevalent individual disorder (8.3%), followed by major depressive episodes (6.4%).

Rates of disorder also appear to be considerably higher following transition from ADF service. A recent study of personnel in the first five years after transitioning out of full-time ADF service found that almost three in four met criteria for a lifetime mental disorder (affective, anxiety or PTSD), and 46.4% met criteria for a 12-month disorder (Van Hooff et al., 2018). Similar to serving members, anxiety disorders were most common (37.0%), and PTSD was the most prevalent individual disorder (17.7%).

1.2.1.2 Comparisons with civilian and international military populations

Differences in military population composition compared to civilian populations (e.g., military populations are often younger with a higher proportion of males), as well as differences in patterns of disorder, highlight specific risks for mental health in the military. A study of current serving ADF members found rates of lifetime common mental disorders were significantly higher for serving ADF members compared to the civilian community, but the 12-month prevalence was similar (McFarlane et al., 2011). The study also found 12-month affective disorders and PTSD were more common in the ADF than in an Australian civilian sample matched for employment, age and sex. Affective disorders and PTSD were particularly problematic among younger, male ADF personnel when compared against rates for young men in the Australian community (McFarlane et al., 2011). In contrast, rates of alcohol disorder in the ADF are significantly lower than in the Australian community. Consistent with civilian populations (Australian Bureau of Statistics, 2009a), rates of anxiety disorders were higher in ADF females compared to ADF males, but rates of depression were not, which is inconsistent

with civilian populations (Salk, Hyde, & Abramson, 2017). Additional service-related risk groups in the ADF included lower rank and Army service (McFarlane et al., 2011).

Comparisons of disorder prevalence between former serving ADF and the civilian community in Australia are not currently available, but psychological distress in recently transitioned personnel is significantly higher than in the Australian community with nearly three times as many recently-transitioned ADF reporting high to very high psychological distress (Van Hooff et al., 2018). Comparisons of disorders in veterans of specific conflicts and the Australian community also indicate considerably greater mental health morbidity in those who have served (Hawthorne, Korn, & Creamer, 2014; McGuire et al., 2015; O'Toole, Catts, Outram, Pierse, & Cockburn, 2009).

Overall, military service is consistently associated with increased rates of mental illness across various militaries (Fear et al., 2010; Reijnen, Rademaker, Vermetten, & Geuze, 2015; Rusu, Zamorski, Boulos, & Garber, 2016; Thompson et al., 2014; Zamorski et al., 2016a). However, comparative international rates are difficult to report due to diverse research methodologies and sampling, and variation in the rates of specific disorders between countries is considerable (Richardson, Frueh, & Acierno, 2010). Perhaps the most comparable data to ADF rates come from the Canadian Forces Mental Health Survey. The survey found higher prevalence of disorder in military personnel compared to the general Canadian population, in particular, major depressive episode (8.0% vs 3.5%) and generalised anxiety disorder (4.7% vs 1.5%) (Rusu et al., 2016; Zamorski et al., 2016a). PTSD was the second most prevalent disorder in the Canadian Armed Forces at 5.3% (Zamorski et al., 2016b). Likewise, a survey of Canadian veterans in 2013, found that those who had transitioned from the regular force reported poorer mental health and wellbeing than the general Canadian population (Thompson et al., 2014). The results, although slightly different in pattern to Australia, suggest a similar issue with higher morbidity for particular disorders in the military compared to the general population.

1.2.1.3 Risk factors for mental illness in the military

Many risk factors for mental illness are similar in community and military populations, but there are additional risk factors for military personnel including, but not limited to, combat exposure. Exposure to combat-related trauma has been found to carry considerable risk for the mental health of military personnel (Forbes et al., 2019; Lawrence-Wood et al., 2019). However, a range of other types of trauma exposures may also be experienced during

peacekeeping and humanitarian operations with similar risks for mental health outcomes post-deployment (Benassi, Steele, & Krauss, 2014).

Whilst these are intuitively expected findings, not all trauma exposure is related to operational deployment or military service. Serving ADF members who have never deployed have similar rates of mental disorder compared to ADF members with a history of operational deployment (McFarlane et al., 2011). This finding may be in part due to a 'healthy-worker effect' whereby those who deploy are more likely to deploy by virtue of their better health status but also for many individuals, deployments will not include exposures to trauma. It could also be that ADF members who have not deployed have experienced other, non-operational, trauma exposures. Motor vehicle accidents, training accidents and interpersonal traumas (e.g., sexual assault) can be significantly higher in military populations (Van Hooff et al., 2013; Wilson, 2018) and may or may not be associated with military service. Research on non-occupational traumas in other military populations (Rusu et al., 2016; Turner et al., 2017; Zamorski et al., 2016a) suggest a possible underlying burden of risk which may then be exacerbated with further occupational exposures producing a dose-response relationship (McFarlane et al., 2011).

Leadership behaviours and other organisational factors, such as unit climate, have also been linked to mental health concerns in military populations (Adler, Saboe, Anderson, Sipos, & Thomas, 2014; Benassi et al., 2014; Britt, Wright, & Moore, 2012; Steele, Rodgers, & Fogarty, 2020), as well as the impact of frequent relocations and extended separations from family and friends (Adler & Castro, 2013; Rona et al., 2014). Due to these additional risks associated with military service, the provision of timely mental health services is critical in meeting duty of care for military personnel.

1.2.2 Impact of mental ill health

The Australian Government is increasingly concerned about the long-term burden of mental disease and there is increased pressure from military leaders, interest groups and the broader community to provide timely, high-quality treatment. There is no known formal analysis of burden of mental disorder in the ADF, however in the Australian community mental disorders are considered the second largest contributor to non-fatal burden of disease (Australian Institute of Health and Welfare, 2019). Hidden unmet mental health need also poses a high cost to the Australian community in terms of lost productivity and compounding disadvantage. The cost to Australian employers of mental health issues in the workplace is estimated to be $11 billion

per year, with psychological illness and stress now the leading cause of absenteeism in Australian workplaces (PwC, 2014).

Persistent and complex mental health conditions can have considerable long-term consequences for military personnel, including early discharge from service on medical grounds (Boulos & Zamorski, 2016). Transition from full-time service is increasingly seen as a high-risk time for the development or exacerbation of mental illness (Shields et al., 2016). Although mental illness does not always result in discharge from service, there is a higher prevalence of mental health concerns in transitioned personnel compared to those who are still serving (Dobson et al., 2012; Thompson et al., 2014) and those who transition out are more likely to experience chronic, rather than episodic, mental health conditions (Bryant et al., 2019). Particular groups identified at higher risk in recently-transitioned ADF members include those in younger age groups, non-commissioned and junior ranks, and those with shorter length of service (Van Hooff et al., 2018).

Transition out of service may also exacerbate psycho-social disadvantage. There is growing concern regarding the impact of poor adjustment in a range of psycho-social domains, including quality of life, education, employment and social and community integration for those who leave service (Shields et al., 2016). High psychological distress and impaired functioning has been found to be associated with physical symptoms and insomnia post-service, as well as financial issues, pain and social strain in current and former ADF members (Hansen et al., 2020). Some individuals may or may not identify as having an illness prior to leaving service, or may have delayed onset, and therefore can experience considerable hardship prior to getting treatment.

In the ADF, suicide is a key indicator of the fatal impact of mental disorder. A recent report from the Australian Institute of Health and Welfare (AIHW) indicated that rates of death by suicide for former ADF members were significantly greater than the Australian community, with the rate of suicide in ex-serving ADF men more than double the rate of full-time serving men or reservists (Australian Institute of Health and Welfare, 2016). Again, this trend was particularly problematic in younger ex-serving males, with those in the 18 to 49 age range over three times more likely to die by suicide than ex-serving men aged 50 to 84.

Mental ill health of ADF members also has implications for the health and wellbeing of their families. Military families play an important role in the careers of service members, including

decisions to join and leave service (Atkins et al., 2014; Gibson, Griepentrog, & Marsh, 2007) as well as forming a key source of support for coping with the challenges of military life both during and post-service (Danish & Antonides, 2013; Dursun & Sudom, 2009; Rosen, Moghadam, & Vaitkus, 1989). Higher rates of mental illness and symptoms have been found among the spouses and partners veterans (O'Toole et al., 2017; O'Toole, Outram, Catts, & Pierse, 2010) and mental illness of serving members has been shown to have a clear association with similar concerns in spouses and partners (Calhoun, Beckham, & Bosworth, 2002; MacDonell, Bhullar, & Thorsteinsson, 2016; McGuire et al., 2012). In addition, these issues can have long-term effects on the mental health of family members, including adult children (Daraganova, Smart, & Romaniuk, 2018; Forrest et al., 2014).

1.3 Mental health help-seeking in the military

Mental health help-seeking can be defined as "an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern." (Rickwood & Thomas, 2012, p. 180). External assistance may be comprised of formal services (e.g., mental health professional), semi-formal sources (e.g., supervisor, chaplain), informal sources (e.g., partner, friends) and/or self-help (e.g., website, smart phone apps). The next section describes formal mental health services available to current and former ADF members, as well as e-mental health resources, and factors associated with formal help-seeking.

1.3.1 Mental health service provision in the ADF

Mental health care is provided to serving ADF personnel through multi-disciplinary teams, including general practitioners, mental health nurses, psychologists, psychiatrists and military chaplains. Services are delivered via a combination of joint, single Service and contracted health assets. Mental health services are generally provided on military bases, with off-base specialist psychiatric and contracted care available where necessary. Members may self-refer or may enter mental health services through other means, including medical and administrative referrals. Depending on the size and nature of the military operations to which Australia contributes, psychological support may be embedded within, or in support of, the operational theatre. ADF members also receive psychological screening following deployment, critical incidents and periodically as part of their regular healthcare within Australia.

Members who have transitioned out of full-time service access the Australian health service system, where mental health services are provided through a combination of Australian

Government, state and territory governments, private and non-government sectors. Under current non-liability healthcare arrangements administered by DVA, treatment costs for all mental health conditions are covered for individuals who have served one day of full-time service in the ADF, when they see a participating service provider. As the name suggests, access to non-liability healthcare enables access to mental health treatment regardless of whether the condition is attributable to military service. Prior to non-liability health care, current and former ADF members could seek subsidised care through a complex veteran support and compensation model (Department of Defence, 2018). ADF members, serving and ex-serving, and their families also have access to free counselling via the Open Arms veterans and families counselling service.

1.3.2 E-mental health services

E-mental health in this thesis is defined as " the use of digital technologies and new media for the delivery of a range of mental health related services, from health promotion, prevention and early intervention, to crisis support, screening, treatment and relapse prevention …" (Riper et al., 2010, p. 1). There is interest in developing online and mobile mental health resources in the Australian Departments of Defence and Veterans' Affairs (hereafter Defence and DVA) (Department of Defence, 2017; O'Donnell et al., 2014; Veterans and Veterans Families Counselling Service, 2017). Interventions and resources delivered online or via other technologies may provide a valid help-seeking mechanism for many military members.

1.3.2.1 Current state of e-mental health in ADF and civilian Australian community

E-mental health in Defence and Veterans' Affairs currently consists of ADF and veteran specific websites (within which health and mental health pages are embedded), telephone helplines and a limited number of smartphone apps. Whilst there are trials underway of online treatment programs (e.g., vShade), further mobile applications (e.g., Coordinated Veteran Care) and other novel programs (e.g., Project Synergy), it is not clear how these programs contribute to the relevant health service systems and overall strategic goals of Defence and veteran mental health policy.

Current and former ADF members also have access to the wide array of e-mental health resources in the Australian community. Since the early 2000s, there has been a rapid expansion of e-mental health service development with many programs now available at no or low cost to the Australian community. These include public health web-based resources incorporating

mental health promotion activities, online forums (e.g., Beyond Blue, ReachOut); internet interventions and online counselling (e.g., MoodGYM, THIS WAY UP, My Compass, MindSpot, eHeadspace) and smartphone apps (e.g., headcoach). The Australian Government has also developed a website (i.e., Head to Health) as a single gateway to assist individuals navigate the range of services available.

In 2012, Australia launched the National E-Mental Health Strategy in recognition of the potential for e-mental health services to increase access to mental health care (Department of Health, 2012). Major initiatives under this strategy included an ePortal, online clinic and national training programs for clinicians (Raphiphatthana et al., 2020). However, there are gaps in the translation evidence-base in Australia, particularly in terms of policy settings required to implement e-mental health at the national level (Meurk et al., 2016). These issues are discussed further in section 1.4.2. of this chapter.

1.3.3 Formal mental health service use

Despite the availability of free or low-cost mental health services, it is estimated that only half of full-time ADF members with a disorder will receive professional treatment within a 12-month period (McFarlane et al., 2011). Similar rates of service use are reported for Canadian Forces active serving personnel (Fikretoglu, Guay, Pedlar, & Brunet, 2008).

In a current serving Canadian military sample, Fikretoglu, Liu, Pedlar, and Brunet (2010) found that depending on the mental disorder, treatment latency ranged from three to 26 years, with risk factors for delay being shorter military service, being male, older age, and younger age of onset. In the ADF, the average treatment latency is estimated to range between four years for depression, to seven years for alcohol abuse (McFarlane et al., 2011). Variation in delays to treatment according to disorder are also seen in civilian populations (Wang et al., 2005). In addition, research suggests that those transitioning from service are more likely to report persistent rather than episodic symptoms with sensitisation of stress reactions occurring during ADF service (Bryant et al., 2019). As such, some individuals will experience symptoms whilst in-service but not seek treatment until transitioning out of service.

In a study of recently transitioned ADF members, service use was reported by 75% of those who had a probable 30-day disorder and were concerned about their mental health (Forbes et al., 2018). Forbes et al. (2018) note that these results compare favourably with the civilian Australian population (Burgess et al., 2009) and other veteran populations (Rosen et al., 2011).

However, “due to attrition at each help seeking stage and variability in the treatment services delivered” (p. vi), Forbes et al. (2018) estimated that only a quarter of those with a current mental health need had received evidence-based care in the previous 12 months. These results raise concerns not only about access to care but also adequacy of existing support mechanisms and indicate the need for further investigation of the factors impeding mental health help-seeking in the ADF, both in service and following transition out.

1.3.4 Factors affecting formal mental health help-seeking

In both general community and military populations, there has been considerable interest in improving access to mental health care and examining factors that impede treatment seeking behaviour. In Australia, research has focused on broad population data (Parslow & Jorm, 2000) with limited data available to inform barriers to mental health care for Australian military personnel (McGuire et al., 2015). In a military context, much of the research on barriers to mental health care has been conducted in the United States (e.g., Adler, Britt, Riviere, Kim, & Thomas, 2015; Cornish, Thys, Vogel, & Wade, 2014; DeViva et al., 2016; Hoge et al., 2004; Thomas, Adrian, Penix, Wilk, & Adler, 2016), United Kingdom (e.g., Jones, Keeling, Thandi, & Greenberg, 2015; Murphy, Elizabeth, Luzon, & Greenberg, 2014; Stevelink et al., 2019) and Canadian Defence Forces (e.g., Fikretoglu & Liu, 2015; Fikretoglu et al., 2010; Fikretoglu, Liu, Zamorski, & Jetly, 2016; Lee, Fikretoglu, Blais, Sudom, & Beatty, 2016). While there are similarities between these nations (Gould et al., 2010) and Australia (Gould et al., 2010), it is expected that differences in health service systems in each country will result in different behavioural outcomes in each setting.

The published literature on barriers to mental health care is examined in more detail in Chapter 4 of this thesis, but there are several key themes identified from the literature discussed below. These include socio-demographic factors, the level of individual need (such as type, severity and impact of symptoms) and attitudinal barriers.

1.3.4.1 Socio-demographic factors influencing mental health service use

Several socio-demographic factors have been identified as related to mental health service use in general community samples. In Australia, men are less likely to access mental health services compared to women, as are those with lower education levels, in remote locations or not in the labour force (Parslow & Jorm, 2000). In the military, factors reflecting those in the general community are also associated with mental health treatment seeking behaviour. Again, male

military personnel are less likely to seek treatment than female personnel (Searle, Lawrence-Wood, Saccone, & McFarlane, 2013) as are those in mid to lower ranks (Fikretoglu et al., 2008).

1.3.4.2 Need factors influencing mental health service use

As might be expected, in both community and military populations those with symptoms of disorder are more likely to use mental health services than those without a disorder (Fikretoglu, Elhai, Liu, Richardson, & Pedlar, 2009; Parslow & Jorm, 2000). However, it also recognised that there remain gaps between mental health need and help-seeking behaviour (Fikretoglu et al., 2016; Jones et al., 2015; Kohn, Saxena, Levav, & Saraceno, 2004). Previous research suggests that the extent to which mental health need predicts service use may differ according to the type and extent of symptoms. Rates of service use by current serving ADF members range from just under 12% of those with Obsessive-Compulsive Disorder and up to 75% for those with Generalised Anxiety Disorder (McFarlane et al., 2011). This is similar to findings in the Canadian military (Fikretoglu et al., 2008). In addition, mental health service use is more common for disorders with greater severity and comorbidity (Teesson, Slade, & Mills, 2009).

This higher rate of service use in those with more severe conditions suggests a convergence towards service use when mental health symptoms impact on functioning. In a qualitative study of UK military personnel with a diagnosis of PTSD or depression and receiving treatment, Murphy et al. (2014) observed that individuals found it difficult to identify they had a mental health concern, ignoring early warning signs and accessing services only when reaching 'crisis point'. While only a small sample size, other researchers have also noted the possible role of 'crisis points' or impact on functioning in overriding existing barriers when the mental health concern 'can no longer be ignored' (Sharp et al., 2015, p. 158). Other studies have found that functional impairment is related to use and level of care accessed (Fikretoglu, Brunet, Guay, & Pedlar, 2007; McKibben et al., 2013; Stevelink et al., 2019) and higher levels of symptoms are associated with reduced self-care strategies (Christensen, Leach, Barney, Mackinnon, & Griffiths, 2006). These findings indicate that as symptoms increase, functioning decreases, ultimately leading to mental health service use (Christensen et al., 2006).

In an epidemiological study of Canadian Forces personnel in 2002, researchers found that 84% to 96% of individuals with a disorder who did not seek treatment, did not think they needed treatment (Fikretoglu et al., 2008). In a subsequent study conducted over 10 years later, *perceived need* for care still remained the "leading barrier to accessing mental health care" in

the Canadian Armed Forces (Fikretoglu et al., 2016, p. 36S). It has been suggested that lack of knowledge about mental disorder leads to a lack of perceived need for care amongst those with disorder (Jorm et al., 2000) but it is also clear that mental health literacy is necessary but not sufficient to determine perceptions of need. Interventions aimed at improving mental health literacy, whilst improving help-seeking attitudes, have not necessarily translated into behaviour change (Gulliver, Griffiths, Christensen, & Brewer, 2012b).

1.3.4.3 Attitudinal barriers and facilitators to mental healthcare

A range of help-seeking beliefs have been shown to impede service use and engagement in treatment, and these beliefs are likely to influence perceptions of need and help-seeking behaviour. These include help-seeking stigma (Corrigan & Rao, 2012; Vogel, Wade, & Haake, 2006), negative attitudes to mental health services (Jones, Twardzicki, Fertout, Jackson, & Greenberg, 2013; Kim, Britt, Klocko, Riviere, & Adler, 2011; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009) and self-reliance (Labouliere, Kleinman, & Gould, 2015; Ortega & Alegría, 2002). However, there are challenges in operationalising help-seeking beliefs in military research and these are considered in more detail in Chapter 3 of this thesis.

Stigmatising beliefs about treatment-seeking for mental illness have received much attention in both military and general community research, particularly beliefs about how others will react (perceived stigma) (Barney, Griffiths, Jorm, & Christensen, 2006; Batterham, Griffiths, Barney, & Parsons, 2013; Britt et al., 2008; Greene-Shortridge, Britt, & Castro, 2007; Hoge, Engel, Messer, Castro, & Terhakopian, 2007; Zinzow et al., 2013). Military culture is likely to play a considerable role in how serving personnel consider, and make decisions about, the risk associated with seeking treatment (Dickstein, Vogt, Handa, & Litz, 2010). Issues which are consistently reported in serving military populations include concerns that seeking treatment will result in being passed over for promotion, inability to deploy on operational service and ultimately loss of job (Britt et al., 2008; Castro, Sara, & Anthony, 2015; Gould et al., 2010; Hoge et al., 2004; McFarlane et al., 2011). Stigmatising beliefs may be perpetuated by military specific policy which prioritises organisational capability rather than individual wellbeing (Cosgrove, 2017).

Whilst there are strong indications that perceived stigma is negatively related to intentions to seek treatment (Barney et al., 2006; Blais & Renshaw, 2013; Murphy et al., 2014), emerging evidence suggests that it is not associated with actual help-seeking behaviour or related

outcomes (Acosta et al., 2014; Sharp et al., 2015). A systematic review of military studies on stigmas and barriers to care found other beliefs may be related to help-seeking behaviour (such as negative attitudes towards mental health services). Sharp et al. (2015) suggest that there may be methodological issues with the measurement of stigma and inadequate conceptualisation of the gap between intentions and behaviour. Chapters 3 and 4 of this thesis examine the topic of stigma and help-seeking beliefs in more detail, with Chapter 3 examining challenges in operationalising stigma and Chapter 4 examining the relationship between help-seeking beliefs and behaviour.

A number of factors are associated with greater use of mental health services (Gulliver, Griffiths, & Christensen, 2010). Consistent factors include positive attitudes to help-seeking and mental health services (Adler et al., 2015; DeViva et al., 2016) as well as positive past experiences of care, including witnessing others experiences of care (Zinzow et al., 2013). Greater social support (Murphy et al., 2014; Stevelink et al., 2019) encouragement from others as well as strong leadership (Coleman, Stevelink, Hatch, Denny, & Greenberg, 2017; Zinzow et al., 2015) have been shown to facilitate access to care.

1.3.4.4 Self-reliance

A preference for self-managing mental health has been associated with a lack of formal help-seeking in military populations (Adler et al., 2015) and echoes research about the role of self-reliance in impeding mental health service use in civilian populations (Gulliver et al., 2010; Olesen, Butterworth, & Leach, 2010). The issue of self-reliance is considered in more detail in Chapter 7. Self-reliance is thought to be one of the most common barriers to initiating mental health treatment (Andrade et al., 2013) and has been linked with minimisation of symptoms (Rafferty, Stevelink, Greenberg, & Wessely, n.d.).

At lower levels of symptoms, self-reliance might be seen as a resilient attribute that can support individuals through recovery without treatment (Ortega & Alegría, 2002). Researchers have postulated that self-management could represent a preference for maintaining a sense of self-efficacy in dealing with life stressors or a preference for reaching out to informal support networks (Adler et al., 2015). The use of informal help-seeking is common in military populations as is the use of self-help strategies such as increasing physical activity and behavioural activation (Forbes et al., 2018), and it is possible that self-reliance is associated with increased wellbeing behaviours. Yet, despite the potential for self-reliant attitudes toward

mental health to align with other qualities valued within military culture, such as resilience and self-sufficiency, there is little research examining how military personnel self-manage their mental health and how this relates to help-seeking behaviour.

Having personal control over decisions related to mental healthcare was found to be helpful for military personnel or veterans engaging in mental health services, for example having autonomy over treatment plans helped participants to feel in control and supported (Murphy et al., 2014). No known research has examined facilitators of mental health help-seeking in the Australian military, however qualitative research on general health service use reaffirms the potential benefits of increased agency in personal health management (Dabovich, Eliott, & McFarlane, 2019). E-mental health may be a potential avenue to increase personal agency and allow the 'user' to have more direct control over their treatment outcomes.

Managing the balance between allowing self-directed mental health management and encouraging formal help-seeking is a challenge for military organisations where individual healthcare decisions are made within a broader context of operational capability and must necessarily balance immediate and future risks to the individual, team and organisation. More information is required regarding member treatment preferences, use of formal services and self-care strategies to enable the development of appropriate resources for those seeking to self-manage their mental health and minimise barriers to formal care when needed.

1.3.4.5 Structural barriers

There are also structural factors that impact significantly on an individual's decision to seek help. Services that are not easily accessible, costly or do not meet the needs of those seeking services have been shown to reduce treatment access in civilian populations (Parslow & Jorm, 2000). In the military, it may be argued that structural factors are less of a barrier than in civilian populations, as issues such as cost and accessibility are less relevant and, in some cases, have been shown not to be associated with mental health service use (Adler et al., 2015). However, upon separation from the ADF, personnel transition to public and private health systems, or a combination of both, where the member is largely responsible for initiation and navigation of a care system of which they often have very little experience. The change in service availability, cost and accessibility associated with transition out of the military is important for inclusion in research on military populations, due to the potential disparities in mental healthcare this transition may create.

In contrast, whilst mental health treatment is available at no direct financial cost for military personnel who remain in service, there are potential indirect financial and personal costs associated with a diagnosis of mental illness. In a military setting, serious health conditions, including mental illness, can result in an individual being unable to perform their military duties and may place their colleagues and the individual themselves at risk of further injury. Functional difficulties can lead to medical review and potential medical 'downgrade' which imposes work or task restrictions and affects whether an individual can deploy on operations and the role they can undertake whilst on operational service or in garrison. Ultimately, if an individual is unable to fulfil their role in the military, and cannot be redeployed to appropriate taskings, health conditions can result in a medical discharge. Whilst this reflects a 'worst-case scenario' and is by no means the standard outcome, many ADF members report concerns about the negative consequences of mental health help-seeking on ability to deploy, career progression, and indeed ability to remain in military service (McFarlane et al., 2011). As members transition out of service, these concerns may become less salient as civilian employment is often not as closely linked to health capability.

For this reason, mental health help-seeking beliefs and behaviours of both current and former serving ADF members are examined in this thesis. Although differences in help-seeking in these populations are considered, the primary focus of the thesis is not to compare service use of current and former ADF members but to examine how e-mental health is used across the entire population. There is increasing recognition of the need for Defence and DVA to focus on a 'whole-of-life' approach to the mental health of ADF members (Productivity Commission, 2019). Whilst boundaries between existing ADF and civilian or veteran health systems are unlikely to be removed, e-mental health resources have the potential to sit outside these existing boundaries and thereby provide some continuity in care access for those transitioning out of service.

1.4 Policies and programs to improve access to treatment

Policies which influence access to care can be hard to identify due to the non-specific nature of influence and the range of policy areas that impact access to care (Andersen et al., 2014). However, there are a number of specific policies in Australia that are aimed at improving access to care. One such policy is the Better Access initiative (Department of Health, 2019), which focuses on reducing costs of mental health care to the individual through government rebates and improving coordinated care between general practitioners, psychiatrists and allied health

professionals. Although the Better Access initiative improved treatment rates in the general community (Whiteford et al., 2014), given the range of socio-cultural factors related to mental health and service use in the military, in addition to the separate healthcare system and subsidised care available to this group, a policy targeting reduced cost of care may have less relevance to the ADF population. Veteran specific policy such as 'non-liability healthcare' may have improved access to mental healthcare, but this has only recently been introduced and baseline data on unmet mental health need will be important to inform evaluations of this policy into the future.

There are also challenges for policy-focused research due to insufficient evidence-base, as well as a lack of baseline data and pragmatic research. For example, researchers developing a microsimulation model estimating the costs of stigma were unable to demonstrate the economic value in programs targeted to reduce stigma (Acosta et al., 2014) due to the lack of empirical evidence showing an association between stigma and help-seeking behaviour. However, it is still important to assess the role of policy and program approaches designed to improve access to services in the military context.

Another example of an insufficient evidence base is post-deployment mental health screening in the ADF, which is intended to increase symptom recognition and prompt earlier access to mental health care for those at risk of disorder. There is ongoing debate about the efficacy of screening (Baines et al., 2017; Keeling et al., 2012; McFarlane, 2017; Rona, Burdett, Greenberg, Fear, & Wessely, 2017a). Regardless, psychological screening has high acceptability in the ADF and the Australian Government is expanding the current program, developing technology-based resources to support both organisational and self-screening. However, trials of computerised screening have found that provision of advice about symptom levels was not sufficient to increase help seeking behaviour compared to controls (Batterham, Calear, Sunderland, Carragher, & Brewer, 2016; Rona et al., 2017b) and echo previous research that advising individuals to seek help may not be sufficient to increase help-seeking behaviour and may even have unexpected consequences (Christensen et al., 2006). Evidence is also mixed regarding the ability of screening to improve symptom recognition and further system or organisational changes are required to ensure adequate follow-up and treatment is conducted (Gilbody, Richards, Brealey, & Hewitt, 2007; Pignone et al., 2002).

These examples expose gaps between the help-seeking evidence-base and policies designed to increase mental health service use. They indicate a need to better understand the drivers behind treatment seeking behaviour to inform interventions and reduce the intention-behaviour gap. E-mental health, which is often promoted as one way to enable or support mental health help-seeking, is increasing in prominence in Australian policy discussions about improving access to mental health care. Chapters 5 and 6 of this thesis examine the literature on e-mental health in more detail. However, the following section provides an overview, describing the proven benefits of e-mental health services and gaps in evidence with regards to help-seeking and mental health service use.

1.4.1 Benefits of e-mental health

Online services have been presented as a possible solution to improving uptake of mental health services for a number of reasons, including the ability to reach a wider consumer base and a cost-effective alternative to formal care (Ellis et al., 2013). Research on internet use in young people in Australia reports that young males are heavy users of the internet, with 94% of young men using the internet frequently and a large proportion of those (71%) predominantly using smartphones (Burns et al., 2013). As such, this medium may hold potential for reaching a group which consistently show poorer mental health in military populations and reduced care-seeking behaviour. The internet also offers potential anonymity to overcome stigma issues (Schreiber & McEnany, 2015) and a non-intrusive mechanism for supporting self-care approaches (Christensen et al., 2006; Ellis et al., 2013).

In addition, there is a growing body of evidence indicating the efficacy and cost-effectiveness of therapies delivered online (Batterham et al., 2015; Christensen & Petrie, 2013) as well as psycho-education aimed at increasing awareness and improving attitudes to help-seeking (Han, 2017; Reynolds et al., 2015). Evidence-based internet interventions have been shown to be as efficacious as evidence-based face-to-face therapy for a range of common mental disorders, including depression, specific phobia, panic disorder, social and generalised anxiety disorder (Andersson, Carlbring, Titov, & Lindefors, 2019; Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010; Ebert et al., 2015). Treatments delivered online present an opportunity to deliver consistent, high-fidelity mental health services (Christensen & Mackinnon, 2006) which transcend traditional access issues such as cost and geography.

1.4.2 Gaps in evidence-base

Recent reviews in Australia and internationally point to a distinct lack of policy-focused research (Lal & Adair, 2014; Meurk et al., 2016) and gaps in the translational evidence-base (Batterham et al., 2015) for e-mental health. In a review of Australian e-mental health services for depressive and anxiety disorders, Meurk et al. (2016) pointed to several key policy-relevant gaps in the evidence-base, including:

1. Inadequate understanding of which sub-groups are most likely to benefit from e-mental healthcare;
2. No benchmark of current e-mental health use compared to other interventions, limiting modelling of future e-service use; and
3. Insufficient information to inform policies that facilitate broad-scale adoption.

The evidence is also currently insufficient to confirm the capacity of e-mental health resources to fill gaps in service use and improve help-seeking behaviour at a population level public health intervention. This is in part due to the low quality of studies addressing e-mental health services as a facilitator of help-seeking (Kauer, Mangan, & Sanci, 2014), but also a lack of explicit measurement and reporting of peripheral or secondary outcomes from e-mental health trials (Musiat & Tarrier, 2014).

While some barriers to help-seeking may be reduced through e-mental health alternatives, other barriers remain and additional complicating factors need to be taken into account (Kauer et al., 2014; Meurk et al., 2016). For instance, males are still less likely to access e-mental health services compared to females and lack of awareness of available services remains an issue. Anonymity issues are replaced, or complicated by, concerns over privacy and confidentiality (i.e., issues of trusting mental health services remains) and depersonalisation of online services. Stigma remains a concern for those accessing online services as does a preference for self-management, dependant on whether individuals view e-mental health as a self-management tool (Meurk et al., 2016).

Predictors of online service use also appear to be similar to predictors of professional service use, with those with better mental health literacy, more severe symptoms and greater functional impairment more likely to access online services (Kauer et al., 2014), although these issues are rarely assessed at a population level. Users also report preferences for face-to-face services and possible perceptions that expectations will not be met by online treatments and smartphone

applications (Meurk et al., 2016; Orlowski et al., 2017). On the flipside, whilst some research suggests a preference for face-to-face services and reduced acceptability of online services, acceptability once using the services is high (Berry, Lobban, Emsley, & Bucci, 2016).

1.4.3 Research on e-mental health use in military populations

Nearly all research on e-mental health use in military populations comes from international studies. In the United States (U.S.), policy-relevant implementation research has informed much of the development and integration of online and professional services in both current and former military personnel (Creason, Ruscio, Tate, & McGraw, 2019; McGraw et al., 2019; Owen et al., 2018). Research has focused on readiness for e-mental health interventions (including technology usage in general) (Bush & Wheeler, 2015), preferences or acceptability of online options (Whealin, Seibert-Hatalsky, L. Howell, Willett, & Tsai, 2015) and adoption within a trial or clinical environment (Erbes et al., 2014). The research has identified both individual and system level barriers to broad uptake and adoption of e-mental health within military populations (Bush, Armstrong, & Hoyt, 2018; Whealin et al., 2015).

Despite the breadth of e-mental health research undertaken in the U.S., there remains limited information about the extent of use and engagement in internet treatments in military populations internationally. One study undertaken with the Canadian Armed Forces found that approximately 10% of personnel reported 12-month use of the internet for mental health-related problems and that use was significantly associated with use of professional mental health services (Duranceau, Zamorski, & Carleton, 2019). Factors associated with use of the internet for mental health were greater need, being female, being from a White/Caucasian background, higher education and childhood adversity. The study did not examine preferences for mode of resource (e.g. traditional website-based resources versus smartphone apps) but did indicate that overall, the use of the internet for delivery of mental health resources is relevant for Canadian military forces.

Differences in health service systems mean that findings from studies in the U.S. and Canada may not translate to the Australian service system. In addition, the previous studies have not addressed mental health beliefs which are known to form a barrier to care for many military members and veterans (Vogt, Fox, & Di Leone, 2014). The military e-mental health literature is considered in more detail in chapters 5 and 6, but questions remain about the rates of self-initiated uptake of online services and the extent to which these services can overcome stigma

and other barriers to help-seeking. There is a need for research taking a population health perspective to inform policy development and implementation within the ADF.

1.5 Summary

Overall, findings related to prevalence of mental disorder in military populations are consistent; there is a higher morbidity of mental illness in both current and former serving military populations relative to their community counterparts. These populations are likely to carry a higher burden of risk due to both occupational and non-occupational factors, and this risk extends beyond transition from service and has implications for individuals, families, and the community. As such, ensuring timely and appropriate access to treatment is a strategic priority for the Australian Government.

There are many factors likely to influence the use of mental health services in military populations, including level of symptoms and self-perceived need, help-seeking beliefs (including stigma), self-reliance and military policy and culture. Policies and programs specifically designed to address barriers to help-seeking and enable earlier access to care are difficult to evaluate due to both practical considerations and gaps in the evidence-base. One key example of this is e-mental health.

E-mental health is increasingly proposed as a means to overcome barriers to help-seeking and improve access to mental health services. However, there are key policy-relevant gaps in the e-mental health evidence base which hamper efforts to implement and support broad-scale adoption. There is a need for e-mental health policy and development to be informed by a more comprehensive understanding of barriers to help-seeking in the ADF, and how these factors relate to use of both professional services and e-mental health resources.

1.6 Research Approach

1.6.1 Purpose

The purpose of this research is to examine factors associated with mental health service use by current and former ADF members and identify how these factors relate to use of e-mental health resources, help-seeking behaviour and self-management in this population.

1.6.2 Applying a conceptual and theoretical framework

It has been suggested that published help-seeking research suffers from a lack of conceptual clarity (Rickwood & Thomas, 2012). Rickwood and Thomas (2012) propose that researchers investigating help-seeking should specify essential measurement elements to provide some consistency in the field. These elements include the help-seeking type, stage and timeframe, source and type of help, and mental health concern for which help is sought (see Figure 1-1).

The first element, 'process', is important to consider when selecting the relevant theory to guide the research. In the current thesis help-seeking behaviour, rather than intention or orientation, is of principal interest. This is because, in military research, there is a recognised gap between factors which influence intentions versus those that relate to actual behaviour. The intention-behaviour gap is most noticeable in relation to perceived anticipated stigma which is often stated as a barrier to help-seeking intentions, but has not been empirically linked to help-seeking behaviour (Acosta et al., 2014; Sharp et al., 2015).

Various models have been used to describe pathways into mental health care, including the Theory of Reasoned Action, Theory of Planned Behaviour (Ajzen, 1991; Lee et al., 2016; Stecker, Fortney, Hamilton, Sherbourne, & Ajzen, 2010), and the Andersen Behavioural Model of Health Service Use (Gulliver et al., 2012b).

The Theory of Reasoned Action (TRA) posits that attitudes and subjective norms predict behavioural intentions which, in turn, increases the likelihood of behaviours being enacted. The extension of the TRA to include perceived behavioural control in the Theory of Planned Behaviour (TPB) is thought to improve prediction of behavioural intention (Madden, Ellen, & Ajzen, 1992) and has been used widely in health behaviour research, including with current and former serving military personnel (Lee et al., 2016; Stecker, Fortney, & Sherbourne, 2011). However, although shown to be associated with changes in intentions to seek treatment, it remains to be seen if this also applies to changes in help-seeking behaviour (Stecker et al., 2011). A criticism of TRA and TPB has been the lack examination of contextual factors which may also influence actual behavioural control and associated limits on the intention to behaviour relationship (Ajzen, 2011).

The Andersen Behavioural Model of Health Service Use (Andersen et al., 2014; Babitsch, Gohl, & von Lengerke, 2012) has been applied to describe mental health service use behaviour in both community and military populations (Fikretoglu et al., 2007; Fikretoglu et al., 2008;

Parslow & Jorm, 2000). It is based on three main factors influencing service use: predisposing, enabling and need factors. These factors can be conceptualised at both the contextual and individual level (Andersen et al., 2014). This model provides a useful way to conceptualise the numerous factors which may influence mental health service use behaviour, but the operationalisation of this model in the literature is not consistent. Although citing this model, many studies focus only on specific aspects of the model, such as sociodemographic indicators or beliefs or need, but do not necessarily examine these factors in relation to each other.

Using elements from the Rickwood and Thomas (2012) framework and Andersen's Behavioural Model of Health Service Use, this thesis aims to identify individual and contextual factors associated with formal mental health help-seeking behaviour in the previous 12-months. These factors are considered in relation to other informal help-seeking and self-help behaviours. The terms 'formal help-seeking' or 'professional help-seeking' are used in this thesis to describe use of professional mental health services, such as general practitioner, psychiatrist, psychologist or other mental health professional. E-mental health resources can be conceptualised as both 'informal' and 'self-help' noting that different modalities of e-mental health may be used for different purposes. For example, social media may be used to access information or support, internet interventions for assessment and self-guided treatment, and telephone helplines for crisis support. 'Type' of support accessed either formally or informally was beyond the scope of this thesis, as were outcomes. However, it is acknowledged that these are important considerations for future work. Whilst help-seeking for general mental health concern was measured, symptoms of PTSD, depression and anxiety are considered in the analyses.

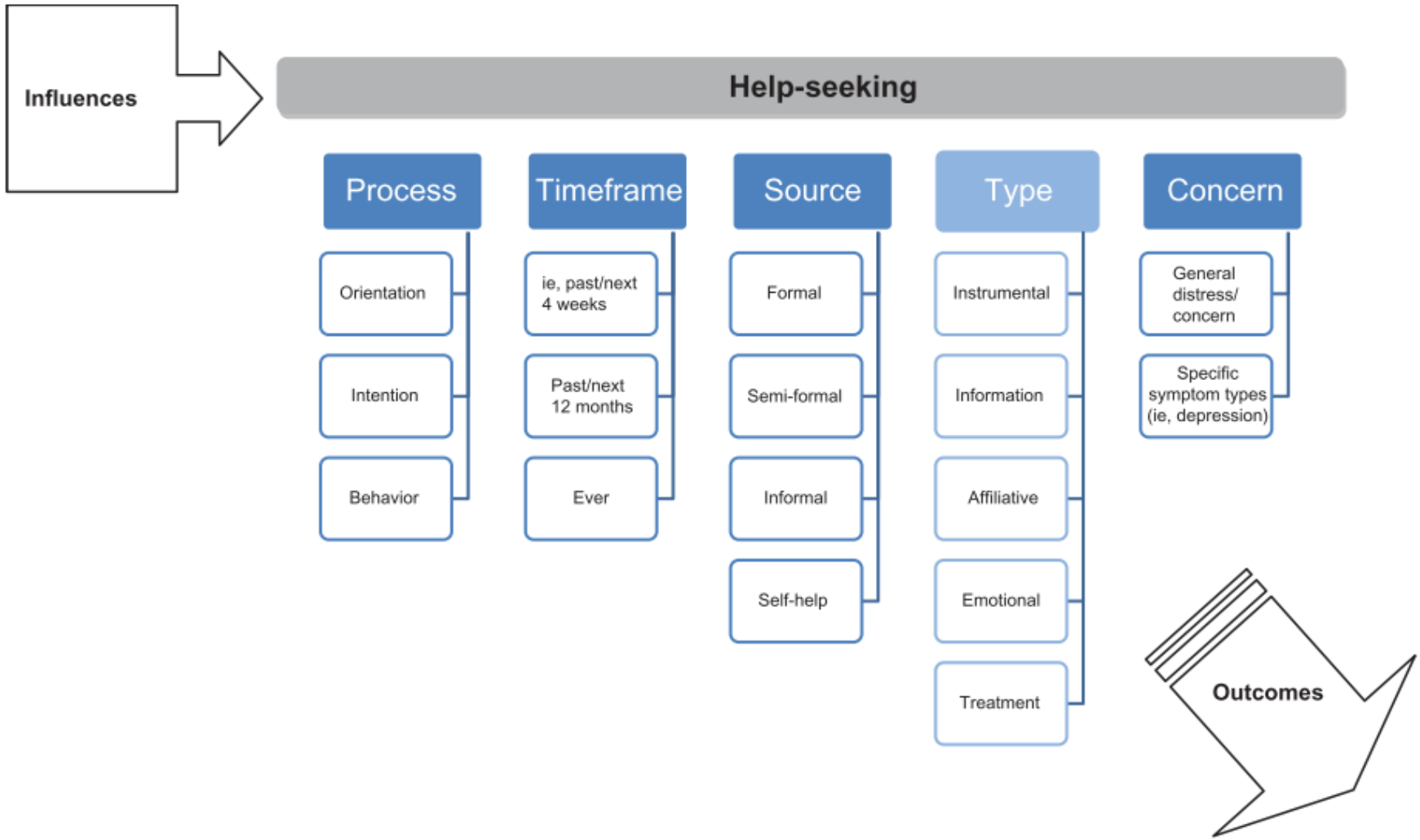

Figure 1-1 Rickwood and Thomas' (2012) Help-seeking measurement framework.

1.7 Summary of the thesis

1.7.1 Research Design

This thesis uses data drawn from a large, cross-sectional survey investigating the mental and physical health of current and former ADF members. The dataset is described in more detail in Chapter 2. Due to the design of the survey, two separate samples were compiled for analysis.

1.7.1.1 Sample 1

Sample 1 comprised full-time, serving ADF members (Permanent ADF) in 2015 and members who transitioned from full-time, permanent, ADF service between January 2010 and December 2014 (Transitioned ADF). These participants completed questions on symptoms of mental disorder, subjective mental health concern, help-seeking beliefs, e-mental health and mental health service use and self-management behaviour.

1.7.1.2 Sample 2

Sample 2 was a sub-group of Sample 1 who reported that they had been concerned about their mental health during their lifetime but had 'never' had assistance for their mental health. This sample completed additional questions on symptoms of mental disorder, help-seeking beliefs, e-mental health use and self-management behaviour. As the sample had no mental health service use and therefore provided no data on service use, they instead completed additional questions about reasons for not seeking care.

1.7.2 Research Questions

This research will seek to address the following questions, which are addressed in Chapters 3 to7 (as described later in Table 1-1):

1. What attitudes and beliefs do current and former ADF members hold about seeking help for their own mental health, and what psychosocial factors are associated with these beliefs?

2. What predisposing, need and enabling factors are associated with 12-month formal help-seeking (i.e., professional mental health service use) in current and recently transitioned ADF members, in particular:

    a. Are there differences in mental health service use within ADF demographic sub-populations, and how does service use relate to need within these sub-groups?

b. Which pre-disposing help-seeking beliefs are associated with 12-month mental health service use, taking into account need and other context factors?

c. What enabling factors are associated with 12-month mental health service use, taking into account need and other contextual factors?

3. What is the reach of different modes of e-mental health resources in a 'real-world' sample of current and former ADF members, specifically:

   a. What is the rate of use of e-mental health resources by modality (internet information, telephone helplines, internet interventions, apps, social media)?

   b. What sociodemographic factors are associated with use of individual e-mental health modalities?

   c. Does the use of specific e-mental health modalities increase at higher levels of need (as defined by depressive, PTSD and anxiety symptoms and alcohol use)?

   d. What other need factors and predisposing beliefs are associated with use of various e-mental health modalities?

4. What is the relationship between use of e-mental health modalities with use of professional mental health services within a 12-month period for ADF members?

   a. Which modalities are associated with seeking professional help, including among those with probable disorder?

5. Do e-mental health resources fill a gap in mental health service use for those who might not otherwise seek care, specifically:

   a. What is the overlap between use of any online resource and professional services, and what is the remaining level of unmet need in those with symptoms of disorder?

   b. What are the peak levels of symptom severity at which e-mental health resources are preferred over professional services?

6. To what extent do online services overcome known barriers to seeking professional help in the ADF population?

    a. What personal and psychological factors are associated with a behavioural preference for online mental health resources over formal service use?

    b. What personal and psychological factors are associated with remaining unmet need, when both formal and online help-seeking is taken into account?

7. What factors are associated with not seeking help among current and former ADF members who report mental health concerns?

    a. Specifically, what are the roles of self-reliance, perceptions of ability to function and fear of help-seeking in not seeking help?

8. What factors are associated with self-reliance and self-help behaviours in non-treatment seeking current and former ADF members?

    a. What are the effects of help-seeking beliefs and resilience on self-reliance, when controlling for symptoms and functioning?

    b. What is the relationship between self-reliance and self-help behaviours including physical exercise, informal help-seeking and behavioural activation, both overall and amongst those with probable disorder?

1.7.3 Outline of chapters

This thesis is divided into 8 chapters. In summary, there is an introductory chapter, followed by a methodology chapter, then five empirical chapters exploring the research questions, and a concluding discussion chapter. Further detail of each chapter is provided below and in Table 1-1.

This introductory chapter outlines the research problem, the research questions to be addressed within this thesis and the research approach. This chapter also provides an overview of literature on mental health in the ADF, help-seeking behaviour and evidence on policies to increase help-seeking. Note that a more detailed consideration of the literature relevant to each chapter is provided within those chapters. Further details on the remaining chapters are provided below.

Table 1-1 Outline of chapters and corresponding research questions

Chapter	Outline	Research Question	Sample
1	Introduction: Outlines the research problem, relevant literature, and the research questions to be addressed within this thesis.		
2	Provides a detailed description of the methodology employed in this thesis.		
3	Identifies latent mental health help-seeking constructs and examines the relationship between these beliefs and a range of psychosocial factors in an Australian military population.	RQ1	1: All
4	Applies the Andersen Behavioural Model of Health Service Use to examine 12-month formal mental health help-seeking by current and former ADF members.	RQ 2a, 2b & 2c	1: All
5	Examines the reach of e-mental health resources in the ADF by modality (websites, telephone helplines, social media, internet treatments and smartphone apps), and demographic and psychosocial factors associated with use.	RQ 3a, 3b, 3c & 3d	1: All
6	Examines the relationship between use of e-mental health resources and formal mental health care, and factors associated with use of e-mental health in the absence of formal care.	RQ4 / RQ 5a & 5b / RQ 6, 6a & 6b	1: All
7	Investigates self-reliance, help-seeking beliefs, and self-management practices in those who report a mental health concern but no formal service use.	RQ 7a / RQ 8a & 8b	2: non-users of formal services
8	Conclusion		

The next chapter (Chapter 2) details the methods used in the research and generation of this thesis. Data for the research were drawn from a population-based research programme of ADF members on which the author was an investigator: the Transition and Wellbeing Research Programme (Van Hooff et al., 2018). The limitations and benefits of such an approach is discussed in Chapter 2 and a justification provided for this research approach.

Chapter 3 considers issues with the measurement of help-seeking beliefs in military populations and examines the mental health help-seeking beliefs of current and former ADF members. As no individual help-seeking scale was used in this study and items were taken from different scales, this chapter identifies and tests latent constructs of help-seeking beliefs for use in subsequent chapters in this thesis. The relationship between these help-seeking beliefs and other psychosocial factors are explored. Note that Chapters 3 to 6 use data from Sample 1.

Chapter 4 examines the military mental health service use literature in more detail and applies the Andersen Behavioural Model of Health Service Use to examine formal mental health help-seeking and associated factors in an Australian military population. The chapter identifies predisposing, enabling and need factors that are associated with mental health service use and examines the help-seeking beliefs (identified in Chapter 3) associated with 12-month formal help-seeking behaviour in the ADF.

Chapter 5 focuses on the reach of various modalities of e-mental health resources in the ADF community, namely information websites, telephone helplines, social media, internet treatments and smartphone apps, and factors associated with uptake of each modality. This chapter examines: (1) the current state of technology use for mental health by current and former ADF members, (2) demographic and psychosocial factors associated with use, and (3) types of technologies adopted.

Informed by the findings of Chapters 4 and 5, Chapter 6 examines the proposition in the literature that e-mental health improves access to mental health services. The relationship between use of professional mental health services and e-mental health is examined. Then the use of e-mental health in the absence of professional service use is investigated with consideration of the factors shown to be a barrier to mental health service in Chapter 4.

The final empirical chapter, Chapter 7, uses data from Sample 2 to explore self-reliance and self-management practices in those who have been concerned about their mental health but not sought help. Self-reliance, a known barrier to help-seeking (Gulliver et al., 2010; Ortega & Alegría, 2002), was unable to be examined in Sample 1, as reasons for non-treatment seeking were only asked of those who had never used mental health services. The relationship between self-reliance, symptoms and functioning as well as other known barriers to mental health care is examined in addition to the techniques used to improve or maintain mental health. This chapter also examines whether those with a preference for self-management used other forms of informal help-seeking. Understanding the relationship between self-reliance, beliefs about help-seeking and self-help behaviours may enable better design of preventative e-mental health support tools.

Chapter 8 synthesises the overall findings and considers these findings in relation to the existing literature. The chapter provides implications of results for policy and practice, limitations of the thesis and recommendations for further research.

1.8 Significance of this research

Encouraging early and self-directed treatment to reduce the impact of mental ill health on the individual and community is a strategic priority of the Australian government (National Mental Health Commission, 2014). While the introduction of cost-effective treatments and psycho-education delivered online has the potential to reduce short-term service gaps (such as providing interim care when waiting for face-to-face services) as well as reduce the long-term costs of lost productivity, rehabilitation and compensation, it is unknown to what extent these services are currently being used and whether they are meeting this potential. Thus, understanding current utilisation rates, users of these technologies, possible service gaps and the needs of ADF members in managing their own mental health will benefit the development of e-mental health policies and programs for ADF members and the broader community.

Chapter 2 Methodology

2.1 Chapter Overview

This research used a cross-sectional survey design to examine help-seeking beliefs and behaviour of current and former ADF members. Data for the research were drawn from a population-based research programme jointly funded by the Australian Government Department of Veterans' Affairs (DVA) and Department of Defence, the Transition and Wellbeing Research Programme (Van Hooff et al., 2018). This programme investigated the mental, physical, and social health of current and former ADF members, and their families, in 2015.

This chapter details the methods used in the Transition and Wellbeing Research Programme which are relevant for the current research. In particular, the chapter focuses on sampling, measures, and procedures. An overview of statistical analyses is provided, however more detailed descriptions of analyses are provided within each chapter of this thesis. Finally, a description of the study participants, including demographics and mental health status, is provided followed by a discussion of the scope, limitations and benefits of the methodological approach taken in this thesis.

2.2 Sampling

Several overlapping populations were targeted for data collection in the Transition and Wellbeing Research Programme but only two of those, Transitioned ADF and Permanent ADF, are combined in this thesis to produce the final sample. Response rates for surveys of ADF members are traditionally low (i.e., 30%-50%) (Australian Public Service Commission, 2019; McFarlane et al., 2011; Steele et al., 2020) and limited contact details were available for personnel separated from full-time service. Therefore, different sampling approaches were taken for sub-samples within the Programme to maximise participation and to meet the overall aims outlined in Van Hooff et al. (2018). Sampling methods are described in more detail below.

2.2.1 Transitioned ADF

The Transitioned ADF population consisted of all ADF members who transitioned from full-time, permanent, ADF service between January 2010 and December 2014 (N=23,974) and all individuals in this population were eligible to take part in the study. This population included those who transitioned into the Active and Inactive Reserves as well as those who had

discharged completely from full-time service in the ADF (ex-serving ADF). This sample in the original Programme was intended to provide prevalence of mental disorder in members who have left ADF service since 2010, but due to a lack of reliable contact details and hence an expected low response rate, attempts were made to contact all known ADF personnel who had transitioned since 2010.

Note that this sample is termed 'Transitioned ADF' not 'ADF Veterans' or 'Ex-serving ADF'. The term 'veteran' has various meanings and a specific definition with regards to entitlements under Australian Commonwealth legislation and it is important to note that the sample includes those who *did not* deploy on 'warlike' operations during their ADF service *as well as* those who were operationally deployed during their career. Likewise, the sample is not termed 'ex-serving' because it included those who were still serving in the ADF in a reserve capacity at the time of the survey.

2.2.2 Permanent ADF

The Permanent ADF participants were recruited from two populations combined to produce a sample of full-time, permanent ADF in 2015 (N=20,031). The two samples were:

All ADF members who participated in the Military Health Outcomes Program (MilHOP) of research (Department of Defence, 2010) and who were still serving in 2015 (n=14,991). Note that MilHOP targeted the entire population of serving ADF members in 2010 (across three separate studies).

a) A random sample, stratified by sex, Service and rank, of full-time permanent ADF members in 2015 who *were not* part of the Military Health Outcomes Program in 2010 (n=5,040). This sample enabled inclusion of members who joined the ADF since 2010 to be represented. Stratification to ensure adequate representation in disproportionate population subgroups was undertaken by the Australian Institute of Health and Welfare (AIHW) using the Military and Veteran Health Research Study Roll.

The term 'Permanent' is an employment description used within the ADF to represent individuals enlisted or appointed to the ADF on a permanent full-time basis. It excludes reservists (including those on continuous full-time service) and ex-serving personnel.

2.2.3 Military and Veteran Health Research Study Roll

The Military and Veteran Health Research Study Roll was created by the AIHW in collaboration with DVA and Defence for the Transition and Wellbeing Research Programme. The Study Roll linked employment data from the Department of Defence with contact details from ADF superannuation provider, ComSuper, and DVA client databases. The Study Roll was also checked against the National Death Index and contact details for deceased individuals were removed prior to study recruitment. Although substantial time and effort was taken to improve contact details for Transitioned ADF, there remained considerable missing contact information for this group.

2.2.4 Response rates

For the purposes of this research, only those who responded *and* answered at least one demographic and psychological health question in the survey were included for analysis. Figure 2-1 shows the flow of response for the total sample and of Transition and Permanent ADF separately. Of the 23,974 Transitioned ADF invited to participate, only 15.9% participated in the survey and met criteria for inclusion in the analysis (n=3,808). Of the 20,031 Permanent ADF invited to participate, 38.8% (n=7,779) responded and met criteria for inclusion in analysis.

Demographic distributions of the permanent and transitioned ADF population in 2015 are compared to study respondent demographics in Table 2-1. Overall, Permanent (67.1%) and recently Transitioned ADF (32.9%) members were adequately represented in the sample population ($\chi^2 = 1.17$, $p = .279$), but within each group, representativeness was not achieved. For Permanent ADF, Air Force personnel were over-represented in the study sample by comparison with the corresponding population ($\chi^2 = 374.31$, $p < .001$), as were females ($\chi^2 = 1,222.69$, $p<.001$). Junior Non-Commissioned Officers and other enlisted ranks were under-represented in the study sample by comparison with the corresponding population ($\chi^2 = 3,825.08$, $p<.001$), as were younger ADF members, particularly aged 18 to 27 ($\chi^2 = 5,281.63$, $p<.001$).

Similarly, for the Transitioned ADF, Air Force personnel were over-represented in the study sample by comparison with the corresponding population ($\chi^2 = 125.44$, $p<.001$). Junior Non-Commissioned Officers and other enlisted ranks were under-represented in the study sample by comparison with the corresponding population ($\chi^2 = 1479.93$, $p<.001$), as were younger ADF members, particularly aged 18 to 27 ($\chi^2 = 2170.73$, $p<.001$).

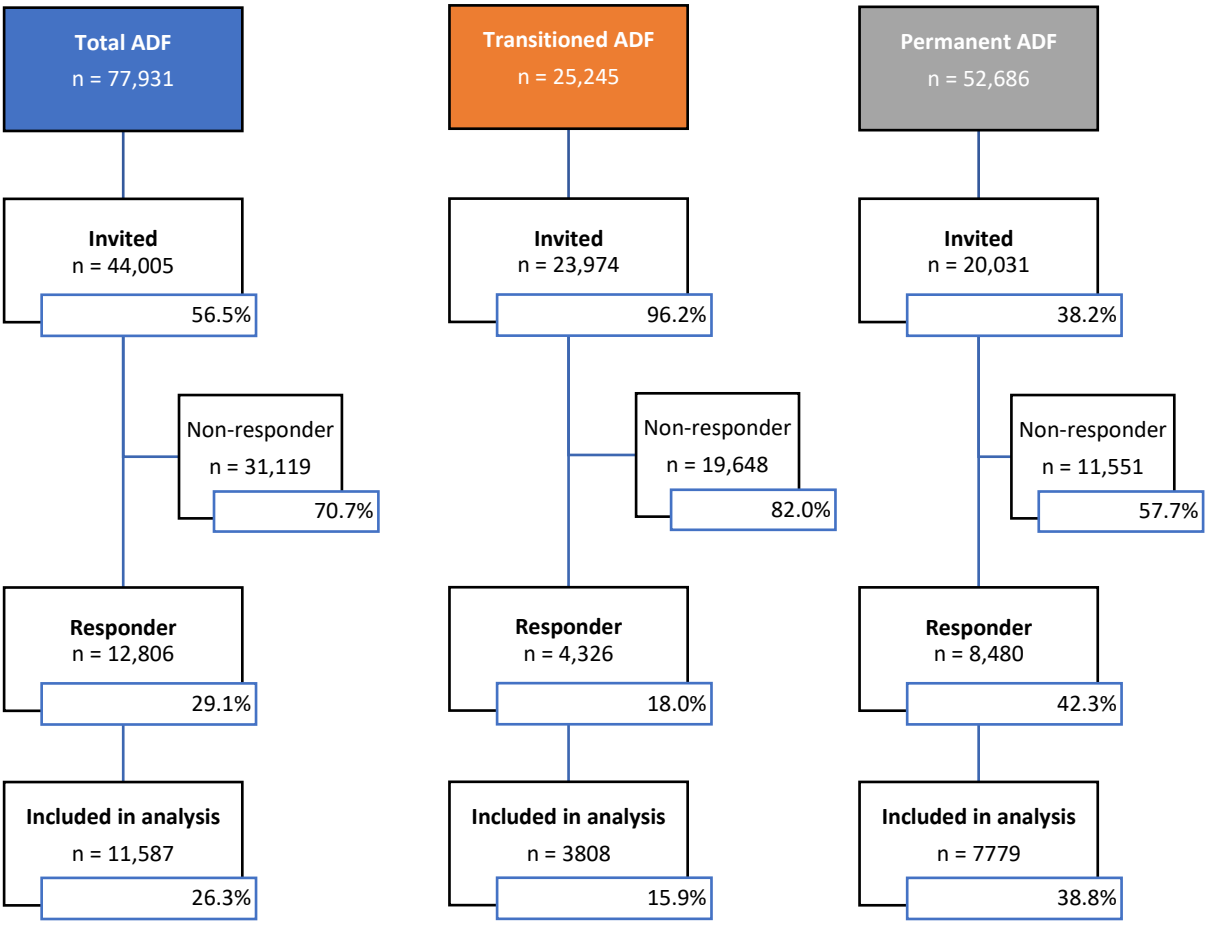

Figure 2-1 Survey response rates

Individual weights for differential non-response were calculated on the original data but were not employed for analysis in this thesis, because the design of the weights did not match the design of the current thesis. Strata were based on sex, Service, rank, and a proxy health status variable (Medical fitness) generated from current or last-known (for Transitioned ADF) Medical Employment Classification. Medical Employment Classification (MEC) is an administrative process designed to monitor physical fitness and medical standards in the ADF and was not available with the dataset for privacy reasons. During the Transition and Wellbeing Research Programme, survey weights were calculated for each section of the survey to address the issue of differential non-response due to survey attrition. A 'survey section responder' was defined as anyone who answered at least one question in a specific section of the survey. There were 29 section responder weight variables. For the current study, multiple survey sections were involved in analysis and therefore no one section weight would be appropriate (e.g., Section 3 contained the PHQ-9 and GAD-7, whereas measures of PTSD, functioning, help-seeking beliefs, resilience and social support were each in separate sections).

Table 2-1 Demographics of permanent and transitioned ADF population in 2015 in comparison to participant characteristics.

		PERMANENT ADF				TRANSITIONED ADF			
		2015 Population		Respondents		2015 Population		Respondents	
		N	%	n	%	N	%	n	%
SERVICE	Navy	13,299	25.2	1,845	23.7	5,716	22.6	753	19.8
	Army	25,840	49.0	3,196	41.1	15,181	60.1	2,152	56.5
	Air Force	13,453	25.5	2,711	34.9	4,270	16.9	902	23.7
	Missing	94	0.2	27	0.3	78	0.3	1	0.0
RANK	Officer	13,467	25.6	3,275	42.1	4,116	16.3	1,166	30.6
	SNCO	9,725	18.5	2,825	36.3	3,705	14.7	1,113	29.2
	JNCO/OR	29,377	55.8	1,661	21.3	17,316	68.6	1,525	40.0
	Missing	117	0.2	18	0.2	108	0.4	4	0.1
SEX	Male	47,645	90.8	6,144	79.0	20,770	82.3	3,201	84.1
	Female	4,855	9.2	1,607	20.7	3,278	13.0	606	15.9
	Missing	368	0.7	28	0.4	1,197	4.7	1	0.0
AGE	18-27	19,360	36.7	515	6.6	7,508	29.7	390	10.2
	28-37	17,316	32.9	2,232	28.7	9,803	38.8	1,071	28.1
	38-47	10,301	19.6	2,737	35.2	4,437	17.6	992	26.1
	48-57	5,058	9.6	1,968	25.3	2,279	9.0	797	20.9
	58+	418	0.8	192	2.5	1,061	4.2	516	13.6
	Missing	233	0.4	135	1.7	157	0.6	42	1.1
TOTAL		**52,686**	**67.6**	**7,779**	**67.1**	**25245**	**32.4**	**3,808**	**32.9**

Abbreviations: SNCO, Senior Non-Commissioned Officer; JNCO, Junior Non-Commissioned Officer; OR, Other Ranks

The purpose of the current thesis was not to develop prevalence estimates but to examine factors associated with mental health service use and informal help-seeking, including in those who have not sought treatment despite symptoms indicating professional intervention may be helpful. The core analyses to be conducted in the current research are regression models and the sampling weights were predominantly a function of independent variables to be included in the proposed analyses. Therefore, a model-based approach was adopted (Winship & Radbill, 1994; Young & Johnson, 2012). Key variables used to generate the weights (sex, Service and rank) were adjusted for in analyses.

2.3 Measures

Current and former ADF members completed questions on mental and physical health, wellbeing factors, pathways to mental health care, use of health technology, as well as lifetime and occupational trauma exposures. Only measures used in the current thesis are detailed below, but a full list of measures used in the Transition and Wellbeing Research Programme are available in Van Hooff et al. (2018). A copy of the full survey is provided in Appendix A.

2.3.1 Demographics

Standard demographics were collected, including age and sex. Military demographic variables of rank, Service (Navy, Army or Air Force) and ADF transition status (Permanent or Transitioned) were collected. Due to the varied living arrangements for military members, relationship status was collected with one question "Are you currently in a significant intimate relationship" with the following response options 'married and living together', 'de facto and living together', 'married and not living together', 'in a relationship and not living together' and 'No, not a relationship'. Responses were dichotomised into 'relationship' or 'single'.

2.3.2 Psychological Health

A set of validated measures were used to assess overall psychological health and are outlined below.

2.3.2.1 The Posttraumatic Checklist – Civilian (PCL-C)

Posttraumatic stress symptoms were assessed using the Posttraumatic Checklist – Civilian (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993), a scale commonly used in ADF mental health screening (Steele & Goodman, 2006). The PCL-C is a 17-item scale assessing distinct symptom clusters of PTSD according to the Diagnostic Statistical Manual IV (Weathers et al., 1993) experience in the previous month. Although additional items to allow calculation of PCL-5 scores (Blevins, Weathers, Davis, Witte, & Domino, 2015) were included in the survey, the PCL-C is validated in current and former ADF samples (Forbes, Creamer, & Biddle, 2001; Searle et al., 2015). All items on the PCL-C were totalled to produce a response range of 17 to 85. The PCL-C showed excellent internal consistency in the current sample, Cronbach's $\alpha = .96$. As would be expected, the PCL-C showed strong correlations (r_s range .50 to .80) with other psychological health measures, including functional impairment, and lower resilience (see Table 2-2)

A PCL-C score of 53 represents the cut-off in the current-serving ADF population most likely to define a diagnosis of PTSD (McFarlane et al., 2011) and PCL-C ≥50 has traditionally been used in clinical samples (Forbes et al., 2001). However, researchers within military primary care settings suggest a score in the range of 30 to 34 indicates need for assessment (Bliese et al., 2008), supported by a suggested screening cut-off of 29 or moderate risk between 30 to 39 in the Australian military (McFarlane et al., 2011; Nicholson) for screening purposes.

Table 2-2 Correlation matrix of main continuous variables used in this thesis

	Depression	Posttraumatic stress	Anxiety	Alcohol use	Work functioning	Social life functioning	Family life functioning	Resilience	Friend Positive	Friend Negative	Family Positive	Family Negative
Depression	1											
Posttraumatic stress	**.812****	1										
Anxiety	**.866****	**.816****	1									
Alcohol use	.343**	.382**	.338**	1								
Work functioning	**.660****	**.657****	**.628****	.251**	1							
Social life functioning	**.710****	**.706****	**.671****	.284**	**.838****	1						
Family life functioning	**.698****	**.691****	**.665****	.283**	**.806****	**.896****	1					
Resilience	**-.518****	**-.501****	**-.526****	-.190**	-.470**	-.484**	-.477**	1				
Friend +ve	-.296**	-.260**	-.258**	-.096**	-.209**	-.264**	-.252**	.279**	1			
Friend -ve	.155**	.153**	.168**	.114**	.120**	.124**	.121**	-.154**	.065**	1		
Family +ve	-.283**	-.253**	-.239**	-.105**	-.182**	-.239**	-.249**	.196**	.300**	-.061**	1	
Family -ve	.270**	.262**	.274**	.118**	.192**	.226**	.277**	-.228**	-.203**	.303**	-.226**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Bold figures denote Spearman's Rho > .50

A conservative score of PCL-C ≥ 50 has been used in this research to represent probable PTSD for two reasons. Firstly, spectrum effects have been considered (McDonald & Calhoun, 2010). Given the current research examines population (not clinical) data where prevalence is estimated between 8% and 17% (McFarlane et al., 2011; Van Hooff et al., 2018), and there is high level of comorbidity in the sample, efficiency is the key consideration and a conservative approach deemed more appropriate. Secondly, this research is interested in prevailing mental health service use and therefore it is considered necessary to assess service use in those with greatest need and most likely to have required access to services; those with symptoms indicative of disorder, not sub-syndromal symptoms. Where relevant, risk categories have been used in whole sample analysis to examine effects within sub-syndromal categories. PCL-C risk categories reported in this thesis align with Defence psychology screening policy (Benassi & Steele, 2011): low (17-29), moderate (30-39), high (40-49), very high (50-85).

2.3.2.2 Patient Health Questionnaire (PHQ-9)

The Patient Health Questionnaire nine-item depression scale (PHQ-9: Kroenke, Spitzer, & Williams, 2001) was used to measure symptoms of depression in 'the last 2 weeks'. The scale has previously been used in population health research in the U.S. (Engel et al., 2008)and Canadian (Garber, Zamorski, & Jetly, 2012) militaries and has proven validity in screening for depression in various settings, including primary care and community settings (Moriarty, Gilbody, McMillan, & Manea, 2015). Although measures of psychological distress such as the Kessler-10 (K10: Kessler et al., 2002) have been used in ADF screening (Steele & Goodman, 2006) and validated in an ADF population, such measure do not distinguish between anxiety and depressive symptoms. The current study seeks to delineate help-seeking according to specific disorders rather than non-specific distress (Rickwood & Thomas, 2012). The PHQ-9 has been validated in an Australian military population, showed good internal consistency, and is strongly correlated with the K10 (Searle et al., 2017). In the current sample, the scale showed good internal consistency, Cronbach's $\alpha = .92$, and was strongly correlated with other psychological health measures, including functional impairment, as well as lower resilience (see Table 2-2).

Participants responded on a four-point Likert scale with total scores summed to a range of 0 to 27. The authors of the scale indicate that PHQ-9 scores of 5, 10, 15, and 20 represented mild, moderate, moderately severe, and severe depression, respectively. Despite research with the serving ADF suggesting a lower cut-off of 6 for screening purposes (Searle et al., 2017),

validation in samples of former serving ADF has not occurred so a cut-off of 10 is used in this study to represent caseness of any depressive disorder as a conservative estimate (Manea, Gilbody, & McMillan, 2012) of moderate to severe depression.

2.3.2.3 Generalised Anxiety Disorder scale (GAD-7)

Generalised anxiety was measured using the 7-item Generalised Anxiety Scale (GAD-7: Spitzer, Kroenke, Williams, & Löwe, 2006), a brief self-report scale developed as a screener for Generalised Anxiety Disorder. Participants were asked to rate how often they experienced each symptom on a 4-point scale from "Not at all" (0) to 'Nearly every day' (3), producing a total score between 0 to 21, with higher scores indicative of more severe anxiety.

The scale has been shown to have validity when compared to mental health professional diagnoses and functional impairment indices (Spitzer et al., 2006) in primary care and the general population (Löwe et al., 2008). Again, although the K10 has been used to assess both anxiety and depression symptoms in the ADF (Steele & Goodman, 2006), the GAD-7 can distinguish anxiety symptoms independent of depressive symptoms (Spitzer et al., 2006). The scale has high internal consistency (Löwe et al., 2008; Spitzer et al., 2006), also evidenced in the current sample, Cronbach's $\alpha = .93$. Correlations with other psychological health measures were strong as well as with functional impairment and resilience indices (Table 2-2).

Note that the GAD-7 examines symptoms in the two-weeks prior to administration which is different to the PCL-C, which covers a month timeframe. The authors of the scale report that despite this short timeframe, high scores represent chronic symptoms of anxiety, with 96% of individuals scoring 10 or above reporting symptoms last longer than one month (Spitzer et al., 2006). As the intent of analyses was to measure symptoms current at the time of the survey in relation to recent (12-month) service use, this scale was deemed appropriate for use in the proposed analyses.

2.3.2.4 Alcohol Use Disorders Identification Test (AUDIT)

The 10-item Alcohol Use Disorders Identification Test (AUDIT: Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) was used to assess alcohol consumption and problematic alcohol use. The first eight items on the scale were answered on a 5-item scale (scored 0 to 4), and the final two items answered on a 3-item scale (scored 0, 2, 4), with total score ranging from 0 to 40. The scale has been validated in a serving ADF sample, with a score of 20 or above indicating likely ICD-10 harmful alcohol use disorder (McFarlane et al., 2011). In the current sample the

AUDIT had good internal consistency (α = .80). However, the scale characteristics operated differently to other psychological health measures with only moderate correlations with PCL-C, PHQ-9 and GAD-7, and low to moderate correlations with functional impairment and resilience (Table 2-2). This reflects the externalising nature of symptoms of alcohol abuse which typically align more closely with other externalising disorders, in comparison to the internalised symptoms common among the other disorder symptoms measured in this study (Kotov et al., 2017; Miller, Fogler, Wolf, Kaloupek, & Keane, 2008). Therefore, the different characteristics of this scale reflect the different characteristics of the symptoms measured, rather than any inconsistencies in the data itself.

2.3.2.5 Probable disorder and comorbidity

A dichotomous variable, 'probable disorder', was derived from the PCL-C, PHQ-9, and the GAD-7, with a score above cut-off on any of these scales representing any probable disorder. The AUDIT was considered for inclusion, however given the different operating characteristics of the AUDIT, alcohol disorder was not included in the Probable Disorder variable. However, there was considerable comorbidity in the sample, of the 556 participants who scored at or above 16 on the AUDIT (indicative of hazardous alcohol use), 78.2% were indicated as having comorbid PTSD, depression, or anxiety. Therefore, a large proportion of individuals reporting harmful drinking or alcohol dependence were included in analysis of those with probable disorder.

2.3.2.6 Suicidal ideation and behaviour

Items examining suicidal ideation and behaviour in the 12-months prior to the survey were adapted from the Australian National Survey of Mental Health and Wellbeing (Australian Bureau of Statistics, 2009b) and mirrored those used in the 2010 ADF Mental Health and Wellbeing Survey (McFarlane et al., 2011). The four items represented a graded severity of suicidality, each answered with a 'yes' or 'no' response:

1. In the last 12 months, have you ever felt that your life was not worth living?
2. In the last 12 months, have you ever felt so low that you thought about committing suicide?
3. In the last 12 months, have you made a suicide plan?
4. In the last 12 months, have you attempted suicide?

A single variable, 'Any 12-month suicidality', was derived from the latter three questions (i.e., active suicidal ideation, plans and attempts) for a dichotomous outcome 'Yes' (1) or 'No' (0).

2.3.2.7 Functioning

Functioning was assessed using the Sheehan Disability Scale (Sheehan, 1983), which assesses functional impairment on three dimensions: work, family and social life. One item is asked per dimension "How much have the symptoms disrupted your: work?; social life/leisure activities?; and family life/home responsibilities?" Answers on each dimension range from "Not at all" (0) to "Extremely" (10). A total disability score of 0 to 30 can be determined by adding scores on the individual items together. Although there is no recommended cut-off score, scores greater than five on any of the dimensions are considered to represent significant functional impairment (Leon, Olfson, Portera, Farber, & Sheehan, 1997).

The scale has been shown to reliably assess reduced mental health-related functional impairment in a primary care setting (Leon et al., 1997), clinical trials (Sheehan & Sheehan, 2008), and across a range of mental disorders (Leon et al., 1997; Sheehan & Sheehan, 2008). Responses on each functioning dimension were strongly correlated with each other ($r > .80$) and correlated with PTSD, depressive and anxiety symptoms ($r > .50$).

2.3.3 Pathways to mental health care measures

Several items assessed pathways to mental health care, including attitudes to help-seeking and self-report mental health service use.

2.3.3.1 Subjective mental health concern

One item assessed subjective mental health concern, which was used as a proxy for perceived need for care. Participants were asked, "Have you ever been concerned about your mental health (e.g., stress, anxiety, depression, anger, relationship problems)?" with a dichotomous 'Yes' (1), 'No' (0) response.

2.3.3.2 *Help-seeking behaviour*

Participants were asked if they had ever sought/received help for their own mental health from a list of service providers. The list included General Practitioner(GP)/Medical Officer, Psychologist, Psychiatrist, other mental health professional (including a social worker, occupational therapist, mental health nurse), inpatient treatment (hospital admission) and hospital-based PTSD program as well as residential alcohol and other drug programs.

For each health professional, participants indicated whether they had received services in the last 12 months or more than 12 months ago, as well as services received (i.e., referral, medication, counselling, cognitive behavioural therapy or other evidence-based, trauma-focused therapy). Responses from the above questions were combined to create two dichotomous variables: Lifetime mental health service use (Ever/Never) and 12-month mental health service use (Yes/No). Use of residential alcohol and other drug programs was considered for removal as a lack of regulation of these programs means that some may not include a mental health professional on staff. However, upon examining the data, the overlap with other professional services was high, and the numbers using only a residential program were negligible, so the data were retained. The variable did exclude use of other providers (such as counsellor, complementary/alternative therapist, life coach).

2.3.3.3 Help-seeking attitudes and beliefs

The items used to measure help-seeking attitudes and beliefs were taken from various scales developed by Britt et al. (2008), Hoge et al. (2004) and Vogel et al. (2006), with additional items added by experts in military mental health and trauma. Items were chosen to reflect issues in the literature shown to impact intentions to seek care, including anticipated, public and self-stigma, career concerns, perceived control, and practical barriers to care. The characteristics of these questions are examined further in Chapter 3 of this thesis. The final scale consisted of 18 items designed to measure concerns a person may have when considering seeking mental health services. Participants were presented with "a list of concerns that a person **might** have when they **consider** seeking help for problems with mental health". They were then asked to "indicate how much each item might affect YOUR decision to seek help" with answers on a 5-point Likert scale from 'Strongly Disagree' (1) to 'Strongly Agree' (5).

An additional set of seven questions were asked of those who had indicated a mental health concern, but had "never received assistance", to examine unmet need. Participants were presented with a list of seven barriers and asked to indicate how much they disagreed with each one on a 5-point scale ranging from 'strongly disagree' to 'strongly agree'. Examples of statements include 'I can still function effectively' and 'I didn't know where to get help'.

2.3.3.4 Online service use

Online service use was taken from 32 questions examining use of online self-help, collapsed into dichotomous outcomes. Participants were asked about their use of a list of websites,

smartphone apps, telephone helplines and internet interventions "in the last 12 months to inform or assess their mental health". Dichotomous (Yes/No) responses were obtained across a range of websites (e.g., ADF website, DVA website, Beyond Blue website, other health website), telephone helplines (e.g., ADF All-hours Support, VVCS Vetline, Lifeline, other telephone helpline), internet treatment (e.g., MoodGYM internet treatment, other internet treatment), smart phone apps (e.g., PTSD Coach Australia, On Track, other smart phone app) and one item assessing social media. Relevant items were grouped and collapsed to produce five dichotomous variables indicating 12-month use (1) or no use (0) of: Any information website, Any telephone helpline, Social media, Any internet treatment, and Any smart phone app. The survey did not ask about the extent of use (i.e., one contact vs multiple contacts) nor the way in which online resources were used (e.g., for information, engage with others, monitor symptoms etc).

2.3.4 Additional measures

The Transition and Wellbeing Research Programme was an ambitious research endeavour and included comprehensive set of additional measures to address the broad ranging aims of the programme. Measures used in the current research are detailed below, followed by a list of other measures included in the survey but not used in this study.

2.3.4.1 Resilience

The Ohio State University Brief Resilience Scale (BRS: Smith et al., 2008) was used to measure resilience. The scale has six items with responses on a 5-point Likert scale, from 'Strongly Disagree' (1) to 'Strongly Agree' (5). Three items are reverse scored, with the total mean score ranging from 1 to 5, with higher scores representing greater resilience. Scores can also be categorised to indicate low resilience (1.00-2.99), normal resilience (3.00-4.30) and high resilience (4.31-5.00) (Smith, Epstein, Oritz, Christopher, & Tooley, 2013). Although developed as an outcome measure (Smith et al., 2008), the scale can be viewed to represent personal agency (Windle, Bennett, & Noyes, 2011). The scale reflects self-efficacy in dealing with life stressors, with items such as "I usually come through difficult times with little trouble", "I tend to bounce back quickly after hard times" and "I have a hard time making it through stressful events".

The scale has shown good internal consistency as well as convergent and discriminant predictive validity (Smith et al., 2008; Windle et al., 2011). In the current study, the scale also

had good internal consistency, α = .90. The scale also performs well against other, longer resilience scales (Windle et al., 2011), and was chosen in this study both for the scale characteristics and brevity. The scale was developed for use in adult populations and has been used in research with military and other similar populations (Carleton et al., 2018; Cooper & Bates, 2019).

2.3.4.2 Social support

The Schuster Social Support Scale (Schuster, Kessler, & Aseltine, 1990) was used to assess level of positive and negative social support interactions with family and friends, with the partner subscale omitted for this research. The subscales for family support and friend support each have 5 items, with each item rated on a 4-point scale from 'never' (0) to 'often' (3). Affective support was measured by two questions about how often family (or friends) made them feel cared for and how often family (or friends) expressed interest in how they were doing. Higher scores were indicative of more supportive interactions. Three questions assessed negative interactions: how often family (or friends) made too many demands on them, how often they criticised them and how often they created tensions or arguments with them. Higher scores of these scales indicate more negative interactions. Scores are interpreted for each category: friends and family.

The scale has been used previously with ADF samples, most notably in the Longitudinal ADF Study Evaluating Resilience (Crane, Lewis, Forbes, & Elliott, 2012). The scale has shown acceptable internal consistency for supportive interactions and negative interactions with family and friends in community-based samples (Liu, Fairweather-Schmidt, Burns, & Roberts, 2016). In the current sample, there was good internal consistency for supportive interactions with friends (α = .90) and family (α = .86), as well as negative interactions with friends (α = .79) and family (α = .80).

2.3.4.3 Dimensions of Anger Reactions (DAR-5)

The Dimensions of Anger Reactions (DAR-5) scale (Forbes et al., 2004) is a 5-point scale used to assess anger frequency, intensity and duration, antagonism towards others and social interference. Items are scored on a 5-point Likert scale and summed to produce a score from 5 to 25, with higher scores indicative of more problematic anger and a cut-off of 12 differentiating high and low scorers (Forbes et al., 2014b). The scale has shown good internal reliability, is unidimensional and was designed as a short screen for anger with particular relevance post-

trauma. The scale has been validated against the State Trait Anger Expression Inventory-2 (STAXI-2) and other psychological health measures (e.g., PCL-C) in Australian combat veterans (Forbes et al., 2014a; Forbes et al., 2004), and more recently with U.S. Afghanistan and Iraq veterans (Novaco, Swanson, Gonzalez, Gahm, & Reger, 2012) and community samples with and without a history of trauma exposure (Forbes et al., 2014b).

In the current sample, the DAR-5 showed good internal reliability (α = .92) and consistently strong correlations (r_s>.60) with psychological health scales (PCL-C, PHQ-9 and GAD-7), and functional impairment (r_s>.49) and resilience (r_s>-.41).

2.3.5 Other measures not used in this thesis

Several additional questions and scales were included in the 2015 data collection but were outside the scope of this thesis. These questions covered a range of topics, including:

- Lifetime and Deployment-related Trauma Exposure
- Recent stressful life events
- ADF Service History
- Questions relating to transition from the ADF (only asked of Transitioned ADF)
- Deployment History
- Risk taking behaviours (e.g., gambling, risk driving)
- Physical Health
- Family relationships
- Homelessness
- Experiences with the law
- Perceived quality of life
- Technology use

Technology use questions were taken from the Young and Well National Survey (Burns et al., 2013) and covered internet usage and use of emerging technologies. Internet usage questions encompassed usage patterns, means of access, use for social support and barriers to talking

online about mental health. Emerging technology questions enquired about use of new and emerging technologies for health and wellbeing, other reasons for use and types of technologies used. A detailed description of technology use in the current sample was reported in Burns et al. (2019). Due to skips in the survey and reduced sample size due to survey attrition, the usability of this data to predict e-mental health usage was diminished. For example, many questions were only asked of those who used the internet for their mental health, and therefore the information could not be used to compare against non-users. Therefore, these questions were not analysed in this thesis.

2.4 Procedure

Recruitment for the study was undertaken primarily via email, with participants invited to complete an online self-report survey. Emailed invitation packages were distributed to participants in batches. Each email contained a unique study ID number and token password, as well as a secure link to an online invitation package containing the self-report survey and all associated study materials including information sheets and consent forms (see Appendix A). Where email addresses were not available, or upon request, hardcopy versions of the invitation package and surveys were posted to participants.

The study was advertised in print media, Australian Government websites, Adelaide University website, ex-service organisations, and targeted social media advertising, as well as via a Ministerial media release and public launch in 2014. Individuals who did not receive an invitation (for reasons such as incorrect contact details) could register their interest in participating on the University of Adelaide study website. Eligibility was confirmed against the Study Roll prior to researchers emailing the prospective participant a study pack. A multifaceted approach to following-up survey non-respondents was undertaken to maximise rates of participation, including reminder emails, SMS reminders, targeted telephone follow-up, and hard copy letters.

2.4.1 Ethics approval

Multiple organisations were involved in the research and to ensure the welfare and rights of participants, the study protocol was approved by five ethics bodies:

1. DVA Human Research Ethics Committee (HREC),
2. Australian Defence HREC (under mutual recognition of the DVA HREC approval),

3. University of Adelaide HREC,
4. AIHW Ethics Committee, and
5. Australian National University HREC (Expedited review).

Written consent to participate was obtained online prior to completing the survey. Current and former serving ADF members were advised that participation was voluntary and that Defence and DVA would be unable to identify participants. As such, participants were also advised that participation in the research would not affect their career or future entitlements.

The research programme was endorsed by the Chief of the Defence Force and Secretary of the Department of Veterans' Affairs.

2.5 Analysis

Prior to analyses, variables were examined for accuracy of data capture, missing values, and the assumptions of the statistical analyses to be employed, in accordance with guidelines suggested by Tabachnick and Fidell (2007) and Field (2013), and are described fully in each chapter.

The following is a brief overview of key analyses used in each analysis chapter, with detailed descriptions provided in each chapter:

Chapter 3: Help-seeking Beliefs. Exploratory factor analysis was used to identify independent latent help-seeking beliefs for subsequent analysis with the thesis. Using the factors extracted from this analysis, multiple regression analysis was used to examine the relationship between help-seeking beliefs and relevant psychosocial factors described in sections 2.3.1 and 2.3.2.

Chapter 4: Mental health service use. Binary logistic regression was employed to assess predisposing, need and enabling variables associated with any 12-month mental health service use by current and former ADF members. Binary logistic regression was also used to model predisposing, need and enabling factors associated with any 12-month use of a general practitioner/ medical officer and 12-month use of any mental health professional.

Chapter 5: E-mental health resource use. Descriptive statistics were used to characterise use of e-mental health resources, categorised into five separate modes of delivery: information websites, telephone helplines, social media, internet interventions and smartphone apps. Binary logistic regression analyses were used to examine the reach of e-mental health resources within the sample.

Chapter 6: Relationship between e-mental health resource use and seeking professional help. Binary logistic regressions were performed to test associations between use of each mode of e-mental health with any professional 12-month mental health service use, adjusting for sex, age, transition status, Service, and rank. These were performed for both the entire sample, and a sub-sample who reported symptoms indicative of probable disorder (PTSD, depression, or anxiety) at the time of the survey.

A multinomial logistic regression was performed to model the relationship between the predictors and four categories of help-seeking (none, online only, professional only, or both).

Chapter 7: Self-reliance beliefs and self-management behaviours. The role of self-reliance and engagement in self-management behaviours in supporting mental health were quantified in a subsample of ADF members who indicated they had been concerned about their mental health in their lifetime but never received assistance. Chi-square and independent samples t-tests were used to examine bivariate relationships between both categorical and continuous variables, and self-reliance, perceived functioning and fear of help-seeking. A binary logistic regression was performed to assess the association between psychological need (symptoms and disability), predisposing help-seeking beliefs and self-reliance.

2.5.1 Missing data

Missing data was analysed using SPSS Missing Value Analysis. Note that the variables included in each analysis are different, so there are slight variations in the sample sizes used for the analyses across the empirical chapters, based on different levels of missingness across the included variables. Across all variables analysed in this thesis, 2.0% of values were missing and 26.9% of cases had missing values. Four variables were missing more than 5% data, with the highest missing from Resilience (6.7%), then PCL-C (5.9%), Friend Negative Support (5.4%), Friend Positive Support (5.3%). Total reported trauma was considered for inclusion in

the thesis analyses but due to 13.0% of missing data on this variable, it was removed as it was not deemed central to the research question. This left a total of 26.1% of cases missing data on any variable, leaving a final sample of 8,566. Little's MCAR test revealed that data were not missing completely at random, χ^2 (2,635) = 3,622.39, $p < .001$, indicating that there "might be systematic differences between the missing and observed values" (Bhaskaran & Smeeth, 2014, p. 1336).

Further examination indicated the pattern of missing values were non-monotone and data were assumed to be 'missing at random'; that is, the missingness depended on the observed value but not on missing components of the observed values (which would indicate data was 'missing not at random' and would therefore be non-ignorable). Multiple imputation was performed using the Monte Carlo Markov chain technique with fully conditional specification. All variables used in models in Chapters 4, 5 and 6 were included in the imputation model, including outcome variables (White, Royston, & Wood, 2011). The number of imputations (30) was greater than the percentage of incomplete cases (26.1%), as recommended by White et al. (2011).

2.5.2 Power Analyses

The data used in this thesis were collected to inform a range of issues and meet the aims of the larger research programme (Van Hooff et al., 2018). As such, planned power analyses were not conducted to test whether there was sufficient power to answer the specific research questions posed in this thesis. However, post hoc power analyses were conducted and based on proposed binomial logistic regression analyses proposed for chapters 4 to 7, using the G*Power software. The study was well powered (power > .99) to examine main effects among the total sample of complete cases (N = 8,566), and among the smaller sample of those who had a mental health concern but did not receive assistance (Sample 2: N = 1,539; power > .80).

The study was not sufficiently powered to detect associations for rare events in unequal population sub-groups, particularly for internet treatment use which had a prevalence of only 2.0%. For example, the power to detect an effect of perceived need (OR = 2.9, R^2 = 0.078) was estimated to be greater than 0.99, where 0.8% of those without a mental health concern had used an internet treatment. However, to detect differences in the use of internet treatments with smaller subgroups of the sample, such as among females (2.8% of females used an internet treatment), the estimated power was 0.63. This suggested that the sample was sufficient to undertake analyses with relatively common outcomes but was underpowered to examine rare events among unequal sub-populations. Future research should consider a more defined

sampling frame or a different design to better address research questions about help seeking within smaller subgroups of the military.

2.6 Participants

Participants consisted of 11,587 full-time, serving ADF members (Permanent ADF) and members recently transitioned from full-time ADF service (Transitioned ADF), who participated in the Transition and Wellbeing Research Programme in 2015. Demographic details of the study sample used in this thesis are provided in Table 2-3.

The age of participants ranged from 18 to 74 years with a mean age of 41.7 (*SD* = 10.0). The sample was predominantly male (80.9%), in a current significant intimate relationship (83.7%), and Army personnel (46.3%). The representativeness of the final sample is investigated in section 2.2.4 of this chapter.

Table 2-3 Demographics of study sample

		N	%
Sex	Male	9345	80.9
	Female	2213	19.1
Relationship Status	Single	1872	16.3
	In a relationship	9582	83.7
ADF Transition Status	Permanent ADF	7779	67.1
	Transitioned ADF	3808	32.9
Service	Royal Australian Navy	2598	22.5
	Australian Army	5348	46.3
	Royal Australian Air Force	3613	31.3
Rank	Officer	4441	38.4
	Senior Non-Commissioned Officer (NCO)	3938	34.1
	Junior NCO/Other Rank	3186	27.5
		Mean	**SD**
Age		41.7	10.0

Note: Proportions reported are valid percent only. Missing data are not included in the table.

As is detailed in Table 2-4, a considerable number of participants had been deployed on operational service during their military careers.

Table 2-4 Types of operational deployments reported by participants

Deployment type	No. of participants deployed	
	n	%
MEAO deployment	6343	54.8
Other warlike	3160	27.3
Non-warlike	4154	35.9
Humanitarian	977	8.4
Defence Assistance to Civil Community*	1533	13.2
Border protection	2854	24.6

Abbreviations: MEAO, Middle East Area of Operations
* Refers to emergency operations in the Australian community, such as the support provided during and following the 2019-2020 Australian bushfires.

The mental health status of participants is described in Table 2-5 with 12-month service use among those in each symptom severity range reported. Overall, 21.4% of the sample exhibited symptoms of probable PTSD, depression or generalised anxiety, based on the cut-offs described in this chapter. One quarter of the sample (24.8%) reported having seen a General Practitioner, Psychiatrist, Psychologist or other mental health professional in the previous 12 months. The lowest rate of 12-month mental health service use was seen for those with probable depression (54.1%) compared to PTSD (71.5%) and generalised anxiety (69.6%).

The rates of posttraumatic stress and anxiety symptoms are consistent with expected rates in a sample of military personnel in Australia (Benassi & Steele, 2011) . However, the rate of depression symptoms indicative of disorder (PHQ-9≥10 = 19.8%) appears higher than would be expected. There was also a high rate of comorbidity in the sample, with 57.1% of those with a probable disorder reporting symptoms indicative of two or more disorders.

2.7 Discussion

The current chapter detailed methods from the Transition and Wellbeing Research Programme, which are relevant to the data extracted and analysed in this thesis. The programme was designed to examine the physical, mental and social wellbeing of current and recently transitioned ADF members, and their families, including the development of prevalence estimates within the Transitioned ADF. The current thesis uses data from the cross-sectional survey design component of the programme to examine mental health help-seeking beliefs and behaviour in a sample of current and former ADF members. In the main, multiple logistic

regression analyses were used to model mental health service and e-mental health resource use in this thesis.

Table 2-5 Mental health status of study sample and proportion of 12-month mental health service use

	N	% sample	% 12mth MHSU
Posttraumatic Stress risk (PCL-C)			
Low (17-29)	8186	75.1%	16.1%
Mod (30-39)	1238	11.4%	36.2%
High (40-49)	623	5.7%	52.2%
Very High (50-85)	859	7.9%	71.9%
Depression severity (PHQ-9)			
Minimal (1-4)	6316	56.1%	12.5%
Mild (5-9)	2710	24.1%	28.2%
Moderate (10-14)	1064	9.5%	44.4%
Moderately severe (15-19)	647	5.7%	55.9%
Severe (20-27)	517	4.6%	71.8%
Generalised Anxiety risk (GAD-7)			
Minimal (1-4)	7699	67.7%	14.4%
Mild (5-9)	2234	19.6%	35.7%
Moderate (10-14)	794	7.0%	57.4%
Severe (15-21)	644	5.7%	69.5%
Comorbidity (PCL-C ≥50, PHQ-9 ≥10 or GAD-7 ≥10)			
No disorder	8222	78.6%	16.5%
1 disorder	961	9.2%	40.9%
2 disorders	618	5.9%	55.4%
3 disorders	662	6.3%	72.8%

Abbreviation: 12mth MHSU, 12-month mental health service use; PCL-C, Posttraumatic Checklist – Civilian; PHQ-9, nine item Patient Health Questionnaire; GAD-7, seven item Generalised Anxiety Disorder scale

2.7.1 Strengths and limitations of the dataset

This thesis focuses on any care touchpoint in a 12-month period and does not directly examine dynamic care-seeking processes or level of engagement in care. A key component of the thesis design is inclusion of participants with hidden unmet need, that is, those with a possible disorder but who do not recognise a mental health concern or who have chosen not to seek care. The same barriers to help-seeking are also a barrier to engagement in research on this topic and therefore it is challenging to identify and recruit this group (Glasgow, Vogt, & Boles, 1999).

It is recognised that help-seeking is not a linear process, from recognition of a problem to either remedial action or use of the health care system, and that help-seeking can incorporate several steps which may be enacted in various orders and engaged at different levels of need (Rickwood

& Thomas, 2012). Qualitative and longitudinal data would provide greater context to results presented in this thesis. Consideration was given to following up survey participants for qualitative interviews, but given the author's role as a Defence employee, this was not ethically viable.

Each analysis chapter (Chapters 3 – 7) will outline limitations specific to the analyses reported within and the Discussion (Chapter 8) will include an outline of the major limitations to this thesis in the context of the findings and their implications.

Response rates and representativeness was an issue in the dataset used in this thesis. The response rate for Permanent ADF was consistent with previous research with this population and may reflect absence from the workplace for several reasons, including deployment related activities, training exercises, employee leave arrangements and courses (Steele et al., 2020). The response rate for Transitioned ADF was lower than anticipated, despite considerable advertising and follow-up of this group during study recruitment. It is likely that responses were hampered by insufficient contact details but, arguably, the response rate is consistent with previous population research with ex-serving Australian Veterans. The Vietnam Veterans Family Study (Commonwealth of Australia, 2014), which used a similar recruitment strategy, calculated response rates from those who registered for the study rather than the total eligible population. If a similar criterion was adopted for the current study (i.e., the proportion completing the survey taken from the total number of registered participants), then the response rate would be 88.0% for Transitioned ADF and 91.7% of Permanent ADF. Therefore, the Transitioned and Permanent ADF response rates were low but consistent with previous research in these populations and represent reasonable response rates.

Although both groups were adequately represented at the broadest population level, differential non-response affected sub-sample representativeness. Males, younger personnel and junior ranks were underrepresented in the sample. These groups are likely to have slightly different internet usage behaviours compared to their counterparts. For example, previous research has shown that males are less likely to access e-mental health services compared to females (Meurk et al., 2016) whereas younger individuals may be more likely to use digital technologies compared to older military personnel (Gould et al., 2019). Although sampling methods in the Permanent ADF group may have exacerbated the issue for junior ranked personnel, similar issues existed for Transitioned ADF for whom a comprehensive approach was taken. To

minimise the impact on results, a model-based approach was chosen over weighting, considering intended analyses and limitations of weighting.

Secondly, the need for brevity of individual scales across such a large survey limited both the number and length of scales used. For example, there are validated help-seeking stigma scales (Skopp et al., 2012; Vogel et al., 2006) which would have been appropriate to use in examining help-seeking beliefs more broadly but could not be included due to competing priorities within the broader research programme. Conversely, the size of the survey instrument meant there were a wide range of measures, allowing for exploration of concepts previously not examined within the ADF community.

There are also many benefits of using existing datasets. In this case, the data were chosen for the following reasons:

1. The sample size was large enough to enable the majority of proposed analyses with adequate power;
2. The presence of both transitioned and current serving personnel in the sample avoided potential bias from a 'healthy worker effect';
3. The breadth of information available within the survey data, including mental health, help-seeking and e-mental health, allowed for comprehensive modelling across multiple constructs;
4. Any proposed replication would not be feasible financially or practically (particularly with regard to Departmental approvals);
5. The current author was an investigator on the original research programme and involved closely in the design and delivery of the research; and,
6. The ethical imperative to ensure that data collected under that previous programme is analysed and reported for the purposes for which it was collected.

2.7.2 Conclusion

In conclusion, the methods outlined in the current chapter provide a sufficient base upon which to meet the key aims of this thesis: to examine mental health help-seeking beliefs and behaviours in the ADF community, and explore the role of e-mental health in supporting access to mental health care and self-managed mental health in the ADF. The next chapter seeks to address limitations in the data regarding help-seeking stigma measurement, to identify latent constructs for later use in this thesis.

Chapter 3 Mental health help-seeking beliefs and attitudes in the ADF

No matter our rank, position, or where we are, we all have a role to play in making it easier to talk about mental health…most importantly, let's talk about the shift in culture we are making; a shift that needs to be maintained to reduce stigma and other barriers to care.

VADM Ray Griggs - Vice Chief of the Defence Force (2018)

3.1 Introduction

3.1.1 Chapter overview

The reduction of barriers to mental health care in the ADF are key to military mental health initiatives. The Defence Mental Health Strategy 2018-2023 (Department of Defence, 2017) recognises the role of culture in supporting access to care by focusing on behavioural health leadership (Adler et al., 2014) and striving for shared responsibility across all levels and branches of the organisation. Reducing barriers to care is also a key focus of the prevention component of the Australian 10-year Veteran Mental Health Strategy (Department of Veterans' Affairs, 2013). Considerable resources are expended by both Defence and DVA on health promotion activities to increase mental health literacy, peer and leader education and 'normalising' mental health conversations.

Prevalent throughout these documents is the assertion that stigma is a major barrier to mental health care for current and former ADF members. The assertion is backed by anecdotal evidence, including media reporting, and statements from ADF members themselves. It is clear that concerns about the perceived impact of seeking help for mental health conditions on career, deployability and the perceptions of others are prevalent (McFarlane et al., 2011). However, evidence is beginning to emerge which questions the impact of stigma on help-seeking behaviour and the relative economic value of programs to reduce stigma in the military (Acosta et al., 2014).

This chapter provides an overview of the way in which help-seeking beliefs, and in particular stigma, are conceptualised in military research and some of the gaps as compared to the broader research literature. Data from Sample 1 will be used to describe help-seeking beliefs and attitudes in the ADF. A range of standard and modified items related to stigma and other

potential barriers to accessing services will be analysed to provide insights into the structure of help-seeking beliefs in this sample and to identify potential latent constructs for use in subsequent analyses in this thesis.

3.1.2 Issues in defining mental health stigma

A common definition of stigma is an "attribute that is deeply discrediting" which reduces an individual "from a whole and usual person to a tainted, discounted one" (Goffman, 1963, p. 3). Following on from Goffman's definition, Link and Phelan (2001) described the processes by which stigma influences, and is influenced by, the social context. As such, some researchers prefer to define stigma as a dynamic process that is not static, but changeable according to relationships and context (Acosta et al., 2014).

In describing the impact of stigma on mental health help-seeking, Corrigan, Druss, and Perlick (2014) note that mental illness stigma is related to two broad sets of barriers:

1. person-level beliefs and attitudes that constrain healthcare decisions, including mental health literacy, negative attitudes about treatment effectiveness and relevance, and reduced social supports; and,

2. provider or system level barriers, such as financial constraints and workforce restrictions.

The potential impact of organisational policy and culture on individual beliefs and behaviours in a workplace environment (Britt et al., 2012; Cosgrove, 2017) have focused Defence and Veteran agencies on the issue of mental health stigma as a barrier to help-seeking alongside practical or system-based barriers to care. It is recognised that stigma is particularly salient in the military environment, where employment and career opportunities (including deployment) are closely monitored and entwined with health outcomes (Jones et al., 2015; Sharp et al., 2015). However, the focus on stigma as an organisational culture issue has led to differences in definitions of stigma between military and civilian research.

Several types of stigmatising beliefs about mental illness have been defined and studied in general community research, ranging from *public*, *social* or *personal stigma* (stereotypical attitudes held by members of a social group towards those with mental illness), *self or internalised stigma*, (where others' actual or perceived prejudicial beliefs are internalised), and

perceived stigma (beliefs about the attitudes held by other people) (Busby Grant, Bruce, & Batterham, 2016; Griffiths, Batterham, Barney, & Parsons, 2011; Rusch, Angermeyer, & Corrigan, 2005).

In military research on mental health stigma, there has been a considerable focus on *anticipated stigma*, the "extent to which people believe they personally will be viewed or treated in a stigmatising way if their mental health problem or related help-seeking becomes known" (Sharp et al., 2015, p. 145). *Anticipated stigma* might be conceptualised as a form of *perceived stigma*. However, the *anticipated stigma* construct seems to reflect both the presumption of attitudes held by other people *and* anticipation that these attitudes will result in discriminatory behaviour.

The lack of a clear and agreed upon definition can impact how stigma is measured and treated in mental health research (Fox, Earnshaw, Taverna, & Vogt, 2018a) and influence the development of policies and interventions to address the issue (Acosta et al., 2014). However, due to the complexity of the construct and potential influence of contextual factors in diverse settings, it may be that definitions of stigma need to also remain diverse but be adequately defined in each case (Link & Phelan, 2001). In this thesis it was deemed important to re-examine the measurement of stigma and other help-seeking beliefs in the study population to consider the utility of broader or separate definitions of stigma for subsequent analysis within this thesis.

3.1.3 Measurement of mental illness stigma in military and civilian samples

Several scales have been developed to measure stigma in general community samples, including scales specifically targeting type of stigma and type of disorder. For example, the depression stigma scale (DSS) and the generalised anxiety stigma scale (GASS) include subscales measuring personal and perceived stigma (Barney, Griffiths, Christensen, & Jorm, 2010; Griffiths et al., 2011). Scales have also been tested on those with serious mental illness and developed according to theoretical models of stigma, such as the *self-stigma* or Mental Illness Scale (Corrigan et al., 2012), which reflects four stages of development from public stigma to *self-stigma*; stereotype awareness, stereotype agreement, self-concurrence and self-esteem decrement (Gaebel, Rössler, & Sartorius, 2017). Other scales used include measurement of social distance, attitudes about mental illness and the mentally ill (Link, Yang, Phelan, & Collins, 2004).

The measurement of stigma in military populations has differed from that in general populations and reflects the focus on *anticipated stigma* about help-seeking for mental illness. In a systematic review of stigma and help-seeking in military populations, Sharp et al. (2015) report that the most commonly used scale is the Perceived Stigma and Barriers to Care for Psychological Problems – Stigma Subscale (PSBCPP-SS) (Britt, 2000; Britt et al., 2008), with items focusing on perceptions of what would happen to military service members when seeking help for a mental health condition, including impact on career and the anticipated perceptions and behaviours of command and co-workers. Note that while this scale uses the term 'Perceived stigma', the items differ from traditional definitions of *perceived stigma* with a focus specifically on help-seeking stigma and the anticipated actions or beliefs of others about self, rather than a global perception of what others think about mental illness. For example, *perceived stigma* items in the GASS are about very general beliefs (e.g., "Most people think anxiety disorder: is not a real illness; is a sign of personal weakness") compared to the PSBCPP-SS items which are more specific in nature (e.g., "If I sought help for a mental health problem: my unit leadership would treat me differently; I would be seen as weak").

3.1.4 Measurement of other help-seeking beliefs in military populations

Contemporary research on military populations has used other *anticipated stigma* scales (e.g., Perceptions of Stigmatization by Others for Seeking Help; Vogel, Wade, & Ascheman, 2009) and tested additional constructs with demonstrated relationship with help-seeking intentions or behaviour, such as *self-stigma* (Blais & Renshaw, 2013), self-reliance and both positive and negative attitudes towards mental health care (Adler et al., 2015; Kim et al., 2011).

Kim et al. (2011), in expanding the PSBCPP-SS, identified three sub-scales which they titled 'Stigma', 'Negative attitudes toward treatment' (e.g., I do not trust mental health professionals; Psychological problems tend to work themselves out without help; Getting mental health treatment should be a last resort) and 'Organisational barriers'. Items loaded strongly on each factor (>.50) and demonstrated good internal consistency ($\alpha \geq .80$). Skopp et al. (2012) subsequently developed the Military Stigma Scale (MSS) which moved away from *anticipated stigma* and delineated *public stigma* and *self-stigma* in a military sample of active serving U.S. Army personnel. These two types of stigma were significantly correlated with each other, were internally consistent ($\alpha \geq .80$), and found to be part of a higher order stigma factor.

Civilian research has also measured self-reliance in relation to help-seeking behaviour (Gulliver et al., 2010; Han, Batterham, Calear, & Ma, 2018; Ortega & Alegría, 2002). In a longitudinal sample of U.S. military personnel, Adler et al. (2015) combined both Kim et al. (2011) and Hoge et al. (2004) items, with additional items to measure a preference for self-management (e.g., I would prefer to manage problems on my own; I know how to help myself; Strong people can resolve psychological problems by themselves). The authors found four factors: professional concerns, self-management, practical barriers and positive attitudes. Again, all factors showed strong internal consistency ($\alpha \geq .90$) and items loaded strongly (> .50) on each factor, with minimal cross-loading. In both the MSS and Adler et al. (2015) research, items related to low trust in services were removed due to perceived inconsistency with the construct or insufficient loading (< .40). However, overlap of items between 'self-management' (Adler et al., 2015) and 'negative attitudes to treatment' (i.e., 'Getting mental health should be a last resort'; Kim et al., 2011) suggests further work is required to distinguish between stigma, attitudes to services and other constructs such as self-reliance.

3.1.5 Correlates of help-seeking beliefs

Theoretical developments in stigma research suggest that public stigma which is internalised (*self-stigma*) has detrimental effects on self-esteem, self-efficacy (Corrigan, Watson, & Barr, 2006) and quality of life (Holubova et al., 2016). Authors of a review of stigma research in application to stigma reduction programmes in the U.S. military (Acosta et al., 2014) point out several outcomes which have been empirically linked to mental illness stigma, such as coping mechanisms (e.g., hide, withdraw), interpersonal outcomes (e.g., self-esteem), attitudes toward treatment seeking and intentions to seek care. However, they also noted several outcomes which have been theoretically but not empirically linked to stigma, such as wellbeing, quality of life, treatment initiation and treatment success.

There is also limited information on the differential expression of stigma and attitudes to care in military population sub-groups, such as military rank, age and gender (Acosta et al., 2014), and no known information in the ADF context. Stigmatising attitudes have been shown to differ between type and intensity of disorder (Holubova et al., 2016; Jones et al., 2015), culture and across time (Angermeyer & Dietrich, 2006) but findings with regards to other demographics such as gender and age are inconsistent (Angermeyer & Dietrich, 2006; Skopp et al., 2012; Vogel, Wade, & Hackler, 2007). In developing the MSS (Skopp et al., 2012), the authors found differential correlations between sex and racial/ethnic group depending on the type of stigma

assessed, with men scoring higher than females on *self-stigma* (but not *public stigma*) as did White/Caucasian compared to Black/African Americans.

If stigma is indeed a dynamic process and changeable according to relationships and context, as suggested by Link and Phelan (2001), it is important to understand the varied elements that impact the expression of beliefs about help-seeking for mental illness in the Australian military. This includes within military demographic sub-groups such as Service, rank and gender, as well as the relationship between help-seeking beliefs and current symptoms of mental illness. Currently there is limited research in the Australian military on this issue, where there is strong a focus on *anticipated stigma* in both research and policy context and no known information about the correlates of other forms of stigma and help-seeking beliefs. The existing focus on *anticipated stigma* limits our understanding of barriers to care, and further examination of help-seeking concerns other than *anticipated stigma* is warranted.

3.2 Research questions

The first aim of this chapter was to identify latent constructs underlying concerns about seeking help for mental health problems in an Australian military population-based cohort for use in subsequent analyses in this thesis. The second aim was to examine factors associated with concerns about seeking help for a mental illness in the ADF, with a focus on transition from ADF service. Mental health services differ for those in full-time ADF service and those who have transitioned, with service delivery and mental health policy managed by separate Government agencies and, in the case of Transitioned ADF, a combination of public and private service providers. Therefore, practical barriers to mental health care are likely to be different between current and reserve/ex-serving members, but beliefs which are consistent with military culture may extend across both groups.

The research question to be addressed in this chapter is:

> RQ1. What attitudes and beliefs do current and former ADF members hold about seeking help for their own mental health, and what psychosocial factors are associated with these beliefs?

The association between help-seeking beliefs and help-seeking behaviour will be addressed in the next chapter, informed by results from the current chapter.

It was hypothesised that more than one construct would be extracted from a list of items used to measure help-seeking attitudes and beliefs in the Transition and Wellbeing Research Programme (Van Hooff et al., 2018), but specific constructs were not predicted.

3.3 Method

3.3.1 Participants

The data were drawn from a large, cross-sectional study investigating the mental and physical health of current and recently transitioned Australian Defence Force members in 2015. A total of 11,587 participants (Sample 1), comprising Permanent ADF members (67.1%) and Transitioned ADF members (32.9%), responded to the survey in 2015 and completed survey sections relevant to this study. The Transitioned ADF were sampled from all personnel who had transitioned from full-time, permanent service between January 2010 and December 2014. The sample had an age range of 18 to 74 (M = 41.7, SD = 10.2), was predominantly Army (46.3%) and male (80.9%). Despite this, females were overrepresented in the responding sample compared to the actual military population at the time the sample was extracted, as were Royal Australian Air Force personnel. Personnel in the lower ranks were underrepresented, as were younger ADF members between the ages of 18 to 37.

3.3.2 Measures

3.3.2.1 *Help-seeking attitudes and beliefs*

The scale developed for the Transition and Wellbeing Research Programme consisted of 18 items designed to measure concerns a person may have when considering seeking mental health services. The items were modified from various scales including that developed by Britt et al. 2008 (Britt et al., 2008; Hoge et al., 2004; Vogel et al., 2006), with additional items added by experts in military mental health and trauma. Items covered a range of help-seeking beliefs and attitudes such as anticipated career concerns, opinions of others, opinions of self and people with mental illness more broadly, attitudes to care and practical barriers to care. In particular, several items reflected core facets of *self-stigma* such as social inadequacy, self-esteem/self-blame (Barney et al., 2010; Corrigan & Rao, 2012) and self-efficacy in terms of ability to control the outcomes of treatment seeking. Participants were asked to indicate how much each item might affect their decision to seek help with answers on a Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

A preference for self-management has been shown to be related to non-care seeking behaviour but skips in the questionnaire design meant that questions related to self-reliance were only asked of those who had a mental health concern but had not sought care. Consequently, this information could not be included in the current analysis.

3.3.2.2 *Psychosocial measures*

A number of validated measures were used to assess psychological health. The 17-item Posttraumatic Checklist – Civilian (PCL-C) (Weathers et al., 1993) was used to measure posttraumatic stress symptoms in the previous four weeks, with a total scale score ranging from 17 to 85, and a score of 50 or greater representing probable PTSD. The 9-item Patient Health Questionnaire (PHQ-9) was used to measure depressive severity in the previous two weeks. The scale is scored from 0 to 27, with a total score ≥10 indicative of major depression (Kroenke et al., 2001). Both scales have been validated in an Australian military context with good reliability (Forbes et al., 2001; Searle et al., 2015; Searle et al., 2017).

The Schuster Social Support Scale (Schuster et al., 1990) was used to assess level of positive and negative social support interactions with family and friends. The scale has 10 items with each item scored on a 4-point scale from ‘never’ to ‘often’. Affective support was measured by two questions about how often family (or friends) made them feel cared for and how often family (or friends) expressed interest in how they were doing. Three questions assessed negative interactions: how often family (or friends) made too many demands on them, how often they criticised them and how often they created tensions or arguments with them.

The Dimensions of Anger Reactions (DAR-5) scale (Forbes et al., 2014a) is a 5-item scale assessing anger frequency, intensity and duration, antagonism towards others and social interference. Total scores ranged from 5 to 25 with higher scores indicative of more problematic anger, with a cut-off of 12 differentiating high and low scorers. One item was used to assess quality of life, asking participants to rate their quality of life on a 5-point Likert scale ranging from “Very poor” (1) to Very good” (5).

The 5-item Ohio State Brief Resilience Scale (Smith et al., 2008) was used to measure resilience, with items such as “I tend to bounce back quickly after hard times” and “I have a hard time making it through stressful events” (Reverse coded), reflecting individual subjective perceptions of ability to deal effectively with life problems. The mean total score between 1 to

5 is used to assess resilience, with scores representing low resilience (1.00-2.99), normal resilience (3.00-4.30) and high resilience (4.31-5.00) (Smith et al., 2013).

3.3.3 Analyses

All analyses were conducted in IBM SPSS Statistics Version 25. All variables were examined for accuracy of data capture, missing values, and fit between their distributions and the assumptions of the statistical analyses to be employed.

An exploratory factor analysis (EFA), with maximum likelihood extraction, was conducted to find latent structures within the observed variables. The Kaiser-Meyer-Olkin (KMO) measure (Kaiser, 1974) verified the sampling adequacy for the analysis, KMO = 0.95. Bartlett's Test of Sphericity (Bartlett, 1954) was statistically significant (χ^2 (153) = 125,270, $p < .001$), supporting the factorability of the correlation matrix. The results of the EFA were assessed using visual inspection of the scree plot, eigenvalues >1 and communalities. Items were iteratively removed according to low communality (< .30), cross-loading and loadings greater than .40, until the most parsimonious model was derived.

The derived factors were then used as outcome variables in subsequent bivariate and multivariate analyses. In this thesis, analysis on Transitioned and Permanent sub-groups will largely be conducted separately so item level scores were compared across the sub-samples of Transitioned and Permanent ADF to examine where specific differences may exist as a result of differing mental health service systems. Separate standard multiple linear regressions were used to assess the ability of demographic characteristics (transition status, Service, rank, sex and age), along with psychosocial issues (PTSD symptoms, depressive symptoms, positive and negative social support, anger, quality of life and self-efficacy), to predict outcomes on the derived factors. Multivariate regression was chosen over bivariate correlations to examine associations between the measured sample characteristics and stigma mechanisms, due to the tendency for stigma to fluctuate with symptoms of mental ill health (Jones et al., 2015), and for disorder rates to vary between sub-population groups (Van Hooff et al., 2018).

3.3.3.1 Missing data

Missing data were never more than 3.1% of cases for individual help-seeking attitudes or beliefs variables. A total of 211 cases were missing data on all help-seeking attitudes/beliefs variables and these cases were omitted from further analysis in this chapter. This resulted in a total of 6.0% cases missing data on any of the variables, with never more than 1.3% of cases missing

data for individual variables. Missing value analysis indicated that these data were missing at random. The subsequent analysis was conducted with three different treatments of missing cases (listwise, pairwise and mean substitution) and comparable results were obtained for all three approaches. Results from the factor analysis using pairwise deletion are presented in this chapter.

3.3.3.2 Univariate and multivariate outliers

A small proportion (2.3%) of univariate outliers was detected for the variables of "I wouldn't know where to get help" (n = 201) and "People with a mental health problem could snap out of it" (n = 76). A total of 567 cases (5.0%) were found to be multivariate outliers. Multivariate outliers were detected through Mahalanobis distance, and influence through Cook's distance and DFFITS values. Upon further examination, there did not appear to be systematic responding patterns amongst outliers and these cases were assumed to be legitimate.

3.3.3.3 Normality

Kolmogorov-Smirnoff tests of normality for all help-seeking belief variables were significant. However, it is likely that tests of skewness and kurtosis in large samples will be significant even when normally distributed (Field, 2013), therefore the shape of the distributions were visually examined. Visual inspection of the histograms and normal Q-Q plots for each variable showed normal distribution with only slight positive skewness on the variables "I wouldn't know where to get help" and "People with a mental health problem could snap out of it". As the risk of the impact of skewness and kurtosis in larger samples is reduced (Tabachnick & Fidell, 2007), variables were not transformed.

Distributions of other continuous variables were assessed, and descriptive statistics are provided in Table 3-1. Skewness and kurtosis of mental health variables (Posttraumatic stress, depression, anxiety and alcohol use) indicated positive skewness, and a longer tail of distribution at higher levels of symptoms. Kolmogorov-Smirnoff tests of normality for all variables were significant. However, studies administering the PHQ-9 (Tomitaka et al., 2018) and PCL-C (McFarlane et al., 2011) in large population cohorts have found similar responding patterns to those seen in the current data and evidence of positive skew. This has also been seen with similar scales commonly used in population health research, such as the K10 (Slade, Grove, & Burgess, 2011; Sunderland, Mahoney, & Andrews, 2012), and therefore the

distributions are considered to represent characteristics of the scales, not discrete features of the current data.

3.4 Results

The initial exploratory factor analysis yielded three factors based on eigenvalues greater than 1, accounting for a total variance of the 18 items of 63.7%. However, the first factor explained the majority of variance at 48.1%, followed by considerable reduction in explained variance by the second and third factors (8.9% and 6.7% respectively). This suggested the possibility of only one factor, but an examination of Cattell's scree plot (Figure 3-1) supported a three factor solution.

Table 3-1 Descriptive statistics for continuous variables used in this thesis

	Mean	SD	Range	Skewness (SE .023)	Kurtosis (SE .047)
Posttraumatic stress	26.37	13.08	17-85	2.00	3.77
Depression	5.60	6.04	0-27	1.45	1.67
Anxiety	3.99	4.84	0-21	1.60	2.11
Alcohol use	5.62	4.96	0-38	2.09	5.90
Work functioning	2.17	2.85	0-10	1.39	0.96
Social life functioning	2.71	3.06	0-10	0.96	-0.28
Family life functioning	2.60	2.97	0-10	1.03	-0.08
Resilience	3.63	0.76	1-5	-0.49	0.24
Friend +ve	4.24	1.51	0-6	-0.65	0.06
Friend -ve	2.18	1.68	0-9	0.51	0.19
Family +ve	5.17	1.31	0-6	-1.71	2.54
Family -ve	3.64	2.18	0-9	0.30	-0.37

Two items, 'People with a mental health problem could snap out of it if they wanted to' and 'I wouldn't know where to get help' revealed low communality (< .30) suggesting the items did not fit well with the other items. These items were removed and following a subsequent factor analysis, an additional item ('If I sought mental health treatment from a professional, I might feel worse') was removed due to cross loading and ambiguity in the question wording.

Following iterative factor analyses, with items removed systematically at each step according to poor loadings, analyses were re-estimated with the reduced set of 15 items (see Table 3-2), indicating a three-factor solution based on eigenvalues greater than one. It was expected there

would be correlations among factors, so to aid in interpretation of the factors an oblique promax rotation was performed. The factor correlation matrix confirmed correlations between .63 and .68 between the three factors, indicating more than 10% variance among factors (Tabachnick & Fidell, 2007). Results of the rotated factor solution are provided in Table 3-2, along with eigenvalues, percent variance and Cronbach's α.

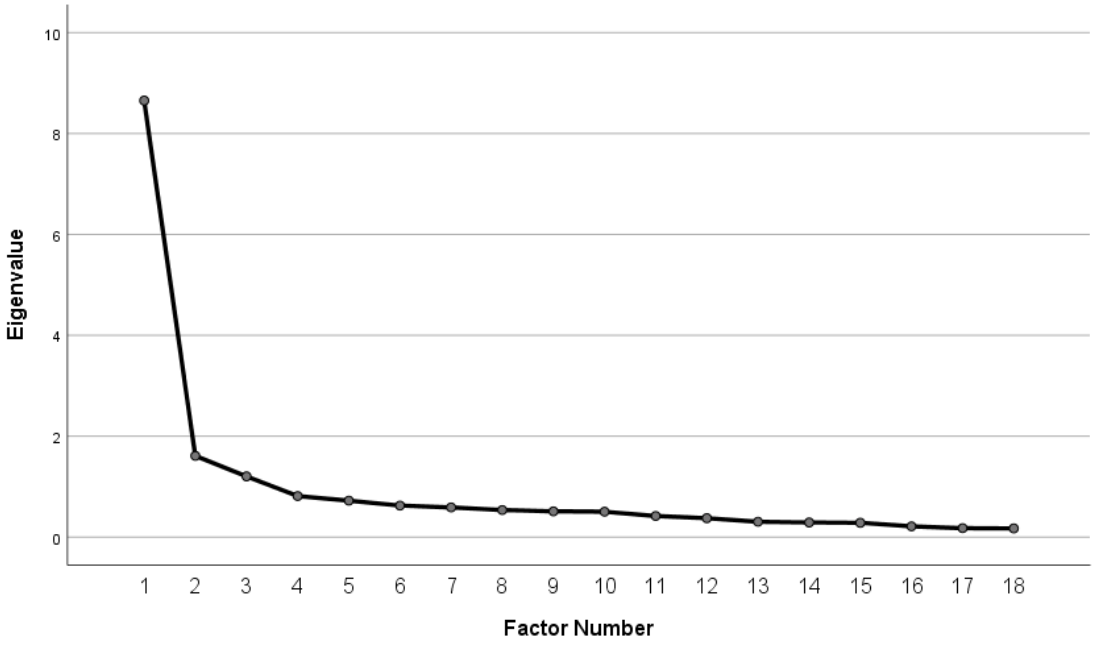

Figure 3-1 Cattell's scree plot for initial EFA of mental health help-seeking beliefs (18 items)

The first factor included most items from the PSBCPP-SS (Britt et al., 2008; Hoge et al., 2004) and reflected concerns about the anticipated perceived reactions of others and impact on career (consistent with the 'professional concerns' factor found by (Adler et al.), so was conceptualised as Anticipated Stigma (also termed *perceived* stigma). The second factor (Service Concerns) reflected concerns about the adequacy and availability of mental health services, reflecting both negative attitudes to services (Kim et al., 2011) and practical barriers (Adler et al., 2015). The third factor (Self-Stigma) reflected anticipated inward reflections on self, reflecting feelings of inadequacy and lowered self-esteem (i.e., "feel worse about myself") which is consistent with concepts of *self-stigma* (Corrigan et al., 2006). The sub-scales demonstrated good internal reliability within the total sample (see Table 3-2) and the sub-groups of Transitioned (Anticipated Stigma α = .90; Self-stigma α = .89; Service Concerns α = .83) and Permanent ADF (Anticipated Stigma α = .92; Self-stigma α = .88; Service Concerns α = .81).

Table 3-2 Derived factor solution for mental health help-seeking beliefs in the ADF

Item	Pattern Coefficients			Structure Coefficients			Commu-nalities
	1 Anticipated Stigma	2 Service Concerns	3 Self-Stigma	1	2	3	
People would treat me differently	**0.888**	-0.027	0.053	0.907	0.575	0.635	0.824
People might have less confidence in me	**0.880**	-0.077	0.113	0.907	0.560	0.655	0.830
I would be seen as weak	**0.774**	-0.055	0.205	0.877	0.576	0.690	0.787
It would harm my career or career prospects	**0.757**	0.152	-0.111	0.779	0.558	0.503	0.619
It would stop me from being deployed	**0.629**	0.083	-0.042	0.653	0.454	0.439	0.430
I feel they wouldn't understand problems related to my veteran and military experience	0.024	**0.703**	0.031	0.492	0.739	0.524	0.547
I don't trust mental health professionals	-0.030	**0.662**	0.097	0.457	0.709	0.527	0.507
It is too expensive	-0.086	**0.589**	0.086	0.347	0.593	0.428	0.356
Most of what would happen if I sought treatment for a mental health issue would be beyond my control	0.123	**0.504**	0.217	0.590	0.729	0.642	0.579
It would be difficult to get an appointment	0.282	**0.496**	-0.136	0.506	0.583	0.391	0.378
I would have difficulty getting time off work	0.309	**0.438**	-0.127	0.502	0.548	0.379	0.347
I would feel embarrassed if I had a mental health problem	0.084	-0.102	**0.901**	0.627	0.564	0.888	0.796
I would feel worse about myself if I could not solve my own problems	0.036	0.001	**0.826**	0.595	0.585	0.851	0.725
I would feel inadequate if I went to a mental health professional for psychological help	-0.030	0.194	**0.721**	0.580	0.664	0.832	0.711
I would worry that seeking treatment might lead to me losing control of my emotions	-0.049	0.345	**0.476**	0.492	0.637	0.677	0.518
Eigenvalue	7.733	1.337	1.088				
Variance (%)	51.55%	8.92%	7.25%				
Cronbach's α	.891	.817	.885				

Table 3-3 shows the response frequencies based on agreement (with *agree* and *strongly agree* responses combined) for each item within Transitioned and Permanent ADF groups. The mean (SD) response for each item is also provided. Significant associations with transition status were found on each item ($p < .001$).

Table 3-3 Proportion endorsing help-seeking beliefs and mean scores for Transitioned and Permanent ADF

	Transitioned ADF		Permanent ADF	
Item	**Agreement**	**Mean (SD)**	**Agreement**	**Mean (SD)**
Anticipated stigma				
Have less confidence in me	41.8%	2.94 (1.34)	43.7%	3.05 (1.24)
Treat me differently	33.4%	2.74 (1.32)	34.5%	2.85 (1.21)
Harm my career	30.7%	2.64 (1.40)	37.0%	2.91 (1.32)
Seen as weak	30.4%	2.66 (1.32)	28.2%	2.68 (1.21)
Stop deployment	19.7%	2.81 (1.15)	50.2%	3.33 (1.25)
Service concerns				
Expensive	26.9%	2.75 (1.21)	6.3%	2.11 (0.96)
They wouldn't understand	22.8%	2.49 (1.24)	9.9%	2.15 (0.99)
Difficulty getting time off work	19.6%	2.20 (1.25)	14.7%	2.08 (1.12)
Beyond my control	15.5%	2.42 (1.08)	15.1%	2.35 (1.05)
Don't trust MH professionals	14.9%	2.23 (1.13)	10.2%	2.11 (1.01)
Difficult to get an appointment	13.8%	2.23 (1.10)	16.6%	2.33 (1.10)
Self-stigma				
Feel worse if couldn't solve problem	36.5%	2.78 (1.29)	29.9%	2.60 (1.20)
Feel embarrassed	32.9%	2.65 (1.28)	27.1%	2.52 (1.18)
Feel inadequate	20.1%	2.35 (1.15)	14.6%	2.19 (1.03)
Lose control of my emotions	17.7%	2.33 (1.15)	11.1%	2.12 (1.00)
Excluded items				
Might make feel worse	12.7%	2.26 (1.04)	7.7%	2.11 (0.92)
Wouldn't know where	11.0%	1.95 (1.04)	6.4%	1.73 (0.89)
People could snap out of it	4.3%	1.79 (0.88)	2.4%	1.73 (0.78)

Items were summed to produce total scale scores on each factor. Table 3-4 shows the socio-demographic characteristics by average total scores on each sub-scale. Mean comparisons were conducted and adjusted using the Bonferroni correction. Females, Permanent ADF, Army (compared to Air-Force) and junior ranks (compared to Officers and SNCOs) had significantly higher mean *Anticipated Stigma* scores. Transitioned ADF had higher mean scores on *Self-Stigma* and *Service Concerns* compared to Permanent ADF. Army personnel reported significantly higher mean *Self-stigma* scores compared to both Navy and Air-Force. Senior NCOs reported higher mean scores on *Self-Stigma* and *Service Concerns* than Officers, and junior ranks reported higher mean scores on *Self-Stigma* and *Service Concerns* than Officers and SNCOs.

Table 3-4 Average anticipated stigma, self-stigma and service concerns by participant demographics

		Anticipated Stigma		Self-Stigma		Service concerns	
	n	Mean	(SD)	Mean	(SD)	Mean	(SD)
Sex							
Male	9345	14.44	5.47	9.68	3.96	13.44	4.72
Female	2213	14.69	5.55	9.54	3.97	13.61	4.72
Transition status							
Permanent	7779	14.83	5.43	9.44	3.79	13.11	4.48
Transitioned	3808	13.76	5.53	10.09	4.24	14.26	5.12
Service							
Royal Australian Navy	2598	14.44	5.51	9.53	4.01	13.56	4.83
Australian Army	5348	14.66	5.60	9.81	4.06	13.53	4.80
Royal Australian Air Force	3613	14.27	5.30	9.51	3.76	13.33	4.52
Rank							
Officer	4441	14.40	5.43	9.29	3.82	12.70	4.49
Senior NCO	3938	14.18	5.53	9.66	3.98	13.50	4.69
Junior NCO/Other Rank	3186	15.00	5.48	10.17	4.06	14.55	4.88

Separate standard multiple linear regressions were estimated Table 3-5 with each sub-scale as the dependent variable to examine the relationship between socio-demographic and psychological factors with each set of help-seeking beliefs. Demographic indicators, symptoms of PTSD and depression, resilience, social support and quality of life were simultaneously included in each model as independent variables. The model for *anticipated stigma* explained 20.5% of variance ($F_{(16, 10,187)} = 165.29$, $p < .001$) and the overall size of the effect was medium ($f^2 = 0.25$) (Cohen, 1988). Permanent ADF members reported more *anticipated stigma* than Transitioned ADF ($\beta = -.182$, $p < .001$) particularly in relation to deployment χ^2 (4) = 1,278.93, $p < .001$, $V = .34$. Greater levels of *anticipated stigma* were significantly correlated with several additional variables, including less affective support and more negative social interactions, reduced quality of life and increased anger. However, most of these variables made only a minimal unique contribution to the total variance. The variables that contributed the greatest unique variance were transition status ($sr^2 = 2.9\%$), age ($sr^2 = 1.2\%$), affective support from friends ($sr^2 = 1.1\%$) and PTSD symptoms ($sr^2 = 0.6\%$).

The model for *Service Concerns* explained 20.7% of variance ($F_{(16, 10,187)} = 167.79$, $p < .001$) and the overall model effect size was medium ($f^2 = 0.26$). All variables in the regression were associated with higher levels of concerns about mental health services. Again however, most made only minimal unique contribution to the total variance. Positive interactions with friends was associated with less mental health service concerns and contributed to the greatest unique variance ($sr^2 = 1.7\%$), followed by age ($sr^2 = 0.6\%$).

Table 3-5 Multiple regression coefficients for models of help-seeking beliefs in the ADF

Variable	Anticipated Stigma			Self-Stigma			Service Concerns		
	B	*SE (B)*	β	*B*	*SE (B)*	β	*B*	*SE (B)*	β
Sex	.047	.131	.003	.061	.115	.005	.336	.112	.028**
Age	-.070	.006	-.129**	-.018	.005	-.038**	-.042	.005	-.090**
Transition status	-2.131	.111	-.182**	-.093	.097	-.009	.238	.095	.024
Service: Navy	-.162	.126	-.012	-.002	.111	.000	.382	.109	.034**
Service: Air-Force	-.126	.115	-.011	.132	.101	.013	.341	.099	.033**
Rank: SNCO	-.746	.117	-.064**	-.034	.103	-.003	.286	.101	.029*
Rank: JNCO/OR	-.635	.138	-.052**	.152	.121	.014	.500	.119	.047**
PTSD symptoms	.061	.007	.146**	.029	.006	.082**	.031	.006	.085**
Depression symptoms	.081	.016	.089**	.077	.014	.099**	.039	.013	.050*
Resilience	-.624	.078	-.087**	-.347	.069	-.056**	-.483	.067	-.078**
Friends - Positive	-.427	.036	-.118**	-.444	.032	-.143**	-.462	.031	-.148**
Friends - Negative	.119	.031	.036**	.170	.027	.061**	.177	.027	.063**
Family - Positive	-.186	.040	-.044**	-.237	.035	-.066**	-.287	.035	-.080**
Family - Negative	.181	.025	.072**	.112	.022	.052**	.115	.021	.053**
Quality of life	-.211	.076	-.034**	-.063	.067	-.012	-.356	.065	-.066**
Anger	.054	.016	.042**	.077	.014	.070**	.080	.014	.072**
$R^2_{Adjusted}$	.205			.164			.207		
F statistic	$F_{(16, 10,187)} = 165.29$**			$F_{(16, 10,187)} = 126.02$**			$F_{(16, 10,187)} = 167.79$		

* p < .01, ** p < .001

Although bivariate analyses suggested that S*elf-stigma* was higher in Transitioned compared to Permanent ADF, the multivariate model showed no significant association (p = .43). The model for S*elf-stigma* only accounted for 16.4% of variance but with a medium effect size (f^2 = 0.20) overall and 12.9% explained by the combination of the independent variables. Although many variables showed a significant multivariate correlation with *self-stigma*, positive interactions with friends (sr^2 = 1.8%) provided the greatest unique contribution to overall variance.

3.5 Discussion

Policy and research on mental health help-seeking in military populations has often focused on *anticipated stigma,* as represented by concerns about the opinions and actions of leaders and peers and impact on career, and the generic term 'stigma' is often used synonymously with the concept of a 'barrier to care'. However, this approach may limit our understanding of stigmatising and other beliefs about mental health help-seeking in military populations. This chapter had two aims: firstly, to identify constructs underlying concerns about seeking help for a mental health condition in the Australian military community; and secondly, to examine demographic and psychosocial factors correlated with concerns about seeking help for a mental illness in the ADF.

Results confirmed the presence of three distinct categories of help-seeking beliefs: *anticipated stigma*, *self-stigma* and concerns about mental health services *(service concerns)*. The three subscales were shown to be reliable and accounted for 67.7% of variance across the 15 remaining items. The strongest factor in the current study was *anticipated stigma*, accounting for 51.5% of variance. This finding, along with the high frequency of endorsement of these concerns in both permanent and transitioned sub-samples, suggests that *anticipated stigma* is an important construct to measure in military mental health research. Anticipated professional concerns and concerns about the perceptions of others have consistently factored together in this and other military research (Adler et al., 2015; Kim et al., 2011), and the high frequency of these *anticipated stigmas* is also consistent with findings in other military populations (Sharp et al., 2015). The need for development and testing of stigma measures in the military environment to allow for consistent and comparative studies across time, populations and contexts, has been noted by a number of authors (Acosta et al., 2014; Fox et al., 2018a; Skopp et al., 2012). Although the reliance on measurement of *anticipated stigma* may have demonstrated limited benefit in predicting help-seeking previously (Acosta et al., 2014; Sharp

et al., 2015), results here suggest the need to understand this construct further in relation to other help-seeking beliefs, including *self-stigma*.

The results also support the idea that *self-stigma*, as represented by feelings of embarrassment and inadequacy, is a key feature of stigmatising attitudes in a military environment, with rates of agreement with individual self-stigma items ranging between 11% and 37% of the surveyed population. While other scales have been developed to measure self-stigma in a military setting (Skopp et al., 2012), the 4-item sub-scale measured in this study is versatile where smaller numbers of items are required, and the clear distinction from *anticipated stigma* allows the unique effects of both types of stigma to be modelled in relation to each other, as well as other factors such as help-seeking behaviour.

An additional factor which reflected concerns about the adequacy and availability of mental health services was found to incorporate both negative attitudes to care, such as a lack of trust in mental health professionals, and concerns about practical barriers, such as the high cost of services. This is inconsistent with previous research which has found support for separate constructs reflecting attitudes to treatment as well as practical barriers related to availability (Adler et al., 2015; Kim et al., 2011). However, even in this previous research negative attitudes to treatment have loaded with other constructs such as self-reliance and public stigma. In the current study it may be that there was a lack of sufficient items to reflect negative attitudes and public stigma as distinct from practical barriers, and yet the results also point to some overlap between these constructs that require further elaboration.

Notably, all three factors were correlated in the current study population. Previous research suggests *self-stigma* and *public stigma* are part of a broader construct of stigma (Wade et al., 2015) and the same may be true of *anticipated* (perceived) *stigma* and *self-stigma*, although this was not tested in this study. The potential overlap and relationship between these two factors accord with a staged model of *self-stigma.* This staged model begins through awareness of externally perceived stigmas, then agreement with those stereotypes, application to self and finally harm to self-esteem and self-efficacy (Corrigan & Rao, 2012). That is, the extent to which mental illness is conceptualised as a stigmatised condition leads to an expectation of rejection by others, which when applied to the self leads to a fear of rejection, decreased self-esteem and other negative consequences. It is possible that *anticipated stigma* reflects the awareness stage, with the *self-stigma* factor a reflection of the final two stages. It is not possible

to ascertain whether *anticipated stigma* precedes *self-stigma* from the current study, however, evidence that *public stigma* is an antecedent to *self-stigma* (but not vice versa) has been shown in longitudinal studies (Vogel, Bitman, Hammer, & Wade, 2013). Regardless, given the overlap between constructs, future chapters in this thesis will consider the unique associations between these help-seeking beliefs and impact on other outcomes, such as help-seeking behaviour and service use.

Regression analysis indicated that across each sub-scale, increased severity of PTSD and depressive symptoms were associated with increased stigma and *service concerns* and there was a systematic effect of age, with younger participants reporting more negative beliefs. Reduced positive interactions with friends was also associated with greater *anticipated stigma*, *self-stigma* and *service concerns* and was one of the variables that contributed the greatest unique contribution to each model. Males and females did not differ in reported stigma, nor did members of the three Services, yet concerns about mental health services did differ between these groups. These findings are considered in light of previous research and are discussed in more detail here.

ADF males and females did not differ in *self-stigma* which is inconsistent with previous research on *self-stigma* in both community samples (Griffiths, Christensen, & Jorm, 2008; Reynders, Kerkhof, Molenberghs, & Van Audenhove, 2014) and military samples (Skopp et al., 2012). However, there was also no difference in *anticipated stigma* between ADF males and females, which is consistent with findings in other military samples (Jones et al., 2015). Also, females reported greater concerns about mental health services than males, which contrasts with previous research that found women have more positive attitudes towards counselling than men (Fischer & Farina, 1995). In research with college students, Vogel et al. (2007) found that the relationship between perceived *public stigma* and *self-stigma* was stronger in men than women and suggest this may be the result of the traditional male gender role of being independent and in control. It is possible that traditional gender roles could be influenced by military culture, as attributes held in high esteem such as resilience and self-reliance in the military are similar to those suggested by Vogel et al. (2007).

Research in military populations suggests that negative attitudes towards treatment may be influenced by a perception of ability to address problems through other means (Dabovich et al., 2019; Kim et al., 2011) and longitudinal research on Australian military recruits tested prior to

entry and following initial training suggests that stigma increases on entry to the military (Crane et al., 2012). As different measures are often used in military research compared to other populations, it is difficult to know whether the results are an artefact of measurement differences or other possible influences, such as military culture. Regardless, the results suggest that stigma reduction initiatives may not be most effective if targeted towards traditional gender roles, but perhaps other characteristics associated with stigmatising attitudes. It also points to the need to further understand the relationship between resilience and self-reliance, help-seeking beliefs and behaviours in a military context.

Concerns about the negative impact of seeking help on career and opinions of others were more salient for full-time serving members, although still a prominent concern for Transitioned ADF. This makes sense given that some of the items are specific to military service (i.e., impact on deployment opportunities). However, it also points to the possibility that *anticipated stigma* is less stable than *self-stigma*, being more influenced by situational characteristics such as increased severity of disorder and social context as reflected by lower rank and age, in addition to career stage. In research on UK military personnel, *anticipated stigma* was shown to fluctuate with mental health symptoms over time, increasing with poorer mental health and decreasing as health improved (Jones et al., 2015). It seems that concerns about perceived stigmatising attitudes towards people with mental disorder become more salient when faced with the prospect of becoming the target of such attitudes (Link & Phelan, 2001), and perhaps also where the individual has less autonomy or agency in healthcare decisions (Dabovich et al., 2019). *Self-stigma* in this study was also related to increased symptoms, but not with other external factors such as career stage, Service and rank, suggesting a more stable construct representing an underlying belief structure which then influence more surface level/changeable attitudes and behaviours.

Modified labelling theory provides a means to understand differences between *anticipated* and *self-stigma*. Pre-held, socialised stereotypes about those with mental illness become more salient when one becomes ill and are expressed as fear about being treated differently or rejected, believing that others around them hold these views (Link & Phelan, 2001). Link and Phelan (2001) propose that these changes may occur despite any immediately observable behaviours of others in the social network and may result in avoidance of those perceived as stigmatising, leading to social isolation, loss of quality of life, harm to self-esteem and self-

efficacy (Corrigan & Rao, 2012; Corrigan et al., 2006), worsening mental health and psychosocial issues such as unemployment and income loss.

The correlates of stigma in the ADF provide some support for the notion that internalised and salient stereotypes are expressed as fear of rejection and subsequent social withdrawal or separation, as both *anticipated-* and *self-stigma* were associated with less affective support from friends. Stigma reduction initiatives may need to take into account social withdrawal associated with both increased symptoms (Gaebel et al., 2017) and *self-stigma*. Military and veteran organisations might also consider providing additional sources of support, such as lived experience peer networks, for those with limited social supports.

While the move towards delineating and measuring other types of stigma in military research (Blais & Renshaw, 2013; Skopp et al., 2012) is encouraging, there is a need to better understand the factors that contribute to these various types of stigma so that military organisations can provide appropriate response and redress of such issues. The current study suggests that while variation in *anticipated stigma* can be better accounted for by transient factors, such as career stage and age, the factors which contribute to or are impacted by *self-stigma* are less well understood, with only 16.5% of variance in *self-stigma* accounted for by the regression model. Also, the relationship between *anticipated stigma*, symptom severity, and other adverse outcomes suggests that *anticipated stigma* may have an indirect, rather than a direct measurable effect, on help-seeking, by virtue of association with other worsening outcomes. In a longitudinal study of U.S. veterans, Fox, Smith, and Vogt (2018b) found that anticipated stigma led to higher levels of self-stigma which subsequently impact help-seeking behaviour. Further examination of the role of *anticipated-* and *self-stigma* as well as *service concerns* in preference for self-management and help-seeking behaviour is warranted to fully understand how stigma impacts on current and former ADF members.

3.5.1 Implications

The results suggest that groups which may benefit most from stigma reduction programs are younger service members, those with current mental illness and those with limited social supports. Programs such as Corrigan & Lundin's Coming Out Proud Program (Corrigan & Lundin, 2012) have shown some reduction in internalised stigma for those considering disclosing their mental illness (Corrigan et al., 2014). Whilst public health interventions targeting *anticipated stigma* may be warranted for currently-serving personnel, it seems that

interventions targeted at reducing *self-stigma* and improving attitudes to care are equally relevant for current and former ADF members, and continuity of public health messaging from within service and during transition may be important to consider.

3.5.2 Limitations

This study is constrained by the practical aspects of recruiting current and former ADF members, most notably, traditionally low response rates and lack of contact details for those who have transitioned out of full-time service. The study sample for this research was derived from a study roll developed in collaboration with four Australian government agencies, with considerable expense and effort made to update contact details for those leaving the ADF within the bounds of Australian privacy legislation. Although numbers completing the survey were high due to attempts to reach all Transitioned ADF, response rates were still low and non-response bias cannot be ruled out. Comparisons with ADF population rates (also available as part of the Study Roll) suggest that younger ADF members and those in the lower ranks were under-represented and therefore results may not adequately represent these groups.

The data reported in this chapter is cross-sectional and therefore relationships between variables may be bidirectional. For example, it is not possible to say whether the reduced positive interactions with friends represents a withdrawal from social supports because of stigma, or if increased stigma is a result of increased social isolation. Longitudinal data may provide further evidence as to how *anticipated stigma* changes over time and how it influences or is influenced by *self-stigma*, social functioning, mental health and even transition from military service.

Due to the size and nature of the research programme from which the data for this study is drawn (Hooff, Hodson, Lorimer, & McFarlane, 2012), there were limitations in the scope of measures that could be included in the survey. Some scales may not fully address certain constructs, such as the one item measuring quality of life. However, the breadth of information captured in the research allows a broader approach to data analysis, with the potential to inform focused studies in the future.

Unfortunately, these results provide limited information about the prevalence of stereotypical attitudes held by members of a military population towards those with mental illness. The one item measuring public stigma (‘People with a mental health problem could snap out of it’) had very low rates of endorsement, but it is difficult to know to what extent social desirability plays a part in this result. Other approaches to measuring stigma, such as measuring social distance

may be beneficial to explore but these are also subject to social desirability (Link et al., 2004). In an organisational context, attitudes about personal leave, absenteeism and malingering may provide a better barometer of organisational climate/behaviours towards those with mental illness (Ricciardelli, Cramm, Mooney, & Carleton, 2017).

3.5.3 Conclusion

This research provides evidence for the validity of a short scale assessing *anticipated stigma* and *self-stigma* in a military population for subsequent use in this thesis. However, it also supports the notion that *self-stigma* and concerns about mental health services are key facets of stigmatising attitudes in military populations and should be researched alongside existing measures of *anticipated*, *perceived* and *public stigma*. Key factors associated with *anticipated stigma, self-stigma* and *service concerns* in this population include social support, symptoms and age. Targeting and tailoring interventions to account for the roles these factors play in help-seeking beliefs may optimise the effectiveness of stigma reduction programs. However, further investigation of the role of these beliefs in help seeking is warranted and will be explored in the next chapter.

Chapter 4 Self-reported mental health service use by current and former ADF members

4.1 Introduction

4.1.1 Chapter overview

In any twelve-month period, one in five serving ADF members is estimated to experience a mental illness (McFarlane et al., 2011), and the risk increases to one in two for those recently transitioned from full-time ADF service (Van Hooff et al., 2018). Evidence-based treatment can improve outcomes across a range of disorders (e.g.,, Bryant et al., 2008; Butler, Chapman, Forman, & Beck, 2006; Shalev et al., 2012; Tolin, 2010) and evidence-based services are funded for both current and former ADF members by the Australian Government. Yet, between 30% and 50% of those with a disorder will not have sought treatment in that same year. Whilst this may appear to be a positive number compared to the estimated 54% of civilian Australians suffering from mental illness but not receiving care (Whiteford et al., 2014), the ADF population is different to the broader community in terms of mental health prevalence, risks and service access.

Most notably, there is a higher rate of suicide in young, transitioned ADF males, who are twice as likely to die by suicide than their civilian peers (Australian Institute of Health and Welfare, 2016). ADF members are more likely to have been exposed to multiple traumatic events (Van Hooff et al., 2013), suffer from any affective disorder, posttraumatic stress disorder (PTSD) (McFarlane et al., 2011) and experience challenges related to prolonged separations from family and friends and frequent relocations (Daraganova et al., 2018). Despite these challenges, ADF members belong to a strong community with a shared set of values and purpose, where leadership has a direct duty of care to those within their ranks, and many mental health services are provided free of charge or subsidised through DVA.

Despite arguably having greater access to care than civilians, serving military members belong to an organisation that values resilience and self-sufficiency and are subject to medical suitability requirements for employment and deployment. Once leaving full-time service, members are no longer subject to medical suitability requirements, but may experience challenges associated with changes to identity, cultural expectations and removal from key system and social supports. Therefore, decisions to access mental health services in a military

setting are influenced by various socio-cultural, psychological and contextual factors, resulting in varying rates of service use and potentially unequal access to services for some groups.

There is limited research examining predictors of mental health service use in the Australian military and what is known comes largely from research on international military populations or general community samples. This chapter examines factors associated with formal help-seeking behaviour in military populations and revisits the research on barriers to mental health care in an Australian military context.

4.1.2 Modelling health service use

Various models have been used to describe pathways into mental health care (Gulliver et al., 2012b). The Andersen Behavioural Model of Health Service Use (Andersen et al., 2014; Babitsch et al., 2012) is one popular model that has been used to predict mental health service use in both community and military populations (Fikretoglu et al., 2007; Fikretoglu et al., 2008; Parslow & Jorm, 2000). It proposes three factors influencing service use: predisposing, enabling and need factors. These factors can be conceptualised at both the contextual and individual level (Andersen et al., 2014).

Predisposing factors are characteristics that represent the pre-existing environment in which health services are used. These include demographic characteristics (e.g., age, gender, marital status, race, education) and predisposing beliefs, which are also a factor in service use, particularly for mental health concerns (Andersen et al., 2014). Enabling characteristics refer to social factors (e.g., social support), individual or structural organisation of care, and financing characteristics (e.g., income level, community resources), which influence service use. Need refers to both perceived need (the extent to which an individual judges severity of the illness) and evaluated need (professional assessment of health status).

This model is a useful framework to examine whether mental health service use is needs-based and therefore likely to be equitable, that is, those with most need are most likely to access services. However, the operationalisation of the model in the literature is not consistent. Although citing Andersen and co-authors, many studies focus only on specific aspects of the model, such as sociodemographic indicators or beliefs or need, but do not examine these within the broader context within which mental health services are accessed (Babitsch et al., 2012). In addition, despite considerable international military research, there is limited understanding of factors associated with mental health service use within Australian military forces.

4.1.3 Predisposing factors associated with mental health service use

4.1.3.1 Predisposing socio-demographic characteristics

A range of sociodemographic characteristics have been shown to be associated with mental health service use, or lack thereof, by military service members. Consistently, male military personnel have been found to be less likely to use mental health services compared to females across Canadian, U.S. and U.K. military populations (Fikretoglu et al., 2008; Hom, Stanley, Schneider, & Joiner, 2017; Stevelink et al., 2019) and women were also found to be more likely to use a greater number of services in one study of U.S. Army personnel (McKibben et al., 2013). This is consistent with findings in the Australian civilian population (Parslow & Jorm, 2000).

Other predisposing sociodemographic factors, such as age, rank, marital status, Service and transition status are less researched. One study with active Canadian military personnel found that younger age, and senior non-commissioned rank (relative to officers) were associated with lower likelihood of mental health service use (Fikretoglu et al., 2009). A study of serving and ex-serving UK military personnel found that Air Force personnel were more likely to seek formal medical support than Army personnel (Stevelink et al., 2019). These studies indicate some potential disparities either in access to care or potential cultural expectations impacting care seeking choices, but lack of consistency across studies and populations means it is difficult to understand why or how these contextual factors might influence service use. Marital status has been shown to be associated with service use, with married, de facto, divorced or separated military personnel more likely to access care than single personnel (Fikretoglu, Brunet, Schmitz, Guay, & Pedlar, 2006; Fikretoglu et al., 2008; McKibben et al., 2013), suggesting a possible role of social support in help-seeking behaviour.

Research comparing current and former serving personnel is rare, despite the possibility of differential expression of behaviours due to different health service systems and base prevalence rates between these groups. A study of serving and ex-serving U.K. military personnel found that those who had deployed or were ex-serving were more likely than non-deployed and serving members to access formal non-medical care (e.g., charity, trained peer, chaplain) compared to informal support (family, friends, online) but not formal medical care (Stevelink et al., 2019). This is in contrast to U.S. research which found permanent personnel were less likely than National Guard (reserve) to access care (Kim, Thomas, Wilk, Castro, &

Hoge, 2010). However, it is a challenge to compare contrary outcomes across studies given the varying transition status of groups with whom the research is conducted.

4.1.3.2 Predisposing beliefs

It has previously been assumed that anticipated stigma (concerns about the opinions of others and how they will react in response to someone with a mental illness), will prevent ADF members seeking help for mental health conditions. Anticipated stigma is thought to lead to concerns about the consequences of connecting with professional services, suggesting that help seeking may be seen as reflecting weakness and result in loss of social standing (Britt, 2000). As noted in the previous chapter, this assumption is reflected in strategic Defence (Department of Defence, 2017) and Veteran Affairs policy (Department of Veterans' Affairs, 2013), but concerns have been raised about the lack of demonstrated association between anticipated stigma and help-seeking behaviour. Sharp et al. (2015) found that in the majority of studies of stigma in military populations, anticipated stigma was not associated with help-seeking intentions or behaviour, with a small number of studies actually reporting a positive association. Similarly, researchers developing a microsimulation model estimating the costs of stigma, were unable to demonstrate the economic value in programs targeted to reduce anticipated stigma (Acosta et al., 2014) due to the lack of empirical evidence showing an association.

Whilst anticipated stigma has not been empirically linked to treatment-seeking behaviour, other types of stigma, in particular self-stigma, have. One study that has measured self-stigma in a military sample, found that self-stigma, as measured using the Self-Stigma of Seeking Help scale (SSOSH; Vogel et al.), was associated with anticipated enacted stigma from military leaders as well as reduced help-seeking intentions post-deployment to Afghanistan and Iraq (Blais & Renshaw, 2013). Although actual help-seeking behaviour was not measured in this research, the SSOSH scale has discriminated between help-seekers and non-help-seekers in non-military settings (Vogel et al., 2006) and in addition has been shown to mediate the relationship between public stigma and willingness to seek counselling (Vogel et al., 2007). Therefore, scales that delineate various types of stigma and presumed barriers to care are important for inclusion in military mental health research on care seeking behaviour.

Military researchers have also considered other beliefs about help-seeking and their influence on mental health service use. Kim et al. (2011) and Adler et al. (2015) identified that attitudes towards mental health care or professionals can impact help seeking behaviour in military

settings. Negative attitudes to care, such as lack of trust in professionals, have consistently been associated with both less help-seeking intentions and behaviours (Jones et al., 2013; Kim et al., 2011; Pietrzak et al., 2009), whilst positive attitudes to care (e.g., 'mental health counselling can be helpful') have also been shown to facilitate treatment-seeking behaviour in both military (Adler et al., 2015; DeViva et al., 2016; Zinzow et al., 2015) and civilian populations (Gulliver et al., 2010).

4.1.3.3 Self-reliance, self-efficacy and resilience

Self-reliance has been shown to hinder treatment-seeking behaviour (Han et al., 2018; Ortega & Alegría, 2002; Sayer et al., 2009). In research on stigma and barriers to care in the U.S. military, Adler et al. (2015) found that, in those with a mental health problem, preference for self-management was associated with less likelihood of subsequent treatment use. This factor included attitudes such as "I would prefer to manage problems on my own" and "Strong people can resolve psychological problems by themselves". The researchers postulate that this self-management principle is a "preference for maintaining a sense of self-efficacy in addressing salient life problems" (p.349). Although self-efficacy as it relates to perceived ability to seek care has been measured in relation to help-seeking intentions (Koeppl, 2012; Lee et al., 2016), the notion of high self-efficacy in self-managing issues and therefore not seeking professional help is less researched. In addition, despite a tendency for researchers to suggest that the culture of self-sufficiency and toughness in military service is associated with stigmatised attitudes, and by association a barrier to help-seeking (Coleman et al., 2017), there is little known evidence to support this.

One way of conceptualising the relationship between self-efficacy and a culture of self-sufficiency is through resilience. Like stigma, resilience can be defined in multiple ways and a lack of consensus definition has made measurement and comparison of findings relating to this construct challenging (Cosco et al., 2017; Smith et al., 2008). A common definition of resilience in military research is, "the ability to maintain or return to previous levels of wellbeing and functioning in response to adversity" (Dell et al., 2019). Whilst this definition includes two generally accepted components of resilience, adversity and adaptation (Cosco et al., 2017), the traditional view of resilience as an individual trait is shifting to also include other contextual determinants such as demographic, cultural and social variables (Denckla et al., 2020; Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014).

Researchers have hypothesised that resilience could increase the likelihood of seeking care in an environment due to increased capacity to overcome stigma and barriers to care (DeViva et al., 2016), but instead found that those who received psychotherapy and psychopharmacotherapy had lower levels of resilience than those with no treatment. The authors noted the significant correlations between resilience and other variables, such as negative correlations with PTSD symptom severity, and attribute this to a difference in pre and post-trauma resilience levels.

As such, resilience may vary over time and could be influenced by both internal resources (e.g., self-efficacy) and external factors (e.g., environment). Such a perspective allows investigation of how organisational factors intersect with help-seeking beliefs within the individual. In qualitative research with an Australian high-risk combat unit, Dabovich et al. (2019) found that for individuals in this unit health was expressed in part through personal agency (the skills and confidence to adapt physically and psychologically to challenges) and interpersonal trust (that others in the unit are also able to adapt to these same challenges and therefore can be trusted to perform in complex and dangerous situations). However, health service use for injury or illness was perceived as reducing personal agency, resulting in a lack of trust in the health service system. A related but separate construct, hardiness, was found to be associated with increased help-seeking intentions in Canadian recruits (Lee et al., 2016), and this relationship between hardiness and intentions was mediated by help-seeking self-efficacy and subjective norms.

Together this research points to complex relationships between perceptions of self-sufficiency and adaptability, organisational values and decisions to seek care. In particular, perceptions of self as resilient may reduce the likelihood of seeking help because of a desire to maintain self-efficacy and agency in dealing with life problems, and to meet cultural expectations within a military setting.

4.1.4 Need factors associated with mental health service use

When compared to predisposing and enabling factors, mental health need has consistently been most strongly associated with treatment use in military and civilian populations (e.g., Fikretoglu et al., 2009; Parslow & Jorm, 2000), and as would be expected, those who are most unwell are typically most likely to access care (Goodwin & Andersen, 2002). Meeting criteria for disorder (Fikretoglu et al., 2008; Parslow & Jorm, 2000), comorbidity of mental disorder (Fikretoglu et al., 2007) and greater symptom severity (Adler et al., 2015) have all been associated with

greater use of mental health services. Research has also found different treatment seeking rates depending on the type of disorder, with higher rates for PTSD and depression (McFarlane et al., 2011) and lower rates for substance use disorders (McFarlane et al., 2011; Parslow & Jorm, 2000) and specific symptom clusters (e.g., avoidance) (Blais, Hoerster, Malte, Hunt, & Jakupcak, 2014).

Whilst these types of variables are most commonly used to represent evaluated need, other factors such as functional impairment are less commonly researched in relation to service use. Qualitative findings indicate that individuals ignore early warning signs until reaching 'crisis point' (Murphy et al., 2014). Issues may become more recognisable at 'crisis point' after a period of gradual onset, or others (friends, family or colleagues/supervisors) may begin to notice. In the latter case this may result in instrumental support in care seeking (Forbes et al., 2018), or even involuntary connection with services as a result of problematic behaviour or impaired functioning.

Preliminary evidence suggests functional impairment is related to both use of care and also level of care accessed in U.S. Army soldiers (McKibben et al., 2013) and two other studies using one item to measure daily impact of symptoms found similar results in the U.K. and Canadian militaries (Fikretoglu et al., 2007; Stevelink et al., 2019). However, measures of functional impairment in this research were limited, and conceptually thought by some authors to represent another key indicator, perceived need. It is likely that perception of need is influenced by functioning and it also may be that symptoms are more easily 'ignored' in some situations (e.g., socially or at work) than others (e.g., home life). A study of serving ADF members found that impairment in functioning was a stronger predictor of mental health service use than symptom severity, and that domain of functioning (e.g., work or home) had differing levels of influence depending on type of symptoms (Searle et al., 2013). Therefore, it is worth investigating not only functional impairment, but domain of functioning in relation to help-seeking behaviour.

Individual perceived need for care has been stated as the leading barrier to mental health care in the Canadian Armed Forces (Fikretoglu et al., 2016) and as such points to the importance of assessing correlates of mental health treatment seeking in population studies where hidden unmet need can be identified. Research that focuses on those already in mental health services fails to recognise a sub-group of non-service users who do not recognise a need for care.

4.1.5 Enabling factors associated with mental health service use

Little attention has been given to enabling factors in a military context. Andersen et al. (2014) suggest that social support can be considered an enabling factor, as distinct from the social context (a predisposing factor). Evidence for the role of social support in mental health service use is mixed. Some research suggests that the impact of social support varies depending on the types of services being accessed (Maulik, Eaton, & Bradshaw, 2009), the severity of disorder (Thoits, 2011), type and source of social support (Marshall, Jorm, Grayson, Dobson, & O'Toole, 1997; Spoont et al., 2014; Zinzow, Britt, McFadden, Burnette, & Gillispie, 2012) and attitudes within social networks towards services and help-seeking (Ben-David, Cole, Spencer, Jaccard, & Munson, 2017; Kogstad, Mönness, & Sörensen, 2013; Warner, Appenzeller, Mullen, Warner, & Grieger, 2008). In the ADF, researchers have found that just under two thirds of those who sought help had someone suggest they seek help, and about one third had actual assistance in seeking help (Forbes et al., 2018). Clearly any investigation of the role of social networks in initiation of mental health service use needs to consider the complex and varying nature of social relationships in the military as well as interactions with other contextual factors.

4.1.6 Summary

There are many factors that can influence help-seeking behaviour, potentially contributing to inequitable access to mental health services within military populations. These factors range from demographic context and individual beliefs and preferences, symptom severity and impairment in daily life as well as support available to enable help-seeking behaviour. However, there are inconsistencies and variations in the literature particularly when only parts of the Behavioural Model of Health Service Use are modelled. Building on this prior research, the current chapter seeks to model mental health service use in the Australian military.

4.2 Research questions

The aim of this research was to test the Andersen Behavioural Model of Health Service Use in an Australian military population and identify predisposing, enabling and need factors associated with help-seeking for mental disorder. The second aim was to investigate the nature of the relationship between stigma and other barriers to care with 12-month mental health service use of current and former ADF members. Specifically,

RQ2. What predisposing, need and enabling factors are associated with 12-month formal help-seeking (i.e., professional mental health service use) in current and recently transitioned ADF members, in particular:

a. Are there differences in mental health service use within ADF demographic sub-populations, and how does service use relate to need within these sub-groups?
b. Which pre-disposing help-seeking beliefs are associated with 12-month mental health service use, taking into account need and other context factors?
c. What enabling factors are associated with 12-month mental health service use, taking into account need and other contextual factors?

A number of hypotheses were considered to support these aims, based on the existing literature and the Behavioural Model of Health Service Use. Firstly, it was hypothesised that there would be differences in mental health service use among ADF population subgroups, with men, single personnel, lower rank and current serving personnel less likely to use services. Secondly, these differences would attenuate when level of need, based on symptom severity, perceived need and functional impairment are considered. Thirdly, greater need, both perceived and evaluated, was hypothesised to be associated with a higher likelihood of 12-month service use and the relationship between service use and functional impairment would vary depending on domain of functioning. Fourth, perceptions of individual resilience, self-stigma and negative attitudes to services would be associated with less likelihood of 12-month service use, while anticipated stigma would not be associated with service use. Lastly, Social support, as an enabling factor, was hypothesised to be associated with greater likelihood of 12-month mental health service use.

4.3 Method

4.3.1 Participants

The data were once again drawn from Sample 1, which is described in more detail in Chapters 2 and 3. A total of 11,587 participants, comprising Permanent (67.1%) and Transitioned ADF members (32.9%), who responded to the survey in 2015 and completed survey sections relevant to this study. The sample had an age range of 18 to 74 (M = 41.7, SD = 10.2), was predominantly Army (46.3%) and male (80.9%).

4.3.2 Measures

4.3.2.1 Perceived need

Perceived need was assessed by one item measuring subjective mental health concerns. Participants were asked, "Have you ever been concerned about your mental health?" answering on a dichotomous Yes (1) or No (0) response.

4.3.2.2 Mental health service use

Regardless of the answer regarding subjective mental health concern, participants were also asked "Have you ever sought help / received help from any of the doctors or professionals listed below for your own mental health?" The list included: general practitioner/medical officer; psychologist; psychiatrist; other mental health professional (including a social worker, occupational therapist, mental health nurse); inpatient treatment (hospital admission); hospital-based PTSD program; residential alcohol and other drug program; and other provider including counsellor, complementary/alternative therapist (herbalist or naturopath), life coach.

Mental health service use was then calculated for each provider from the response options: No; Yes, in the last 12 months; and Yes; more than 12 months ago, into two main outcome variables, for example, lifetime use of general practitioner (GP) for mental health and use of GP in the last 12 months.

Rate of mental health service use from any mental health professional was calculated from the same response options, but across multiple service providers. These were: Psychologist, Psychiatrist, Other mental health professional (including a social worker, occupational therapist, mental health nurse), Inpatient treatment (hospital admission), Hospital-based PTSD program, and Residential alcohol and other drug program.

A final outcome variable was derived indicating 12-month Mental Health Service Use which incorporated 12-month use of GP and mental health professional. Therefore, results in this chapter refer to any visit with professional services in the 12-months prior to the survey for mental health purposes. An additional category, use of "Other provider including counsellor, complementary/alternative therapist (herbalist or naturopath), life coach" was excluded.

4.3.2.3 Measures of mental health need

Measures of psychological health are described in more detail in Chapter 2, so a summary is provided here.

The 17-item Posttraumatic Checklist – Civilian (PCL-C: Weathers et al., 1993) was used to measure posttraumatic stress symptoms in the previous four weeks, with a total scale score ranging from 17 to 85, and a higher score representing more severe PTSD symptoms. The 9-item Patient Health Questionnaire (PHQ-9) was used to measure depressive severity in the previous two weeks. The scale is scored from 0 to 27, with a higher score indicative of more severe depression symptoms (Kroenke et al., 2001). Both scales have been validated in an Australian military context with good reliability (Forbes et al., 2001; Searle et al., 2015; Searle et al., 2017).

General anxiety symptoms in the previous two weeks was measured using the 7-item Generalised Anxiety Scale (GAD-7: Spitzer et al., 2006), with higher scores indicative of more severe anxiety. Participants were asked to rate how often they experienced each symptom on a 4-point scale from "Not at all" (0) to 'Nearly every day' (3), producing a total score between 0-21.

The Alcohol Use Disorders Identification Test (AUDIT: Saunders et al., 1993) was used to assess alcohol consumption and problematic alcohol use. The first eight items on the scale are answered on a 5-item scale (scored 0 to 4), and the final two items answered on a 3-item scale (0, 2 and 4), with total score ranging from 0 to 40. The scale is validated in a serving ADF sample, with higher scores representing more problematic alcohol use.

Functional impairment was assessed using the Sheehan Disability Scale (SDS: Sheehan, 1983), which assesses disability on three dimensions; work, family and social life. Answers on each dimension range from 0 (Not at all) to 10 (Extremely), with respondents indicating how much symptoms reported on the above psychological health measures have disrupted their work, social life/leisure activities and family life/home responsibilities. A total disability score of 0-30 can be determined by adding scores on the individual dimensions together, with higher scores representing greater impairment. A score of >5 on any of the individual dimensions is thought to represent functional impairment.

4.3.2.4 Any probable disorder

A dichotomous variable was derived from a score above cut-off on any of the PCL-C (≥ 50), PHQ-9 (≥ 10) or the GAD-7 (≥ 10) scales representing any probable disorder. Alcohol disorder was not included in the Probable Disorder variable. However, there was considerable comorbidity in the sample, of the 556 participants who scored at or above 16 on the AUDIT

(indicative of hazardous alcohol use), 78.2% were indicated as having comorbid PTSD, depression or anxiety. Therefore, a large proportion of individuals reporting harmful drinking or alcohol dependence were included in analysis of those with probable disorder.

4.3.2.5 Help-seeking beliefs

Attitudes and beliefs about mental health help-seeking were measured using sub-scales identified in the previous chapter. Three scales were used to measure:

1. anticipated stigma, 5 items measuring concerns about impact on career and the opinions/reactions of others;
2. self-stigma, 4 items measuring feelings of embarrassment, inadequacy and loss of control of emotions; and
3. concerns about services, 6 items covering practical access concerns (i.e., expense, time off, appointment difficulties), lack of trust and loss of agency.

Participants were asked to indicate how much each item might affect their decision to seek help with answers on a 5-point Likert scale from 'Strongly Disagree' (1) to 'Strongly Agree' (5). A higher score on each scale represented greater stigma or concerns.

4.3.2.6 Resilience

The Ohio State University Brief Resilience Scale (BRS: Smith et al., 2008) was used to measure resilience. The scale has six items with responses on a 5-point Likert scale (Strongly Disagree to Strongly Agree). Three items are reverse scored, with the total mean score ranging from 1 to 5. The scale can be considered to reflect self-efficacy in dealing with life stressors, with items such as "I tend to bounce back quickly after hard times" and "I have a hard time making it through stressful events".

4.3.2.7 Social support

The Schuster Social Support Scale (Schuster et al., 1990) was used to assess level of positive and negative social support interactions with family and friends. The scale has 10 items with each item scored on a 4-point scale from 'never' to 'often'. Affective support was measured by two questions about how often family (or friends) made them feel cared for and how often family (or friends) expressed interest in how they were doing. Three questions assessed negative interactions: how often family (or friends) made too many demands on them, how often they criticised them and how often they created tensions or arguments with them.

4.3.3 Analyses

Descriptive statistics and univariate analyses were used to describe the sample in relation to 12-month self-reported mental health service use to identify potential differences in service use among sub-populations. Logistic regression was used to assess the relationship of predisposing, need and enabling factors with likelihood that respondents would report having seen a health professional for their mental health in the previous 12-months.

To assess predisposing, need and enabling factors associated with mental health service use (RQ2), a sequential regression model was generated, with constructs from Andersen's Behavioural Model of Health Service Use entered at each step. The initial model began with six predisposing demographic factors (sex, age, relationship status, transition status, Service and rank). Model 2 added perceived and evaluated need variables (subjective mental health concern, posttraumatic stress, depressive and anxiety symptoms, and alcohol use). The psychological health variables were included as scale variables in the model to represent graded symptom severity rather than dichotomous probable disorder as need for services may differ across the spectrum of severity. Model 3 added additional need variables representing functioning in different personal domains (disability in work, social and family life), followed by predisposing beliefs and attitudes (Model 4: resilience, service concerns, self-stigma, anticipated stigma). Model 5 added four social support variables representing enabling factors (Affective support from friends and family, negative interactions with friends and family).

The model including only demographic predictors showed good model fit (χ^2 = 9.91, p=.27) and this remained so for each step and the final model (χ^2 = 12.14, p=.14). Comparison of log-likelihood ratios were used to assess improvement in the model with the addition of each group of predictors. These are further discussed in the results section.

Consideration was given to performing separate models for Transitioned and Permanent ADF given the different service systems, however interactions between transition status and other variables were tested and found not to be significant.

4.3.3.1 Missing data

Less than 4.0% of cases contained missing demographic data and missing data were not more than 4.0% of cases for individual independent variables, except for resilience (6.7%), posttraumatic stress symptoms (5.9%), concerns about mental health services (5.3%), positive interactions with friends (5.3%), and negative interactions with friends (5.4%). In total, 26.1%

of cases were missing data on any variable, leaving a final sample of 8,566. Little's MCAR test indicated that data was not missing completely at random, $\chi^2(1513) = 2{,}330.432$, $p < .001$. In particular, comparisons of valid cases and cases with missing values across variables revealed significant associations between the variable 'concerns about services' and self-stigma, PHQ-9, PCL-C, GAD-7, AUDIT, BRS, Sheehan Disability Scale, and Family affective support, indicating that single imputation methods would not be recommended.

Further examination of missing value patterns revealed that missing data was nonmonotone. Multiple imputation was undertaken in SPSS Version 25 using a Monte Carlo Markov Chain procedure and 30 imputations (White et al., 2011). Logistic regression was repeated on the imputed data and pooled results compared with results from the reduced data. Only slight differences in effects were found and are provided in Tables B-1 and B-2 in Appendix B. Results were deemed not to be substantively different and therefore the original analysis using complete cases (n = 8,566) was retained and reported here.

4.3.3.2 Univariate and multivariate outliers

Univariate outliers were identified using the outlier labelling rule with adjustments for large datasets (Hoaglin & Iglewicz, 1987) and skewed distributions on the PHQ-9, PCL-C, GAD-7 and AUDIT (Banerjee & Iglewicz, 2007). A small proportion of univariate outliers (3.3%) were identified on the PCL-C. Multivariate outliers were detected through Mahalanobis distance, and influence through Cook's distance and DFFITS values. Upon further examination, there did not appear to be systematic responding patterns amongst outliers and these cases were assumed to be legitimate.

4.3.3.3 Multicollinearity

Correlations between individual scale variables are provided in the correlation matrix at Table 4-1 with moderate to high correlations highlighted in bold text. High bivariate correlations (> .8) were seen between psychological symptoms variables (PHQ-9, PCL-C and GAD-7) and also between the subscales of the Sheehan Disability Scale (Work, Social and Family life). Correlations between these variables are expected given the high levels of comorbidity in this sample, with 9.3% of the sample exhibiting symptoms indicative of one disorder and 12.8% reporting symptoms at a level indicative of two or more disorders.

Table 4-1 Correlation matrix of continuous independent variables

	Depression	Posttraumatic stress	Anxiety	Alcohol use	Work functioning	Social life functioning	Family life functioning	Resilience	Anticipated Stigma	Service concerns	Self-Stigma	Friend Positive	Friend Negative	Family Positive	Family Negative
Depression	1														
Posttraumatic stress	**.812****	1													
Anxiety	**.866****	**.816****	1												
Alcohol use	.343**	.382**	.338**	1											
Work functioning	**.660****	**.657****	**.628****	.251**	1										
Social life functioning	**.710****	**.706****	**.671****	.284**	**.838****	1									
Family life functioning	**.698****	**.691****	**.665****	.283**	**.806****	**.896****	1								
Resilience	**-.518****	**-.501****	**-.526****	-.190**	-.470**	-.484**	-.477**	1							
Anticipated Stigma	.333**	.321**	.320**	.152**	.291**	.322**	.314**	-.269**	1						
Concerns about services	.351**	.340**	.336**	.146**	.272**	.322**	.309**	-.297**	**.656****	1					
Self-Stigma	.336**	.323**	.320**	.176**	.241**	.290**	.282**	-.261**	**.665****	**.681****	1				
Friend +ve	-.296**	-.260**	-.258**	-.096**	-.209**	-.264**	-.252**	.279**	-.224**	-.270**	-.249**	1			
Friend -ve	.155**	.153**	.168**	.114**	.120**	.124**	.121**	-.154**	.112**	.132**	.117**	.065**	1		
Family +ve	-.283**	-.253**	-.239**	-.105**	-.182**	-.239**	-.249**	.196**	-.170**	-.227**	-.194**	.300**	-.061**	1	
Family -ve	.270**	.262**	.274**	.118**	.192**	.226**	.277**	-.228**	.201**	.202**	.194**	-.203**	.303**	-.226**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Tolerance levels were used to assess multicollinearity with possible problematic variables identified: PHQ-9 (0.20) and GAD-7 (0.21); Social functioning (0.15) and Family life functioning (0.17). There are discrepancies in the literature as to what value of tolerance constitutes problematic multicollinearity, ranging from tolerance less than 0.10 (Tabachnick & Fidell, 2007) to 0.25 (Menard, 1995), however the results fell between these standard ranges. O'Brien (2007) suggests caution in removing variables due to the impact of other factors such as R^2 and sample size. When examining collinearity diagnostics, a condition index of 56 and two variance proportions for two individual variables greater than 0.50, also suggested possible multicollinearity (Belsley, Kuh, & Welsch, 1980). Given that the impact of multicollinearity is reduced in larger sample sizes, all variables were retained and implications of potential multicollinearity including suppression/confounding were considered during interpretation of results.

4.4 Results

The results show that one in five (21.4%) of participants had a probable 30-day disorder (PTSD, depression or anxiety) at the time of participating in the survey, and just over half of those (54.3%) had seen a GP/Medical Officer (MO), psychologist, psychiatrist or other mental health professional in the previous 12 months. Table 4-2 shows the demographic breakdown and relationship of self-reported 12-month service use to demographics and psychological health.

The results in Table 4-2 show that one quarter of the total sample (24.8%) had seen either a GP or mental health professional for their mental health in the 12 months prior to the survey. ADF females ($\chi^2 = 103.14$, $p < .001$), personnel who were single ($\chi^2 = 64.38$, $p < .001$), Transitioned ADF ($\chi^2 = 22.05$, $p < .001$) and lower ranks ($\chi^2 = 54.48$, $p < .001$) had proportionally greater mental health service use than comparison groups. There were similar proportions of mental health service use between the three Services. Those who used services reported significantly higher current PSTD, depression and anxiety symptoms, as well as increased alcohol use.

Those who had never been concerned about their mental health were the least likely to use mental health services in the previous 12 months (3.7%). However, the majority of participants did not have symptoms at the time of the survey and may not have sought help because they did not have a need for services. Therefore, it is helpful to also examine use in those specifically with probable disorder. Out of 2,219 individuals with a probable 30-day disorder, less than 10%

(*n* = 187) reported no perceived need, with the majority of those participants not utilising mental health services in the previous 12 months (87.2%).

Of those *without* a current disorder, 1,307 (11.3%) had also used mental health services in the previous 12-months. It is likely that some of these individuals may have previously had symptoms, received mental health services and subsequently recovered, but the current data are insufficient to inform this hypothesis.

Table 4-2 Demographics and psychological health of current and former ADF members reporting 12-month mental health service use (MHSU)

		No 12mth MHSU	12mth MHSU		
	N	%	%	χ^2	*p*
Total	11,587	75.2	24.8		
Sex				103.14	<.001
Male	9,222	77.2	22.8		
Female	2,184	66.8	33.2		
Relationship Status				64.38	<.001
Single	1,846	67.8	32.2		
In a relationship	9,462	76.6	23.4		
Transition status				22.05	<.001
Permanent	7,683	76.6	23.4		
Transitioned	3,752	72.5	27.5		
Service				3.56	.169
Navy	2,563	76.0	24.0		
Army	5,276	74.4	25.6		
Air Force	3,568	75.8	24.2		
Rank				54.48	<.001
Officer	4,404	78.4	21.6		
SNCO	3,882	75.0	25.0		
JNCO/OR	3,127	71.0	29.0		
Perceived Need				1824.05	<.001
No	4,588	96.3	3.7		
Yes	6,847	61.1	38.9		
		Mean (SD)	**Mean (SD)**	***t***	***p***
Age		41.95 (10.20)	41.00 (9.54)	4.34	<.001
PTSD symptoms (PCL-C)		23.26 (9.33)	35.90 (17.51)	-47.67	<.001
Depression symptoms (PHQ-9)		4.22 (4.79)	9.84 (7.36)	-46.00	<.001
Anxiety symptoms (GAD-7)		2.86 (3.77)	7.40 (5.99)	-46.92	<.001
Alcohol Use (AUDIT)		5.17 (4.18)	7.02 (6.65)	-17.01	<.001

Abbreviations: MHSU, Mental Health Service Use; SNCO, Senior Non-Commissioned Officer; JNCO/OR, Junior Non-Commissioned Officer/Other Rank; SD, Standard Deviation.

4.4.1 Factors associated with 12-month mental health service use.

The results of the logistic regression modelling factors associated with mental health services are presented in Table 4-3. The logistic regression model with only predisposing demographics included (Model 1), indicated that the odds of mental health service use were significantly greater for females (OR=1.72, 95% CI 1.52, 1.96) compared to males, and this remained true even when additional variables were added into the regression. Participants who were single had greater odds of 12-month mental health service use than those in a relationship (OR=1.31, 95% CI 1.15, 1.50) and although the effect was attenuated with the introduction of additional variables, relationship status was still a significant predictor in the final model.

Model 1 suggested Permanent ADF members were less likely to seek care than ADF members who had transitioned out of service, but once psychological symptoms and perceived need were taken into account, Permanent ADF were *more* likely to report 12-month mental health service use than Transitioned ADF. Likewise, there was no significant effect found for Service in Model 1, but a significant effect was subsequently found once need was taken into account. The opposite effect was observed with ADF rank, which initially had a significant effect, but became non-significant with the addition of Need variables to the model.

The addition of need variables to Model 2 was shown to improve the baseline model (χ^2 = 2150.24, p<.001), with an increase in Nagelkerke's R^2 from .025 to .353. In particular, the odds of 12-month service use in those who perceived a mental health need were 9.57 (95% CI 7.83, 11.68) times greater than those who had never had a concern. Increased symptoms of depression, PTSD and anxiety were associated with greater likelihood of 12-month mental health service use. However, once impact of symptoms on functioning and other beliefs were taken into account, only PTSD symptoms continued to be significantly associated with mental health service use (OR=1.03, 95% CI 1.02, 1.04). The odds ratio represents a 1.03 increase in odds for a 1-point increase on the PCL-C. A 10-point increase on the PCL-C, representing progression to a higher risk category, equates to 1.34 times the odds of mental health service use.

The impact of symptoms on ability to function in various life domains also contributed significantly to the model predicting service use (χ^2 = 223.17, p<.001). In particular, the extent to which symptoms disrupted work (OR=1.17, 95% CI 1.13, 1.21) or family/home life

Table 4-3 Sequential models of predisposing, need and enabling factors associated with 12-month mental health service use

	Model 1 (Demographic)	**Model 2 (Model 1 + Need)**	**Model 3 (Model 2 + Functioning)**	**Model 4 (Model 3 + Beliefs)**	**Model 5 (Model 4 + Enabling)**
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Predisposing demographics					
Sex *(Ref. Female)*					
Male	**0.58 (0.51, 0.66)**	**0.58 (0.50, 0.68)**	**0.58 (0.50, 0.68)**	**0.58 (0.50, 0.68)**	**0.61 (0.52, 0.71)**
Age	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	1.00 (1.00, 1.01)	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)
Relationship Status *(Ref. In a Relationship)*					
Single	**1.31 (1.15, 1.50)**	1.15 (0.99, 1.35)	**1.19 (1.01, 1.39)**	**1.19 (1.01, 1.40)**	**1.20 (1.02, 1.43)**
Transition status *(Ref. Transitioned)*					
Permanent	**0.86 (0.77, 0.96)**	**1.57 (1.37, 1.80)**	**1.57 (1.37, 1.80)**	**1.48 (1.27, 1.72)**	**1.49 (1.28, 1.72)**
Service *(Ref. Air Force)*					
Army	1.06 (0.94, 1.19)	**0.83 (0.73, 0.95)**	**0.82 (0.71, 0.94)**	**0.84 (0.72, 0.97)**	**0.84 (0.73, 0.97)**
Navy	0.95 (0.83, 1.10)	**0.82 (0.70, 0.97)**	**0.83 (0.70, 0.98)**	**0.83 (0.71, 0.99)**	**0.83 (0.70, 0.98)**
Rank (*Ref. Officer)*					
SNCO	**1.26 (1.12, 1.42)**	1.08 (0.94, 1.24)	1.06 (0.92, 1.22)	1.07 (0.93, 1.24)	1.09 (0.94, 1.26)
JNCO/OR	**1.35 (1.17, 1.54)**	1.15 (0.98, 1.35)	1.11 (0.95, 1.31)	1.12 (0.95, 1.33)	1.14 (0.96, 1.36)
Need					
Perceived Need		**9.57 (7.83, 11.68)**	**8.36 (6.83, 10.24)**	**7.69 (6.26, 9.45)**	**7.65 (6.23, 9.41)**
Depression		**1.02 (1.00, 1.04)**	0.99 (0.97, 1.01)	1.00 (0.98, 1.02)	1.00 (0.98, 1.02)
Posttraumatic stress		**1.04 (1.03, 1.04)**	**1.02 (1.02, 1.03)**	**1.03 (1.02, 1.04)**	**1.03 (1.02, 1.04)**
Anxiety		**1.04 (1.02, 1.06)**	**1.03 (1.01, 1.05)**	1.02 (0.99, 1.04)	1.02 (0.99, 1.04)
Alcohol Use		1.01 (0.99, 1.02)	1.01 (1.00, 1.02)	1.01 (1.00, 1.02)	1.01 (1.00, 1.02)
Disability					
Work			**1.17 (1.13, 1.21)**	**1.15 (1.11, 1.19)**	**1.14 (1.11, 1.18)**
Social			1.00 (0.96, 1.04)	1.00 (0.96, 1.05)	1.01 (0.97, 1.06)
Family			**1.05 (1.01, 1.10)**	**1.06 (1.01, 1.10)**	**1.05 (1.01, 1.09)**
Predisposing beliefs					
Resilience				**0.63 (0.57, 0.69)**	**0.61 (0.56, 0.67)**
Service Concerns				**0.96 (0.94, 0.98)**	**0.96 (0.95, 0.98)**
Self-Stigma				**0.89 (0.87, 0.91)**	**0.89 (0.87, 0.91)**
Anticipated Stigma				**1.04 (1.02, 1.05)**	**1.04 (1.02, 1.05)**
Enabling - Social Support					
Friend +ve					**1.08 (1.03, 1.13)**
Friend -ve					0.98 (0.94, 1.01)
Family +ve					1.00 (0.95, 1.05)
Family -ve					1.03 (1.00, 1.06)
-2 log-likelihood	9271.65	7121.42	6898.25	6613.16	6600.49
Nagelkerke R^2	.025	.353	.383	.420	.421
Likelihood ratio test	142.82 (p<.001)	2150.24 (p<.001)	223.17 (p<.001)	285.09 (p<.001)	12.67 (p=.013)

Abbreviations: MHSU, Mental Health Service Use; SNCO, Senior Non-Commissioned Officer; JNCO/OR, Junior Non-Commissioned Officer/Other Rank; SD, Standard Deviation

(OR=1.05, 95% CI 1.01, 1.10) was significantly associated with greater 12-month mental health service use. This remained the case even with additional variables added to the model. Disruption to social life was not associated. To put these results into perspective, a score of five or above is considered 'significant' impairment, a score which doubled the odds (OR=2.19) of mental health service use in those with impairment at work compared to those without. However, 'significant' impairment at home was only associated with 1.28 times the odds of mental health service use compared to those without impairment. This may represent a greater burden of impairment at home existing prior to help-seeking.

Predisposing beliefs of resilience, service concerns and self-stigma were significantly associated with less mental health service use, whilst anticipated stigma was significantly associated with greater service use. The addition of these variables to the model contributed significantly to the prediction of service use (χ^2 = 285.09, p<.001). Lastly, whilst enabling factors did contribute significantly to the model (χ^2 = 12.67, p<.05), only affective support from friends was significantly associated with increased mental health service use (OR = 1.08, 95% CI 1.03, 1.13). The gains in Nagelkerke's R^2 (a pseudo measure of the proportion of variation in the outcome variable explained by the independent variables) were also minimal with an increase from .420 to .421.

Of all participants, 17.6% had seen a GP and 22.5% had seen a mental health professional. Among those with probable disorder, 42.3% had seen a GP and 50.0% had seen a mental health professional. As detailed in Table 4-4, the proportion of participants using mental health professionals were slightly higher than rates of GP use for mental health issues across all sub-populations. As these were not mutually exclusive groups, differences between use of GPs and Mental Health Professionals were not tested. When the model of predisposing, need and enabling factors was applied to 12-month GP service use, there were some marginal differences in the outcomes for the overall GP service use model and compared to the model predicting Mental Health Professional use. Junior ranks (JNCOs/ORs) were more likely to see a GP for their mental health than Officers (OR=1.35, 95% CI 1.11, 1.63, p=.002), and higher anxiety symptoms and alcohol use issues were correlated with use of a GP, whereas they did not predict mental health professional service use. Age was significantly associated with use of a GP but not mental health professionals, with older age associated with greater odds of using a GP for mental health (OR=1.01, 95% CI 1.00, 1.02, *p*=.007).

Table 4-4 Predisposing, need and enabling factors associated with 12-month mental health service use from GP or mental health professional

	GP		Mental health professional	
	n (%)	**OR (95% CI)**	**n (%)**	**OR (95% CI)**
Sex				
(Ref. Female)	525 (24.0%)		654 (29.9%)	
Male	1491 (16.2%)	0.56 (0.47, 0.67)***	1912 (20.7%)	0.65 (0.56, 0.77)***
Relationship Status				
(Ref. In a Relationship)	1557 (16.5%)		2012 (21.3%)	
Single	447 (24.2%)	1.27 (1.05, 1.52)*	538 (29.1%)	1.19 (1.00, 1.41)
Transition status				
(Ref. Transitioned)	756 (20.1%)		909 (24.2%)	
Permanent	1262 (16.4%)	1.50 (1.27, 1.77)***	1660 (21.6%)	1.64 (1.41, 1.92)***
Service				
(Ref. Air Force)	623 (17.5%)		775 (21.7%)	
Navy	433 (18.2%)	0.80 (0.66, 0.96)*	557 (23.4%)	0.86 (0.72, 1.02)
Army	960 (16.9%)	0.76 (0.65, 0.90)**	1235 (21.7%)	0.87 (0.75, 1.01)
Rank				
(*Ref. Officer)*	636 (14.4%)		863 (19.6%)	
SNCO	705 (18.2%)	1.16 (0.98, 1.37)	879 (22.6%)	1.08 (0.93, 1.25)
JNCO/OR	676 (21.6%)	1.35 (1.11, 1.63)**	825 (26.4%)	1.13 (0.95, 1.35)
Perceived Need	98 (2.1%)	7.76 (5.91, 10.19)***	151 (3.3%)	7.15 (5.76, 8.87)***
	Mean (SD)		**Mean (SD)**	
Age	41.21 (9.41)	1.01 (1.00, 1.02)**	40.89 (9.53)	1.00 (0.99, 1.01)
Depression	10.73 (7.48)	1.00 (0.98, 1.02)	9.98 (7.41)	1.00 (0.98, 1.02)
Posttraumatic stress	37.93 (18.14)	1.02 (1.02, 1.03)***	36.34 (17.71)	1.03 (1.02, 1.04)***
Anxiety	8.11 (6.10)	1.03 (1.00, 1.05)*	7.54 (6.01)	1.02 (0.99, 1.04)
Alcohol Use	7.37 (6.95)	1.02 (1.00, 1.03)*	7.09 (6.72)	1.01 (1.00, 1.03)
Disability				
Work	4.81 (3.54)	1.15 (1.11, 1.19)***	4.47 (3.54)	1.16 (1.12, 1.20)***
Social	5.40 (3.33)	1.00 (0.95, 1.05)	5.05 (3.37)	1.00 (0.95, 1.04)
Family	5.21 (3.30)	1.06 (1.02, 1.11)**	4.88 (3.33)	1.05 (1.00, 1.09)*
Resilience	3.07 (0.81)	0.66 (0.6, 0.74)***	3.13 (0.82)	0.61 (0.55, 0.67)***
Service Concerns	14.32 (4.79)	0.96 (0.94, 0.98)***	14.09 (4.75)	0.96 (0.94, 0.98)***
Self-Stigma	10.13 (4.12)	0.91 (0.89, 0.93)***	9.90 (4.06)	0.90 (0.88, 0.92)***
Anticipated Stigma	16.31 (5.62)	1.05 (1.03, 1.07)***	15.98 (5.60)	1.04 (1.02, 1.06)***
Social Support				
Friend +ve	3.97 (1.62)	1.06 (1.00, 1.11)*	4.03 (1.59)	1.07 (1.02, 1.12)**
Friend -ve	2.46 (1.80)	1.00 (0.96, 1.04)	2.40 (1.77)	0.98 (0.94, 1.02)
Family +ve	4.86 (1.50)	1.01 (0.95, 1.06)	4.92 (1.44)	1.01 (0.96, 1.06)
Family -ve	4.24 (2.27)	1.01 (0.97, 1.04)	4.18 (2.27)	1.03 (1.00, 1.07)*
-2 log-likelihood		5475.85		6350.84
Nagelkerke R^2		.40		.41
Likelihood ratio test		2337.60 (p<.001)		2614.80 (p<.001)

**p < .05, **p < .01, ***p < .001*

4.5 Discussion

This chapter sought to identify potential inequities in mental health service use in the Australian military community and used the framework of Andersen's model of health service use to identify predisposing, need and enabling factors associated with mental health service use. One in five (21.4%) participants had a probable 30-day disorder (PTSD, depression or anxiety) at the time of participating in the survey, and just over half of those (54.3%) had seen a GP, psychologist, psychiatrist or other mental health professional in the previous 12 months. Hypotheses regarding predisposing variables were only partially supported: as hypothesised, males were less likely to report 12-month service use than females. However, hypotheses about the influence of rank and relationship status were not supported. There was no effect of rank once symptoms were taken into account, and in contrast to expected results, being single was associated with greater likelihood of service use.

Other predisposing factors found to be associated with service use were Service and transition status, with Navy and Army less likely than Air Force, and Transitioned ADF less likely than Permanent ADF, to report 12-month mental health service use. Age was found not to be associated with overall service use but was for GP use only. Predisposing beliefs such as higher levels of resilience, concerns about mental health services and self-stigma were all associated with less likelihood of service use. In contrast, higher levels of anticipated stigma were associated with greater likelihood of having used mental health services in the previous 12 months.

As expected, need was a key factor for mental health service use and in particular, perceived need (as represented by subjective mental health concern), greater posttraumatic stress symptoms and disability were associated with greater likelihood of service use. The only enabling factor found to be associated with service use was affective support from friends. These findings are considered in more detail and in light of previous research below.

4.5.1 Stigma

The results of this study support the growing body of evidence suggesting that anticipated stigma (concerns about career and anticipated reactions of others), is not a barrier to care in military populations (Sharp et al., 2015). Not only did the current study find it was not a barrier, but anticipated stigma was associated with greater reporting of service use. A positive association has been found in a small number of previous studies (DeViva et al., 2016; Sharp

et al., 2015) and in a study of US veterans with PTSD, stigma concerns were also associated with greater number of psychotherapy visits and counselling sessions (Rosen et al., 2011).

The directionality of influence cannot be assessed in the current study due to the cross-sectional nature, but previous research has found that anticipated stigma increases as symptoms increase and also decreases with symptom reduction (Jones et al., 2015), suggesting that it is most salient to those most likely to be in need of services. However, in the current study symptoms are controlled, as are other variables shown in the previous chapter to be associated with anticipated stigma (age, transition and social support). Therefore, it is possible that mental health service use may generate actual experiences of stigmatising attitudes and behaviours, resulting in higher reports of this type of stigma. The measurement of stigma is limited in the current study and future research would benefit by including measurement of additional types of stigma, including experiences of stigma.

The current study also extends previous literature by examining the effect of self-stigma, which was found to be associated with less likelihood of service use. Very few studies in military populations have explored the concept of self-stigma in relation to help-seeking, despite considerable research in the general population (Corrigan & Rao, 2012; Vogel et al., 2006). Although self-stigma and help-seeking intentions has been examined previously in military populations (Blais & Renshaw, 2013; Wade et al., 2015), the current study is the first known population study of self-stigma and mental health service use behaviour in the military context. The results reported here suggest that self-stigma may be a barrier to care in the ADF and that there is benefit in addressing self-stigma in Defence mental health policy and health promotion activities.

4.5.2 Mental health need

A key factor associated with service use was perceived need, with those who reported a subjective mental health concern having over seven times the odds of service use than those who did not perceive a need. This is consistent with previous research, particularly in the Canadian military which suggests that lack of perceived need is the leading barrier to care in the Canadian Armed Forces (CAF). Researchers suggest that investment in psycho-education in the CAF has resulted in improved recognition of care need (Fikretoglu et al., 2016). The ADF has also invested heavily in psycho-education (Department of Defence, 2017) and whilst it is important to continue to address this issue, it is also important to note that the overall numbers

in this hidden unmet need group are low. Therefore, it may be that the overall burden of hidden unmet need is also low, and that resources might be better focused towards those who recognise a need but have not yet sought care. Further understanding of adverse outcomes, such as suicide, in this group would need to be examined to further support this claim.

Previous research has suggested that mental health literacy is necessary but not sufficient to change help-seeking behaviour (Kelly & Barker, 2016). This would appear to be the case within the ADF, where most members exhibiting symptoms of mental illness appear to recognise a mental health concern, yet additional factors impede access to services, in particular resilience and functioning.

Previous research has conceptualised perceived need as the extent to which symptoms interfere with functioning (Fikretoglu et al., 2007). The results presented here support the notion that interference with functioning is a key factor in help-seeking behaviour, and that particular domains of functioning are more important than others. Disruption to work life was more strongly related to mental health service use than disruption to family life and disruption to social life. It is not surprising that work functioning plays a pivotal role in help-seeking given the explicit links between functional health and capability in a military environment. The relative importance of work and family functioning over social life also fits with the idea that help-seeking may be delayed until symptoms are so severe that they can no longer be ignored (Michel et al., 2018; Sharp et al., 2015).

Posttraumatic stress, depression and anxiety were associated with greater likelihood of seeking care, but when functional impairment and predisposing beliefs were considered, only posttraumatic stress remained significant. The results are consistent with previous research in the ADF which found higher levels of mental health service use for PTSD compared to depression and alcohol use (McFarlane et al., 2011). Previous research also suggested that men, who make up a large proportion of the military population, can have difficulty recognising and understanding prototypical presentations of depression (Seidler, Dawes, Rice, Oliffe, & Dhillon, 2016). It may be that mental health literacy is greater for PTSD than other conditions in military populations due to military mental health promotions and public or media representations of military mental health which focus heavily on PTSD over other disorders.

Delays in service use until symptoms increase in severity and impact on functioning is problematic due to the potential for increased resistance to treatment and subsequent psycho-

social impact (Michel et al., 2018). Whilst it is positive that ADF members are able to seek care for PTSD, and this may reflect the focus of education efforts on PTSD in this group, of concern is the lack of association with depressive, anxiety and alcohol disorder symptoms, suggesting the need for further work in addressing help-seeking across a broad spectrum of conditions.

In contrast to the above findings, symptoms of alcohol and anxiety disorder were marginally predictive of the use of GPs for mental health reasons, but not overall mental health service use or use of mental health professionals. This may be due to physical manifestations of these disorders and there may be opportunity in the primary care space to improve uptake of evidence-based therapies for these disorders. However, small effect sizes indicate that further research would be required to know what, if any, practical applications apply.

4.5.3 Resilience

Very little research has considered the role of resilience in help-seeking, yet the predominant focus on resilience for wellbeing in the military training continuum would suggest that policy makers would benefit from understanding this relationship better. The results presented here show that higher levels of resilience are associated with less help-seeking even when controlling for severity of symptoms and impact on functioning. The resilience measure used in the current study may reflect self-efficacy and perceptions of ability to self-manage, with items such as “I usually come through difficult times with little trouble” and “I have a hard time making it through stressful events” (reverse scored), and reflect a predisposing belief/identity with which help-seeking is incongruous. This is consistent with findings that preference for self-management (self-reliance) is associated with lower mental health help-seeking in both general and military populations (e.g., Adler et al., 2015; Han et al., 2018).

Adler et al. (2015) postulated that a preference for self-management may be a way of maintaining self-efficacy in dealing with life’s problems and lack of help-seeking may be a way of maintaining agency (Dabovich et al., 2019): that is, maintain capacity to exercise influence over one’s actions and personal circumstances (Bandura, 2006). There may be an optimum combination of strong but appropriate levels of resilience, paired with better ability to differentiate between problems that require calling on external supports such as health professionals versus self-managing symptoms, but further research in this area is required. Self-management could not be tested in the current chapter due to limitations in the data, however,

further examination of the relationship between resilience and self-management is presented in Chapter 7 of this thesis.

4.5.4 Men's help-seeking

The results of this research were consistent with previous research on gender differences in health services use, with males less likely to use services (Parslow, Jorm, Christensen, Jacomb, & Rodgers, 2004; Parslow & Jorm, 2000; Seidler et al., 2016). Previous research suggests cultural norms of masculinity influence men's help-seeking through higher subjective perceptions of health, concerns about loss of control and autonomy (Möller-Leimkühler, 2002). However, it should be noted that differences between men and women were significant even when perceived need, symptoms, functioning, self and anticipated stigma and resilience were also considered. One possible explanation for the remaining disparities in health service use could relate to masculine norms around self-reliance and alternative self-management strategies including maladaptive coping styles such as social withdrawal, substance abuse, risk taking behaviour and anger typically seen in men (Seidler et al., 2016). This tendency towards externalising presentations of mental illness, inclusive of maladaptive coping styles as well as somatisation (Oliffe et al., 2019; Rice, Fallon, Aucote, & Möller-Leimkühler, 2013), may also impact men's interpretation of help-seeking questions. Men may be less likely to view their health service use as specifically for mental health and more for physical health, therefore may not endorse these items. Preferences for self-management and alternative symptom management strategies will be examined further in Chapter 7.

4.5.5 Relationships and social support

The findings on relationship status conflict with previous research and are difficult to interpret. Research has found both married (Blais & Renshaw, 2013; McKibben et al., 2013) and/or separated (Fikretoglu et al., 2008) military personnel are more likely to seek mental health care, and it has been suggested that those currently in or previously in a relationship are more likely to be encouraged by others to seek care (Hom et al., 2017). The current study found that those who were single were more likely to seek care, although this was a marginal effect. Different terminology in marital status versus relationship status (i.e., single might incorporate divorced/separated) might account for the difference in findings. It is also possible that those who were partnered relied more on their partners rather than seeking external sources of support. However, the current study considered both source and quality of social support, which

did not appear to vary the results on relationship status, nor did it impact greatly on the final model.

Previous research has provided varying accounts of the role of social support in mental health help-seeking, varying by source and type of social support (Forbes et al., 2018; Marshall et al., 1997; Spoont et al., 2014; Zinzow et al., 2012). The results here are somewhat consistent, in that the quality of support systems (i.e., affective support vs. negative support) impacted on results differently. However, the extent to which these findings can be interpreted is limited. This research did not measure social support specifically in relation to help-seeking behaviour, but simply the level of general social support received. Yet previous research on the sample has revealed that approximately one third of participants who sought help had assistance to do so, mainly from partners, supervisors or Medical Officers (Forbes et al., 2018). It may be that general support is less important as an enabling factor than direct assistance provided by support networks.

4.5.6 Military service characteristics

Paradoxical results were found for transition status where a higher overall rate of mental health service use was reported in Transitioned ADF, but once symptoms and perceived need were included in the model, Permanent ADF were more likely to have used mental health services. Previous research has found that Transitioned ADF have greater symptoms of mental ill health than Permanent ADF (Van Hooff et al., 2018). Therefore, the reversal of direction of association might be explained by higher levels of service use reflecting higher levels of need in Transitioned ADF rather than fundamentally different approaches to help-seeking. In addition, whilst career concerns and stigma might be thought to influence serving members more, when mental health need is taken into account, serving members were more likely to seek care. Only slight changes in the relationship between transition status and mental health service use occurred when predisposing beliefs were taken into account.

Similarly, although univariate analysis suggested little difference in mental health service use between the three Services, higher levels of symptoms in both Army and Navy compared to Air Force were expected (McFarlane et al., 2011; Van Hooff et al., 2018). Results suggest comparable levels of service use in Navy, Army and Air Force, irrespective of differing levels of need, however when perceived need and psychological symptoms were taken into account,

Navy and Army personnel reported disproportionately lower service access than Air Force personnel.

4.5.7 Limitations and strengths

The data used in this research was cross-sectional and so causal pathways could not be assessed. However, the research echoes previous longitudinal findings with regards to anticipated stigma and adds to the body of literature by demonstrating potential influence of other forms of help-seeking stigma and predisposing beliefs. Further longitudinal research would be beneficial to confirm the role of self-stigma and resilience in military mental health service use.

This research only examines contact with GPs or mental health professionals for mental health purposes but does not capture other metrics relevant to service use, such as number of visits, access to evidence-based care, adherence to treatment, quality of care and care outcomes. Conversely, the strength of this research is that it includes those ADF members not already in care with a hidden unmet need, which allows for an understanding not only of those who are most likely to use mental health services, but also those who do not. It will be important for future research to conceptualise help-seeking as a process, which includes both formal and informal sources (Rickwood & Thomas, 2012) and understand the various pathways and facilitators into quality mental health care and how previous care experiences impact future help-seeking behaviour (Rafferty et al., n.d.).

This is the first known research to comprehensively examine predictors of mental health service use in a current and ex-serving ADF cohort, addressing a range of factors likely to affect access to care. It is also the only known research that has measured self-stigma in relation to help-seeking behaviour (not just intentions) in a large military sample. The initial exploration of these factors will inform future research efforts, as well as current policy strategies within Defence and Veterans' Affairs.

4.5.8 Implications

A positive finding of this research is that those ADF members most in need of mental health services are the ones most likely to access care. Those with greater symptoms and functional impairment are more likely to seek help. However, the research also suggests that issues of stigma could affect service use.

Rates of endorsement of public stigma in the ADF are low (Forbes et al., 2018) but research also suggests that stigma fluctuates with symptoms, becoming more salient as individuals become unwell (Jones et al., 2015). In this research, even when controlling for symptoms and functioning, those who had sought care reported more anticipated stigma, potentially reflecting actual experiences of stigmatising behaviour. Future research and stigma-reduction strategies should consider measuring and addressing implicit or unconscious bias (Peris, Teachman, & Nosek, 2008) towards those with mental illness in the ADF. Measurement of stigma was limited in the current study, and future research should focus on other ways to measure stigma implicitly (Rüsch, Corrigan, Todd, & Bodenhausen, 2010), either through a modified Stroop approach (Stroop, 1935) or implicit association test (Sriram & Greenwald, 2009).

Regardless, the results presented here demonstrate that self-stigma is an important construct to address. Public health initiatives, including group training such as ADF resilience training, should be careful of increasing stigma when building self-reliance and personal responsibility. Worldviews stressing personal responsibility have been shown to be associated with negative implicit stereotypes of people with mental illness (Rüsch, Todd, Bodenhausen, & Corrigan, 2010). Whereas beliefs in a just world for oneself ('I get what I deserve') can reduce self-stigma, it can also increase implicit blame among those with mental illness. This highlights the need to consider potential unexpected and adverse consequences of resilience training and the need for nuanced messaging about stigma, self-reliance and mental health. Chapter 7 will examine the relationship between self-reliance and stigma in more detail.

Lastly, a lack of perceived need for care was a major barrier for some individuals, and taken together with issues of self-stigma, resilience and negative attitudes to care, these results can inform current approaches to health communication and service delivery. Emerging research suggests that strength and courage-based norms might be used to promote help-seeking as well as tailoring treatments to accommodate shared decision making and action-oriented approaches (Oliffe et al., 2019; Seidler et al., 2016). This approach recognises the nuances of help-seeking, beyond initial contact with services but also engagement with services, to empower individuals and promote effective self-management of symptoms (Seidler et al., 2016). There is value in attempting to shift attitudes and mechanisms of service delivery to move from a perception of care as a last resort, to one that ADF members can use to support the management of their own wellbeing. Greater understanding of ADF members' preferences for service delivery and self-management is required for this to occur.

Programs that incorporate the voices of those with lived experience through co-design and other participatory methods would be beneficial in this regard. These methods are increasingly being promoted in academia and government to produce consumer-centred services (Bombard et al., 2018; Browne & Hemsley, 2008). However, participatory design methods can be a challenging process and evidence for positive impact on health outcomes is limited (Clarke et al., 2017). Nevertheless, the results presented here indicate that continued exploration of participatory methods with ADF members is merited.

4.5.9 Conclusion

Findings in this chapter provide evidence of a range of predisposing, need and enabling factors associated with 12-month mental health service use in the ADF community. Key factors related to formal help-seeking were perceptions of need, functional impairment, self-stigma, concerns about services and resilience. Key gaps in formal help-seeking were found for males, Transitioned ADF, Navy and Army personnel, and those with self-stigma and concerns about the adequacy and relevance of mental health services. These results have implications for the design and delivery of health-promotion content and treatment services for ADF members. However, further research is required to better understand the role of self-reliance, particularly how self-management and informal help-seeking practices manifest in this population. This topic will be further examined in later chapters in this thesis.

Chapter 5 Reach of e-mental health resources for current and former ADF members

5.1 Introduction

5.1.1 Chapter overview

The previous chapters in this thesis studied formal mental health help-seeking behaviour, and factors associated with mental health service use, in current and former ADF members. This research was informed by existing evidence detailing barriers to formal help-seeking, including self-stigma, concerns about the relevance and adequacy of formal mental health services, and preferences for self-managing mental health (self-reliance). However, in addition to formal services, there is now a considerable body of informal and self-help resources delivered online, intended to support self-managed mental health and improve access to mental health care (Christensen & Hickie, 2010a).

Despite the prolific nature of development in this space and a growing interest by policy makers in the application of online services, there is little information on the current use of existing resources and a lack of knowledge about how best to target future initiatives (Meurk et al., 2016). This chapter examines reach of e-mental health resources in the ADF community, including various modalities, namely information websites, telephone helplines, social media, internet treatments and smartphone apps, and factors associated with uptake of each modality. Many individuals will use more than one modality, in conjunction with professional services, and so overlap between use of various modalities will be address this chapter. However, e-mental health use and its relationship to formal service use will be addressed in Chapter 6.

5.1.2 Background

The internet is transforming the delivery of psychosocial interventions across physical and mental health. Treatment programs have been developed both as stand-alone options to support self-managed health or to augment traditional face-to-face treatment (Christensen et al., 2010; Muñoz, 2010; Ritterband et al., 2003; Ritterband, Thorndike, Cox, Kovatchev, & Gonder-Frederick, 2009). Internet interventions are also being used for early intervention and prevention initiatives (Christensen & Hickie, 2010a) across a range of online modalities. The Australian Government is working towards a national e-mental health strategy that moves from:

> *"a small number of proven and successful online mental health and telephone crisis support services, to a respected, evidence based, accessible,*

> *professionally recognised and integrated e-mental health service environment" (Department of Health, 2012, p. 5).*

As a result, Australia has seen an expansion in development of online web-resources, internet interventions and smartphone apps to address mental health needs in the community.

E-mental health (defined in section 5.1.3 of this chapter) has also been accepted as a key priority for both Defence and DVA (Department of Defence, 2017; Department of Veterans' Affairs, 2013). However, development of defence- and veteran-specific services is only in the early stages compared to international settings. For instance, various online and mobile mental health services have been developed for U.S. military personnel and veterans, with policy and implementation trials in clinical settings (Armstrong et al., 2017; Bush et al., 2018; Owen et al., 2018; Ruzek, Kuhn, Jaworski, Owen, & Ramsey, 2016).

In Australia, Defence and DVA deliver a small number of mobile mental health apps (e.g., PTSD Coach Australia, High Res & Op Life) and forward-facing websites (e.g., Fighting Fit, Open Arms). The psychological and counselling service annexe of DVA, Open Arms, is currently trialling an online 'ecosystem' tailored to the individual and designed to connect them with e-mental health tools and services (Hickie et al., 2019) and developing an online treatment based on cognitive-behavioural therapy concepts (S. Hodson, personal communication, February 7, 2020). However, there is limited evidence of effectiveness of many of the existing smartphone apps and implementation strategies focussed on e-mental health, including coordinated training for clinicians, have not been adopted within Australian military programs outside of these projects. There are no known policies regulating or providing guidance on the use of online services in the Australian military setting and coordinated implementation in clinical care has been minimal to date. As a result, very little is known about the use of e-mental health in the ADF.

5.1.3 Definition of e-mental health services and scope

The term 'e-mental health' can be broadly defined as the use of digital technologies for the delivery of mental health related services, ranging from health promotion, prevention and early intervention, to crisis support, screening, treatment and relapse prevention, as well as electronic records systems and education (Riper et al., 2010). Telephone helplines are considered in the current research and would fit within the definition of e-mental health. However, telephone helplines are not included in the definition of online mental health services. For this research,

an online mental health service is broadly defined as resources delivered primarily via the internet for the purposes of informing, assessing or treating mental illness.

There are various types of online mental health services, including:

1. Health promotion targeting mental health literacy and prevention (e.g., information websites, social media campaigns),
2. Tele-health (therapist delivered therapy via videoconferencing),
3. Therapist-supported online treatment programs (e.g., CBT-based intervention guided remotely by a clinician),
4. Self-guided online treatment programs (e.g., self-guided CBT-based intervention),
5. Programs delivered as an adjunct to therapy (e.g., smartphone apps to track mood/manage symptoms), and
6. Online support groups (e.g., on social media or online forums linked to mental health websites).

While there are various modes of delivering the above information and services, those covered in this thesis are limited to informational websites, internet interventions, social media and smartphone apps, as well as telephone helplines as a comparison of other technology-based solutions. These modes of delivery were chosen because they cover the most commonly used modes of e-mental health delivery and were also straightforward to retrieve from the data available for this research. Tele-health was not included as a separate mode in this thesis because it was not possible to extract this information from the data collected.

5.1.4 Public health impact of e-mental health

There is now substantial evidence that e-mental health interventions are efficacious in supporting and delivering evidence-based psychological treatment (Andrews et al., 2010; Arnberg, Linton, Hultcrantz, Heintz, & Jonsson, 2014; Batterham et al., 2015; Griffiths, Farrer, & Christensen, 2010). However, research trials globally experience high drop-out rates and non-usage attrition (Eysenbach, 2005; Musiat & Tarrier, 2014) and uptake by consumers and clinicians has not been optimal to date (Christensen, Reynolds, & Griffiths, 2011; Waller & Gilbody, 2009). This may be in part due to poor integration with existing service delivery and accreditation (Batterham et al., 2015), lack of knowledge of services or users feeling overwhelmed with the amount of options available (Whealin, Jenchura, Wong, & Zulman, 2016), privacy and security concerns (Lipschitz et al., 2019) and perceived or real gaps between

users' needs and the online services actually available, and other social and demographic context factors (Batterham, Calear, & Kurz, in press). These issues are compounded by a dearth of research on successful implementation of eHealth in 'real world' settings (Hermes, Lyon, Schueller, & Glass, 2019b; Vandelanotte et al., 2018).

To assess the broad public health impact of e-mental health, there is a need to move beyond a primarily efficacy-based research approach (Glasgow et al., 1999; Vis et al., 2018). Efficacy research relies on traditional clinical trials which operate in highly restrictive and controlled environments. This approach can fail to reflect real life heterogeneity of consumers and settings, and therefore cannot approximate effectiveness of the intervention at a public health or community level. To understand the impact of an intervention, a range of dimensions need to be assessed, such as its effectiveness within the setting of interest, along with reach, efficacy, adoption, implementation and maintenance, otherwise known as the RE-AIM model (Glasgow et al., 1999).

In the RE-AIM model, reach and adoption are defined in reference to the characteristics of persons and settings who are affected by a policy or program (Glasgow et al., 1999). Specifically, reach is defined at the individual level and refers to the percentage and risk characteristics of persons for whom the service or policy is designed, while adoption refers to "the proportion and representativeness of settings (such as worksites, health departments, or communities) that adopt a given policy or program" (Glasgow et al., 1999, p. 1323). It is recognised that describing reach and adoption is challenging, requiring demographic, psychosocial and organisational information for both participants and *non*-participants. Whilst trials can partially assess non-participation in clinical settings, understanding non-participation in 'real-world' settings is more challenging. For example, in a public health program for which participants are recruited from the community, non-responders self-select out and are therefore not identifiable, so understanding the factors underlying a choice *not* to engage is limited.

Implementation within the RE-AIM model refers to delivery of the program as intended whereas maintenance refers to integration into routine practice and cultural norms of an organization. Implementation assumes a targeted strategy for delivery of programs, but this is not always the case. E-mental health programs, whilst extolled for scalability, are often delivered locally and not implemented in a way that promotes broad reach and adoption. There are also complexities about sustainability, such as requirements to 'keep up' with user

expectations, technological change and ongoing workforce requirements. Programs are rarely evaluated in a real-world context where motivations for, and barriers to, use may differ from a research setting.

This thesis will not attempt to directly evaluate the implementation or maintenance of e-mental health programs in the ADF, partly because development of programs is relatively novel and are currently delivered in the absence of a detailed evaluation and implementation strategy. However, understanding current reach and adoption is critical to future policy and implementation work. In a recent review of Australian e-mental health research identifying policy-relevant gaps, Meurk et al. (2016) highlight that there is a lack of benchmarking of current e-mental health usage, particularly compared with other treatments. The authors argue that policy-focused research is required to "ensure adequate coverage of e-help-seekers" (p. 13) and identify factors underlying e-help-seeking behaviour. For example, self-help strategies are commonly used by those with mild-moderate psychological symptoms (Jorm, Griffiths, Christensen, Parslow, & Rogers, 2004) but it is not clear if the same pattern appears for self-help online. When developing e-mental health services, there is a balance for governments to decide whether to focus on services for those with moderate symptoms who may not yet require professional help, or to focus on services for individuals with severe symptoms with structural barriers to care. From a public policy perspective, this type of research provides an important additional perspective to the current e-mental health evidence base and "can inform decisions about how to allocate funds to different activities along the translational spectrum from program development to promotion" (Meurk et al., 2016, p. 13).

5.1.5 Use of e-mental health in military populations

Typically, previous research on e-mental health reach and adoption in military populations has focused in a few key areas (Ruzek et al., 2016): readiness (including technology usage in general) (Bush & Wheeler, 2015), preferences or acceptability (Whealin et al., 2015) and adoption within a trial or clinical environment (Erbes et al., 2014). The former types of research typically originate in the U.S. where the development of technology to support mental health in serving and veteran populations is driven by a congressional mandate (Owen et al., 2018). However, it is recognised that research has not 'caught up' with development (Bush et al., 2018) and there needs to be more work in the area of increasing adoption and engagement (Ruzek et al., 2016) such as through improved implementation and integration with clinical services (Owen et al., 2018).

Despite the considerable body of work led by the U.S., there remains a shortage of research about spontaneous adoption and reach of technology for mental health purposes in military populations outside of clinical presentations. One exception is a U.S. study using aggregate data of users of PTSD Coach (a mobile health application for managing PTSD symptoms), which had considerable downloads since release in 2011 and multiple session use in 60% of users. Although some users self-identified as military, this information was limited to those who chose to self-identify as military members and leave an app review (Owen et al., 2015). This approach is useful for examining the extent of use and engagement in the app, but again the views of those choosing not to download or use the app are absent.

Whealin et al. (2015) surveyed U.S. Veterans and National Guard members about their intentions to use various modalities of e-mental health services (including telehealth, internet interventions and social networking) and found that while intentions to use ranged from 32% to 57% depending on modality, barriers to care remained, especially for those with PTSD who were less willing to use these services than those without PTSD. The authors note the need to investigate actual usage (not just intentions) of online services as well as sociodemographic factors that may play a part in preferences for e-mental health care.

Research undertaken with Canadian Armed Forces personnel in 2013 examined use of professional mental health services, contrasted with reported use of the internet for mental health-related problems (Duranceau et al., 2019). Approximately 10% of the sample reported using the internet, and the majority used the internet to find information about symptoms (74%), followed by information about mental health services (30%), to talk with others via forums or social networks (15%) and approximately 4% used online therapy. Factors associated with use of the internet for mental health were greater need, being female, being from a White/Caucasian background, higher education and childhood adversity. Age, lower income, marital status and rank were not associated with internet use, which the authors suggested may be "consistent with narrowing disparities in health-related internet access" (Duranceau et al., 2019, p. 36) and represents increased access to care.

In 2015, research commissioned by Defence and DVA in Australia provided a comprehensive look at attitudes towards internet and emerging technology use, as well as use of the internet to seek mental health information or help (Burns et al., 2019; Forbes et al., 2018). Although this work provided an overview of general technology use, use for own mental health, as well as

attitudes and barriers to talking online, the scope did not allow for detailed analysis of factors associated with use and non-use of technology for mental health purposes, nor compare the use of various e-mental health modes (e.g., websites, social media, smartphone apps and internet interventions). The current research aims to provide more detailed analysis of adoption of various platforms for delivery of mental health online services and factors associated with use of those different platforms to inform future development and implementation initiatives in the ADF.

5.1.6 Summary

In summary, despite the growing development of e-mental health initiatives in Defence, DVA and Australia more broadly, little is known about users of digital mental health services by current and former ADF. As the Australian Government looks to invest more into military e-mental health initiatives, it is important to understand: (1) the current state of technology use for mental health by ADF personnel, (2) demographic and psychosocial factors associated with use, and (3) types of technologies adopted.

5.2 Research questions

In line with the RE-AIM model (Glasgow et al., 1999), the purpose of analysis in this chapter was to identify the reach of different modes of e-mental health resources in a 'real-world' sample of current and former ADF members. In consideration of the Meurk et al. (2016) recommendations, this chapter also sought to understand the factors underlying behavioural preferences for and against e-mental health modalities, including levels of mental health need and other factors associated with formal help-seeking behaviour (identified in Chapter 4 of this thesis).

The research questions to be addressed in this chapter are:

RQ3. What is the reach of different modes of e-mental health resources in a 'real-world' sample of current and former ADF members, specifically:

a. What is the rate of use of e-mental health resources by modality (internet information, telephone helplines, internet interventions, apps, social media)?
b. What socio-demographic factors are associated with use of individual e-mental health modalities?

c. Does the use of specific e-mental health modalities increase at higher levels of need (as defined by depressive, PTSD and anxiety symptoms and alcohol use)?
d. What other need factors and predisposing beliefs are associated with use of various e-mental health modalities?

5.3 Method

5.3.1 Participants

As with previous chapters, data were extracted from a study of 11,587 current and former serving ADF members completing an online survey in 2015 (Sample 1). Participants comprised 67.1% Permanent ADF members and 32.9% Transitioned ADF members. The sample was predominantly Army (46.3%; compared to 22.5% Navy and 31.3% Air Force) and male (80.9%), with an age range of 18 to 74 (M = 41.7, SD = 10.2). Compared to population distributions taken from the Military and Veterans Research Study Roll (Department of Veterans' Affairs, 2015), females were overrepresented in the responding sample compared to actual military population distribution (19.1% vs 10.4%) as were Royal Australian Air Force personnel (31.2% vs 22.7%). Personnel in the lower ranks were underrepresented (27.5% vs 59.9%), as were younger ADF members between the ages of 18 to 37.

5.3.2 Measures

5.3.2.1 Online service use

Online service use was taken from 32 questions examining use of online self-help, collapsed into dichotomous outcomes. Participants were asked about their use of a list of websites, smartphone apps, telephone helplines and internet interventions "in the last 12 months to inform or assess their mental health". Dichotomous (Yes/No) responses were obtained across a range of websites (e.g., ADF website, DVA website, Beyond Blue website, other health website), telephone helplines (e.g., ADF All-hours Support, VVCS Vetline, Lifeline, other telephone helpline), internet treatment (e.g., MoodGYM internet treatment, other internet treatment), smart phone apps (e.g., PTSD Coach Australia, On Track, other smart phone app) and one item assessing social media. Relevant items were grouped and collapsed to produce five dichotomous variables indicating 12-month use (1) or no use (0) of: Any information website, Any telephone helpline, Social media, Any internet treatment, and Any smart phone app. The survey did not ask about the extent of use (i.e., one contact vs multiple contacts) nor the way in which online resources were used (e.g., for information, engage with others, monitor symptoms etc).

5.3.2.2 Perceived Need

Perceived need was assessed by one item measuring subjective mental health concerns. Participants were asked, "Have you ever been concerned about your mental health?" answering on a dichotomous Yes (1) or No (0) response.

5.3.2.3 The Posttraumatic Checklist – Civilian (PCL-C)

Posttraumatic stress symptoms were assessed using the Posttraumatic Checklist – Civilian (PCL-C: Weathers et al., 1993), a scale commonly used in ADF mental health screening (Steele & Goodman, 2006). The items on the PCL-C were totalled to produce a response range of 17 to 85. A conservative score of PCL $\geq$ 50 has been used in this research to represent probable PTSD (Forbes et al., 2001). Where possible, risk categories have been used in whole sample analysis to examine effects within sub-syndromal categories. PCL-C risk categories reported here align with Defence psychology screening policy: low (17-29), moderate (30-39), high (40-49), very high (50-85).

5.3.2.4 Patient Health Questionnaire (PHQ-9)

The Patient Health Questionnaire nine-item (PHQ-9) depression module (Kroenke et al., 2001) was used to measure symptoms of depression in 'the last 2 weeks'. Participants responded on a four-point Likert scale with total scores summed to a range of 0 to 27. The authors of the scale indicate that PHQ-9 scores of 5, 10, 15, and 20 represented mild, moderate, moderately severe, and severe depression, respectively. A cut-off of 10 was used in this thesis to represent caseness of any depressive disorder as a conservative estimate (Manea et al., 2012) of moderate to severe depression.

5.3.2.5 Anxiety

General anxiety was measured using the 7-item Generalised Anxiety Scale (GAD-7: Spitzer et al., 2006), with higher scores indicative of more severe anxiety. Participants were asked to rate how often they experienced each symptom on a 4-point scale from "Not at all" (0) to 'Nearly every day' (3), producing a total score between 0 to 21. A cut-off of 10 was used in this study to represent probable anxiety disorder, and symptom severity was indicated by the following categories: Minimal (1-4), Mild (5-9), Moderate (10-14) and Severe (15-21) (Spitzer et al., 2006).

5.3.2.6 Alcohol use

The Alcohol Use Disorders Identification Test (AUDIT: Saunders et al., 1993) was used to assess alcohol consumption and problematic alcohol use. The 10-items were summed producing a total score ranging from 0 to 40. The scale is validated in a serving ADF sample, with a score of 16 or above representing harmful/hazardous levels of drinking (Saunders et al., 1993) and 20 or above indicating likely ICD-10 harmful alcohol use or dependence (McFarlane et al., 2011). There are four zones of increasing risk based on total AUDIT score: Zone I - Low risk (0-7), Zone II - Risky/Hazardous (8-15), Zone III - Harmful (16-19), Zone IV - High risk/dependent (20+).

5.3.2.7 Any probable disorder

A dichotomous variable was derived from the PCL-C, PHQ-9 and the GAD-7, with a score above cut-off on any of these scales representing any probable disorder. Alcohol disorder was not included in the Probable Disorder variable.

5.3.2.8 Functioning

Functional impairment was assessed using the Sheehan Disability Scale (SDS: Sheehan, 1983), which assesses disability on three dimensions; work, family and social life. Answers on each dimension range from 0 (Not at all) to 10 (Extremely), with respondents indicating how much symptoms have disrupted their work, social life/leisure activities and family life/home responsibilities. A total disability score of 0-30 can be determined by adding scores on the individual dimensions together. A score of >5 on any of the individual dimensions is thought to represent functional impairment with higher scores indicating greater impairment. The SDS has shown high internal consistency in primary care samples (Leon et al., 1997) and is sensitive to treatment effects in clinical trials (Sheehan & Sheehan, 2008).

5.3.2.9 Help-seeking beliefs

Attitudes and beliefs about mental health help-seeking were measured using sub-scales identified in Chapter 3. Three scales were used to measure:

1. anticipated stigma, 5 items measuring concerns about impact on career and the opinions/reactions of others;
2. self-stigma, 4 items measuring feelings of embarrassment, inadequacy and loss of control of emotions; and

3. concerns about services, 6 items covering practical access concerns (i.e., expense, time off, appointment difficulties), lack of trust and loss of agency.

Participants were asked to indicate how much each item might affect their decision to seek help with answers on a 5-point Likert scale from 'Strongly Disagree' (1) to 'Strongly Agree' (5).

5.3.2.10 Resilience

The Ohio State University Brief Resilience Scale (BRS: Smith et al., 2008) was used to measure resilience. The scale has six items with responses on a 5-point Likert scale (Strongly Disagree to Strongly Agree). Three items are reverse scored, with the total mean score ranging from 1 to 5. The scale reflects self-efficacy in dealing with life stressors, with items such as "I tend to bounce back quickly after hard times" and "I have a hard time making it through stressful events".

5.3.2.11 Social support

The Schuster Social Support Scale (Schuster et al., 1990) was used to assess level of positive and negative social support interactions with family and friends. The scale has 10 items with each item scored on a 4-point scale from 'never' to 'often'. Affective support was measured by two questions about how often family (or friends) made them feel cared for and how often family (or friends) expressed interest in how they were doing. Three questions assessed negative interactions: how often family (or friends) made too many demands on them, how often they criticised them and how often they created tensions or arguments with them.

5.3.3 Analysis

All analyses were conducted in IBM SPSS Statistics Version 25. Variables were screened for accuracy of data capture, missing values, and fit with the assumptions of the statistical analyses to be employed, in accordance with guidelines suggested by Field (2013) and Tabachnick and Fidell (2007).

Univariate descriptive analysis examined demographic characteristics of users of each technology platform: website, telephone helpline, social media, internet treatments and smart phone application (RQ3a). Tests of independence were conducted for each categorical demographic variable and post hoc comparisons undertaken where chi-square were significant to identify socio-demographic characteristics associated with e-mental health resource use (RQ3b).

To identify if use of various e-mental health modalities increased at higher levels of need (RQ3c), the relationship between level of psychological symptoms was graphed against symptom risk categories and proportional use of each e-mental health mode. Chi-square tests were used to determine associations between use of each modality and symptom levels.

Binary logistic regression models were applied to model the associations of demographic, stigmatising beliefs and psychological factors with use of each technology platform, to identify need and predisposing factors associated with use (RQ3d). Model fit was assessed using the Hosmer and Lemeshow test.

5.3.3.1 Missing data

Less than 4.0% of cases contained missing demographic data and missing data were not more than 4.0% of cases for individual independent variables, except for resilience (6.7%), posttraumatic stress symptoms (5.9%), concerns about mental health services (5.3%), positive interactions with friends (5.3%), and negative interactions with friends (5.4%). In total, 26.5% of cases were missing data on any variable, leaving a final sample of 8,521. Little's MCAR test indicated that data was not missing completely at random, $\chi^2(1513) = 2{,}330.432$, $p < .001$. Comparisons of valid cases and cases with missing values across variables revealed significant associations between the variable 'concerns about services' with self-stigma, PHQ-9, PCL-C, GAD-7, AUDIT, BRS, Sheehan Disability Scale, and Family affective support, indicating that single imputation methods would not be recommended.

Further examination of missing value patterns revealed that missing data were nonmonotone. Multiple imputation was undertaken in SPSS Version 25 using a Monte Carlo Markov Chain procedure and 30 imputations (White et al., 2011). The logistic regression was repeated on the imputed data and pooled results compared with results from the reduced data. Only slight differences in results were found and are provided in Table B-3 in Appendix B. Results were deemed not to be substantively different and therefore the original analysis with a sample of 8,521 complete cases was retained and reported here.

5.3.3.2 Univariate and multivariate outliers

Univariate outliers were identified using the outlier labelling rule with adjustments for large datasets (Hoaglin & Iglewicz, 1987) and skewed distributions on the PHQ-9, PCL-C, GAD-7 and AUDIT (Banerjee & Iglewicz, 2007). A small proportion of univariate outliers (3.3%) were identified on the PCL-C. Multivariate outliers were detected through Mahalanobis distance, and

influence through Cook's distance and DFFITS values. Upon further examination, there did not appear to be systematic responding patterns amongst outliers and these cases were assumed to be legitimate.

5.3.3.3 Multicollinearity

As seen in the previous chapter, high bivariate correlations (> .8) were seen between psychological symptoms variables (PHQ, PCL-C and GAD-7) and also between the subscales of the Sheehan Disability Scale (Work, Social and Family life). Correlations between these variables are expected given the high levels of comorbidity in this sample, with 9.3% of the sample exhibiting symptoms indicative of one disorder and 12.8% reporting symptoms at a level indicative of two or more disorders. Tolerance levels were used to assess multicollinearity with possible problematic variables identified: PHQ-9 (0.20) and GAD-7 (0.21); Social functioning (0.15) and Family life functioning (0.17). There are discrepancies in the literature as to what value of tolerance constitutes problematic multicollinearity, ranging from tolerance less than 0.10 (Tabachnick & Fidell, 2007) to 0.25 (Menard, 1995). The results were within the upper level of these standard ranges and O'Brien (2007) suggests caution in removing variables due to the impact of other factors such as R^2 and sample size. When variables associated with high multicollinearity were removed from analyses, there were negligible differences in the outcomes of the models and therefore all variables were retained.

5.4 Results

The proportions of users of each technology mode are provided in Table 5-1, compared across demographic characteristics. Overall use varied between platforms with the highest proportion using information websites (29.2%) and internet treatment least used (2.0%). Note that these categories overlap, with 16.6% using two or more technology resources. Use was more common among those with current probable disorder, ranging from 3.4% using internet treatment to 47.0% using information websites.

Table 5-1 Proportional use of e-mental health modalities within demographic categories in the ADF, for entire sample (N=11,558) and those with probable disorder (N=2,240)

			All						Probable disorder only†					
				Website	Telephone helpline	Social media	Internet Treatment	Smart phone app		Website	Telephone helpline	Social media	Internet Treatment	Smart phone app
			N	%	%	%	%	%	**N**	%	%	%	%	%
Total			**11558**	29.2	12.2	12.3	2.0	6.4	**2240**	47.0	23.1	20.0	3.4	13.7
Sex		*χ2*		*4.32**	*8.53**	*36.32****	*7.39***	*1.07*		*3.48*	*0.55*	*9.24***	*0.31*	*1.21*
	Male		**9345**	28.8	11.7	11.4	1.9	6.3	**1823**	46.0	22.8	18.8	3.3	14.0
	Female		**2213**	31.0	14.0	16.1	2.8	6.9	**417**	51.1	24.5	25.4	3.8	12.0
Age		*χ2*		*15.22***	*50.34****	*58.64****	*0.36*	*25.80****		*3.93*	*20.37****	*18.02***	*1.50*	*8.05*
	18-27		**905**	25.7	8.7	15.9	2.1	6.9	**213**	41.8	13.6	26.8	4.2	11.3
	28-37		**3303**	27.6	13.5	14.1	2.1	7.0	**650**	46.3	25.7	20.3	3.4	15.1
	38-47		**3729**	30.6	14.2	13.0	1.9	7.5	**741**	48.6	26.0	22.1	2.8	15.5
	48-57		**2765**	29.9	10.1	8.6	2.0	5.0	**479**	47.4	19.8	14.6	3.8	10.9
	58+		**708**	31.4	8.5	10.7	2.0	4.0	**124**	50.8	20.2	16.1	4.0	11.3
Relationship Status		*χ2*		*0.9*	*0.37*	*14.46****	*0.7*	*4.87**		*3.81*	*1.31*	*0.30*	*2.79*	*0.85*
	Single		**1872**	30.0	12.5	14.9	2.2	7.5	**485**	43.1	21.0	20.8	4.5	12.4
	Relationship		**9582**	28.9	12.0	11.8	1.9	6.2	**1736**	48.1	23.5	19.7	3.0	14.0
Transition status		*χ2*		*33.76****	*11.79***	*135.73****	*1.00*	*4.23**		*13.55****	*1.13*	*23.19****	*2.57*	*0.00*
	Permanent		**7779**	27.4	12.9	9.8	1.9	6.1	**1146**	43.2	24.0	16.1	2.8	13.6
	Transitioned		**3808**	32.6	10.7	17.4	2.2	7.1	**1095**	51.0	22.1	24.2	4.0	13.7
Service		*χ2*		*20.13****	*6.03**	*33.22****	*0.14*	*22.39****		*2.41*	*0.54*	*12.65**	*1.70*	*14.50**
	Navy		**2598**	30.0	11.9	11.9	2.0	6.0	**490**	48.0	22.2	18.6	3.5	12.2
	Army		**5348**	30.7	12.9	14.0	2.1	7.5	**1199**	47.9	23.7	22.7	3.8	16.1
	Air Force		**3613**	26.4	11.2	10.0	2.0	5.1	**551**	44.1	22.5	15.6	2.5	9.6
Rank		*χ2*		*13.39***	*39.75****	*130.78****	*2.89*	*6.22**		*2.11*	*4.50*	*20.99**	*2.49*	*0.72*
	Officer		**4441**	27.4	9.8	8.6	1.8	6.0	**608**	48.0	20.1	13.8	2.6	13.2
	SNCO		**3938**	31.0	13.4	12.4	2.1	6.1	**805**	48.3	24.7	21.6	3.2	13.2
	JNCO/OR		**3186**	29.4	14.0	17.3	2.3	7.3	**824**	45.0	23.7	23.2	4.1	14.4

† Includes only those reaching cut-off on PCL-C, PHQ-9 or GAD-7

*The χ^2 statistic is significant at the .05 level, ** Significant at the .01 level, *** Significant at the .001 level.

Use of all forms of technology was more common among females as compared to males, except for smart phone apps, $\chi^2 = 1.07$, $p = .301$. However, among those with probable disorder, only social media remained associated with sex, with 25.4% of females reporting use compared to 18.8% of males, $\chi^2 = 9.24$, $p < .01$.

In those with probable disorder, social media use was also significantly associated with age, transition status, Service and Rank: the only resource to show significant associations with all demographic and service variables. A greater proportion of those with probable disorder who were Transitioned ADF, Army (compared to Air Force) or junior ranks (compared to officers) reported using social media for their mental health.

ADF service characteristics (transition, Service and rank) were also associated with use of websites, telephone helplines and smartphone apps. Use of online technology for mental health (websites, social media and smart phones) was more common among Transitioned ADF, whereas use of telephone helplines was more common among Permanent ADF. In general, use of technology was more common among Army personnel and non-commissioned ranks. Exploratory analysis indicated a non-linear effect of age for modes of technology, so it was treated in analyses as a categorical variable. Age was associated with website, telephone helpline, social media and app use. However, the pattern of results was different between technology modes. Website use was more common in the older age ranges, and telephone helpline use in the mid-age ranges, whereas use of social media and smart phone apps was more common in the younger age ranges.

5.4.1 Overlap of online resource use

Website use was almost ubiquitous among users of multiple online resources. Of those who used only one online resource, the majority had used a website (76.9%). Social media use was the next most common amongst single resource users at 16.9%. For those who used two or more resources, over 94% had used a website *and* some other resource.

Figure 5-1 shows the proportion of concurrent e-mental health resource use amongst users of each modality. Of website users, 61.9% had used only websites and no other resource and only 1.7% of website users had used the three other resources concurrently (social media, smartphone app and internet treatment). When looking at internet treatment users, 23.9% reported using all three other resources (information websites, social media and apps)

concurrently. This is compared to 1.7% of website users, 7.5% of smartphone app users, and 3.9% of social media users who used all three other resources.

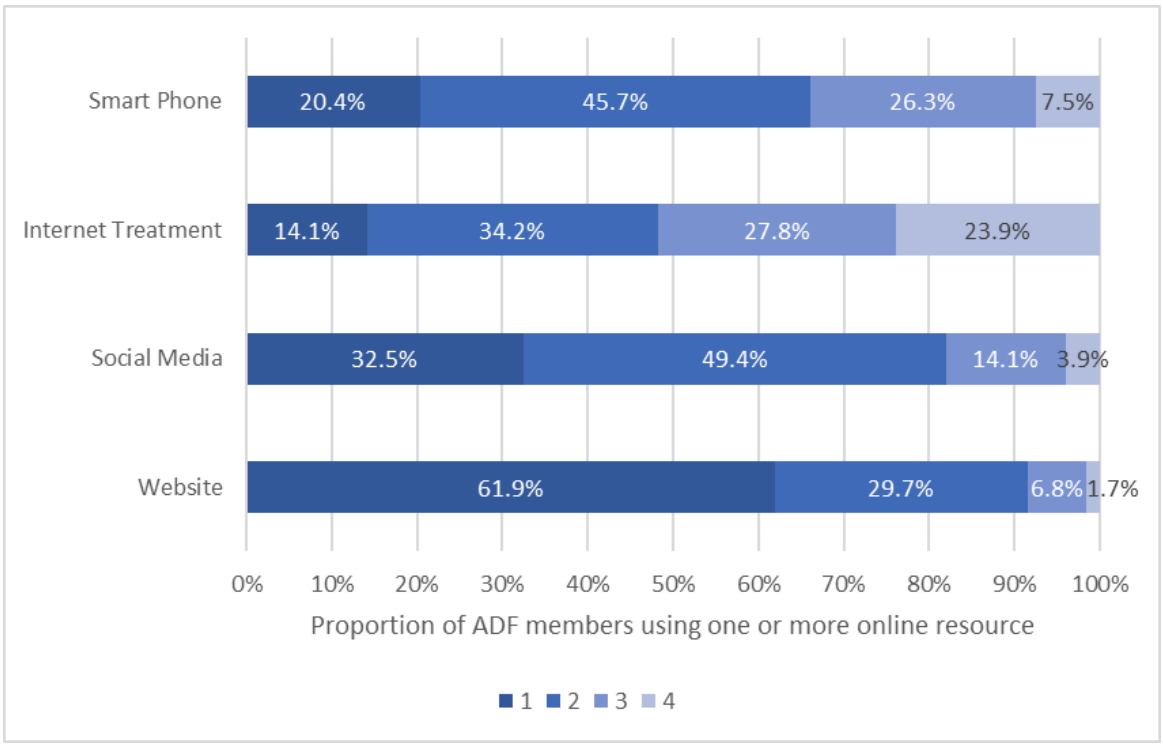

Figure 5-1 Proportion of concurrent e-mental health resource users by number of resources used in previous 12 months

5.4.2 Symptoms and e-mental health use

Figures 5-2 to 5-5 show the proportion of current and former ADF members using different forms of mental health technology resources, based on categories of psychological symptoms of PTSD, depression, general anxiety and alcohol use disorder. The pattern of results looks similar across disorders, with use of all forms of help more common among those with higher symptoms. Information websites and professional service use were most common across all levels of symptoms, but face-to-face professional service use became most common around the moderate to high symptom ranges. For example, at the low risk levels of posttraumatic stress symptoms, 22.3% (95% CI 21.4%, 23.2%) of participants had used websites in the previous 12 months and 16.1% (95% CI 15.3%, 16.9%) had used professional services. However, in the very high-risk range, 59.1% (95% CI 55.8%, 62.4%) had used websites compared to 71.9% (95% CI 68.9%, 74.9%) using professional services.

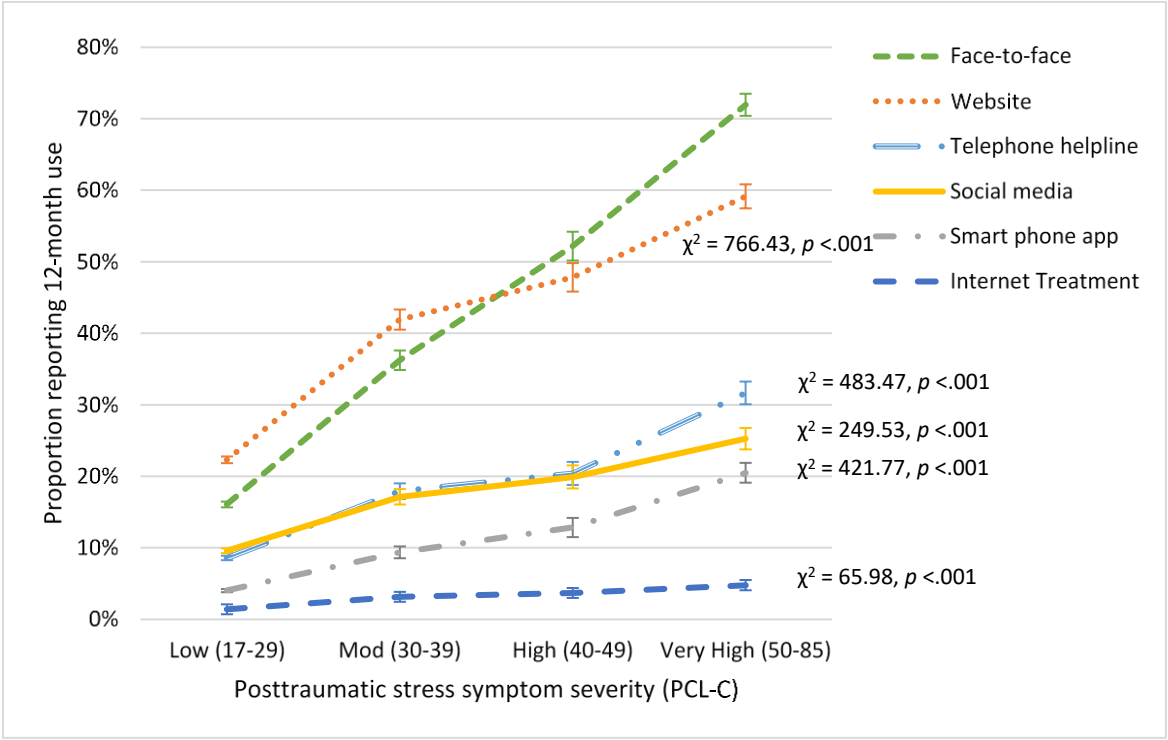

Figure 5-2 Proportions (SE) of ADF using online and traditional mental health resources by posttraumatic stress symptom severity

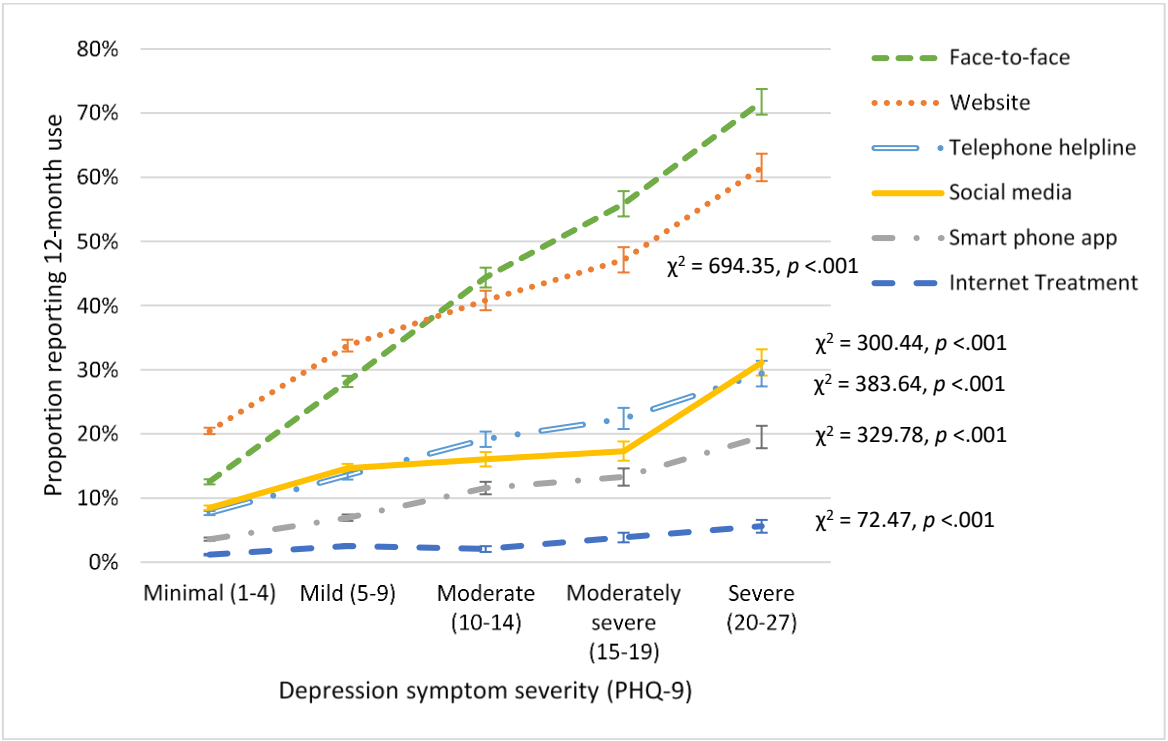

Figure 5-3 Proportions (SE) of ADF using online and traditional mental health resources by depression symptom severity

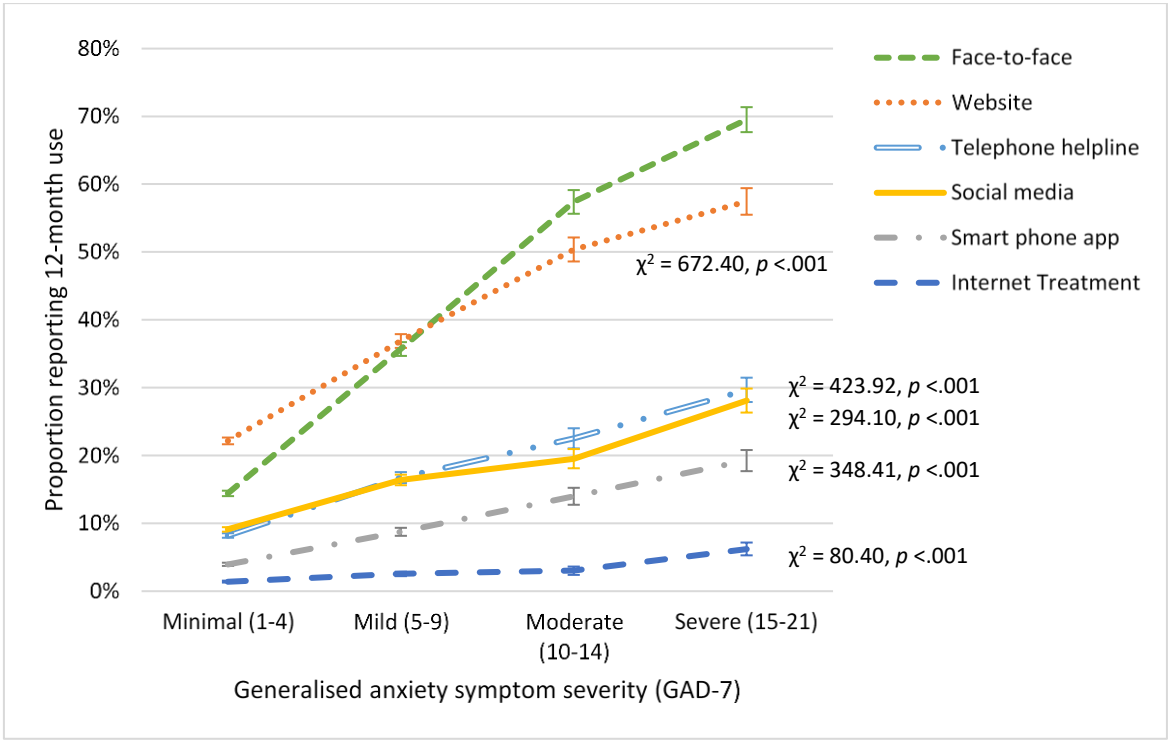

Figure 5-4 Proportions (SE) of ADF using online and traditional mental health resources by anxiety symptom severity

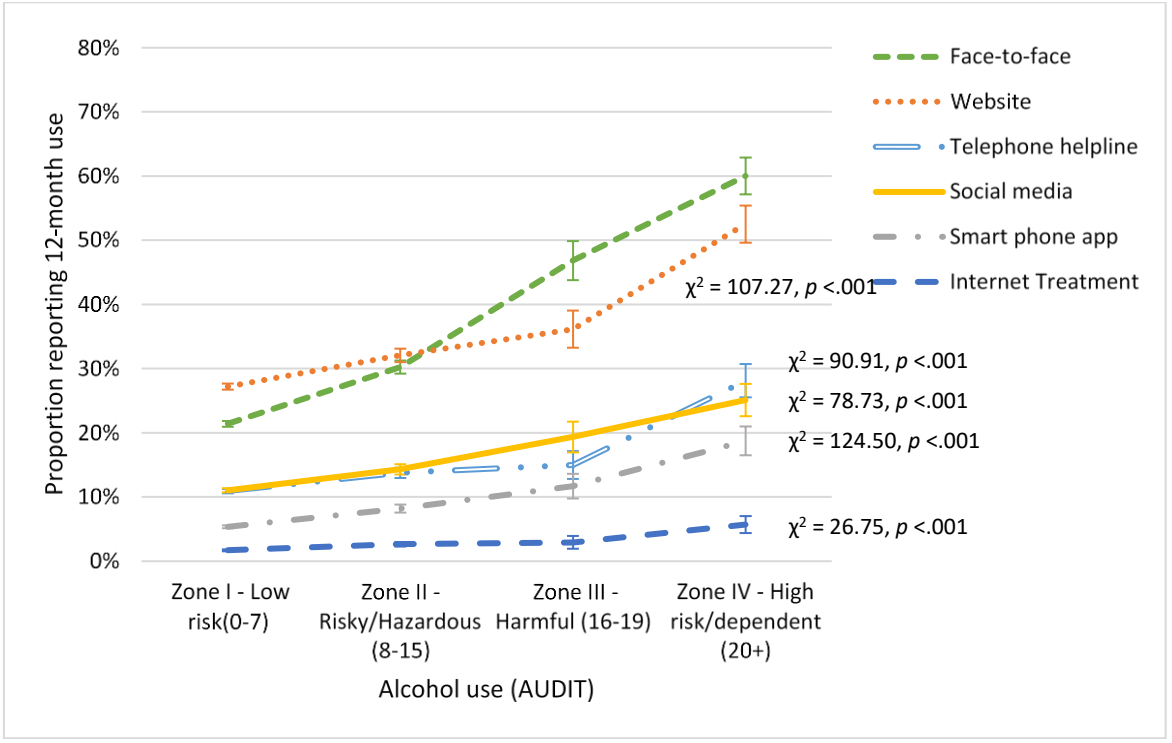

Figure 5-5 Proportions (SE) of ADF using online and traditional mental health resources by alcohol use

Figures 5-2 to 5-5 also show the proportion of users of professional mental health care in relation to proportional use of technology-based resources. From these figures, it is clear that professional care as well as website use is most common, but that face-to-face services appear to take precedence at around the moderate level symptom range. Further analysis of the relationship between online and professional service use in undertaken in Chapter 6.

Table 5-2 shows the proportion of participants who have ever had a mental health concern (perceived need), comorbid disorder and 12-month use of resources. There were significant associations between perceived need and use of each type of resource, with those having been concerned about their mental health more likely to report use of websites (χ^2 = 887.08, p<.001), helplines (χ^2 = 1096.97, p<.001), social media (χ^2 = 118.47, p<.001), internet treatment (χ^2 = 53.47, p<.001) and/or apps (χ^2 = 380.25, p<.001).

Table 5-2 Proportion of e-mental health users by mental health need and 12-month mental health service use

		Website	Telephone helpline	Social media	Internet Treatment	Smart phone app
	N	%	%	%	%	%
Perceived need						
No	4637	16.7%	5.2%	8.0%	0.8%	2.2%
Yes	6878	37.5%	16.7%	15.1%	2.9%	9.2%
Comorbid probable disorder						
0	8125	23.8%	8.9%	10.1%	1.6%	4.5%
1	970	36.3%	18.2%	16.1%	2.2%	9.6%
2	635	47.6%	20.5%	18.9%	3.1%	10.7%
3	566	58.5%	31.3%	25.4%	4.4%	20.5%
4	131	64.1%	32.8%	30.5%	7.6%	26.7%
12mth mental health service use						
No	8603	21.9%	6.3%	10.3%	1.5%	3.8%
Yes	2832	51.2%	29.7%	18.1%	3.7%	14.2%

Note: All chi-square tests were significant at p < .001.

Comorbid symptoms were also associated with technology use, with the proportion of users increasing monotonically with additional numbers of disorder. In addition, use of each technology resource was more common among those who also had accessed professional services in the previous 12 months. Half of those who used professional services had also used information websites, and just under one third had used telephone helplines. The effect was less strong for social media use, internet treatments and smartphone apps, yet still significant at p < .001. These results are examined in more detail in Chapter 6.

5.4.3 Factors underlying behavioural preferences for e-mental health modalities

Binary logistic regression was undertaken to examine need and other predisposing factors associated with use of each technology resource (Table 5-3). Overall, the models predicting use of internet treatment showed only modest fit, and for social media the goodness of fit was poor (χ^2 = 22.49, p=.004, Nagelkerke R^2 = 0.096), suggesting that the observed proportions did not match predicted proportions among sub-groups in the model population. The Nagelkerke R^2 for the model predicting use of internet treatments was also small at 0.078, suggesting that there may be factors that were not measured that better capture use of these modalities.

The logistic regression model predicting use of information websites showed that the odds of using websites to inform/assess mental health were significantly greater for those aged 58+ compared to those in the youngest age group 18 to 27. The odds were also significantly greater for those with perceived and assessed need (reflected in higher PTSD symptoms, impaired functioning at work or in social life) and those reporting negative social support from friends.

The model for use of telephone helplines revealed a number of significantly associated demographic features: sex, age, transition status, Service and rank. Perceived need, posttraumatic stress symptoms and anxiety were all positively associated with telephone helpline use as well as functional impairment in family life. The only predisposing belief to be associated with telephone helpline use was self-stigma, with lower odds of using this resource where there is greater self-stigma.

Permanent ADF, Army personnel and non-commissioned ranks showed greater odds of using social media for mental health purposes. Perceived need was the only measure of need to show a significant association with social media use, and service concerns were the only predisposing beliefs associated with use. Those who reported greater affective support from friends had greater odds of reporting social media use. In contrast, affective support from family was associated with less use of social media whereas negative interactions with family, was associated with greater likelihood of use.

Table 5-3 Predisposing, need and enabling factors relationship to 12-month reach of e-mental health modalities

	Website	**Telephone Helpline**	**Social Media**	**Internet Treatment**	**Smart Phone App**
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Predisposing demographics					
Sex *(Ref. Female)*					
Male	0.92 (0.8, 1.05)	0.81 (0.68, 0.97)*	0.69 (0.58, 0.82)***	0.70 (0.47, 1.05)	1.01 (0.8, 1.29)
Age (Ref. 18-27)					
28-37	1.03 (0.84, 1.27)	1.58 (1.15, 2.18)**	1.05 (0.82, 1.36)	0.96 (0.52, 1.79)	0.98 (0.68, 1.4)
38-47	1.16 (0.93, 1.45)	1.7 (1.22, 2.36)**	1.13 (0.86, 1.48)	0.71 (0.37, 1.39)	1.04 (0.72, 1.51)
48-57	1.23 (0.97, 1.55)	1.3 (0.91, 1.86)	0.76 (0.56, 1.03)	0.94 (0.46, 1.89)	0.72 (0.47, 1.08)
58+	1.51 (1.12, 2.03)**	1.41 (0.87, 2.26)	0.99 (0.66, 1.46)	1.38 (0.58, 3.31)	0.79 (0.45, 1.39)
Relationship Status *(Ref. In a Relationship)*					
Single	0.90 (0.78, 1.04)	0.89 (0.73, 1.09)	0.95 (0.79, 1.15)	1.09 (0.71, 1.68)	0.94 (0.73, 1.21)
Transition status *(Ref. Transitioned)*					
Permanent	1.05 (0.93, 1.19)	2.00 (1.67, 2.4) ***	0.69 (0.59, 0.81) ***	1.48 (1.00, 2.20)	1.33 (1.06, 1.66)*
Service *(Ref. Air Force)*					
Army	1.06 (0.94, 1.2)	1.04 (0.88, 1.23)	1.27 (1.08, 1.50)**	0.89 (0.61, 1.29)	1.25 (1.01, 1.56)*
Navy	1.12 (0.98, 1.29)	0.99 (0.81, 1.2)	1.08 (0.89, 1.31)	0.85 (0.54, 1.32)	1.04 (0.8, 1.35)
Rank (*Ref. Officer)*					
SNCO	1.05 (0.93, 1.18)	1.33 (1.12, 1.57)**	1.36 (1.14, 1.61)***	0.93 (0.63, 1.37)	0.90 (0.72, 1.12)
JNCO/OR	0.93 (0.81, 1.07)	1.43 (1.18, 1.74)***	1.52 (1.26, 1.84)***	0.87 (0.55, 1.37)	0.86 (0.67, 1.1)
Need					
Perceived Need	1.87 (1.65, 2.12)***	2.18 (1.8, 2.65)***	1.37 (1.15, 1.62)***	2.90 (1.74, 4.85)***	2.83 (2.14, 3.75)***
Depression	0.99 (0.98, 1.01)	0.98 (0.96, 1.01)	0.99 (0.97, 1.02)	0.99 (0.94, 1.04)	0.98 (0.96, 1.01)
Posttraumatic stress	1.02 (1.02, 1.03)***	1.02 (1.01, 1.03)***	1.01 (1, 1.02)	1.02 (1.00, 1.04)*	1.03 (1.02, 1.04)***
Anxiety	1.00 (0.98, 1.02)	1.03 (1.00, 1.06)*	1.01 (0.99, 1.04)	1.03 (0.97, 1.09)	1.02 (0.98, 1.05)
Alcohol Use	0.99 (0.98, 1.00)	1.01 (0.99, 1.02)	1.00 (0.99, 1.01)	1.02 (0.99, 1.05)	1.01 (0.99, 1.03)

	Website	**Telephone Helpline**	**Social Media**	**Internet Treatment**	**Smart Phone App**
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Disability					
Work	1.05 (1.01, 1.08)**	1.02 (0.98, 1.06)	1.01 (0.97, 1.05)	0.94 (0.86, 1.02)	1.03 (0.98, 1.08)
Social	1.04 (1, 1.08)*	1.01 (0.96, 1.07)	1.04 (0.99, 1.10)	0.99 (0.88, 1.11)	1.05 (0.99, 1.13)
Family	1 (0.96, 1.04)	1.07 (1.02, 1.12)**	1.01 (0.97, 1.07)	1.11 (1, 1.24)	0.96 (0.9, 1.02)
Predisposing beliefs					
Resilience	0.87 (0.8, 0.94)**	0.92 (0.83, 1.03)	0.92 (0.83, 1.03)	0.87 (0.68, 1.12)	0.84 (0.73, 0.96)**
Service Concerns	1.02 (1, 1.03)	0.99 (0.97, 1.01)	1.03 (1.01, 1.05)*	1 (0.95, 1.05)	1.01 (0.98, 1.03)
Self-Stigma	0.98 (0.96, 1)*	0.97 (0.94, 0.99)*	0.98 (0.96, 1.01)	1.01 (0.96, 1.07)	0.95 (0.92, 0.98)**
Anticipated Stigma	1.01 (1, 1.02)	1 (0.99, 1.02)	1.00 (0.98, 1.01)	0.97 (0.93, 1.01)	1.02 (1, 1.05)
Enabling - Social Support					
Friend +ve	1.02 (0.98, 1.06)	1.02 (0.97, 1.07)	1.08 (1.03, 1.14)**	0.94 (0.84, 1.06)	1.05 (0.98, 1.12)
Friend -ve	1.06 (1.02, 1.09)**	1.02 (0.97, 1.06)	1.04 (1.00, 1.08)	1.04 (0.95, 1.15)	1.01 (0.96, 1.07)
Family +ve	1 (0.96, 1.04)	0.98 (0.93, 1.04)	0.94 (0.89, 0.99)*	0.96 (0.86, 1.08)	0.95 (0.89, 1.02)
Family -ve	1.01 (0.99, 1.04)	1.05 (1.01, 1.09)**	1.04 (1.00, 1.08)*	0.97 (0.89, 1.05)	0.97 (0.93, 1.02)
-2 log-likelihood	9306.04	5554.95	5914.77	1474.56	3696.96
Nagelkerke R^2	.141	.135	.096	.078	.122
Likelihood ratio test	884.95 (p=.000)	615.95 (p=.000)	439.18 (p=.000)	114.45 (p=.000)	407.85 (p=.000)

Due to low numbers of participants reporting use of internet treatments, the model was under-powered and the only significant predictors of using this mode of resource were perceived need and posttraumatic stress symptoms. Results of analysis repeated with pooled multiple imputations datasets (Table B-0-3, Appendix B) had greater power (0.76) to detect an association with sex. The results indicated that men were significantly less likely than women to report use of internet treatments in the last 12 months (OR = 0.66, 95%CI 0.47, 0.92, p = .014), but that posttraumatic stress symptoms were no longer significantly associated with internet treatment use (OR = 1.01, 95%CI 1.00, 1.03, p = .154).

Permanent ADF members were more likely to use smart phone apps for mental health than Transitioned ADF as were Army personnel (compared to Air Force personnel). Higher need, as measured by perceived need and posttraumatic stress symptoms predicted use of mental health smartphone apps, whereas resilience and self-stigma predicted lower likelihood of use.

5.5 Discussion

This chapter sought to describe the reach of technology-based mental health resources to ADF members. The first aim was to describe users of various modalities of mental health resourcing, such as information websites, telephone helplines, social media, internet interventions and smartphone apps. Websites were the most common form of technology used among those with probable disorder (47.0%), followed by helplines (23.1%) and social media (20.0%). Reach of internet interventions was low (3.4%). Use of each modality was more common among those with more severe symptoms.

The second aim was to examine predisposing, need and enabling factors associated with reach of e-mental health modalities. Perceived need and symptoms were associated with use of each mode but use of websites and telephone helplines were also associated with functional impairment. Associations with predisposing factors were different across each mode. Older age was associated with greater use of websites and telephone helplines. Self-stigma was also associated with less use of websites, telephone helplines and smartphone apps, as was resilience (for websites and smartphone apps only). Social media use for mental health looked both similar and different to the other modes of help-seeking. Resilience and self-stigma were not associated with social media use, but users of social media reported more concerns about mental health services than non-users. Army personnel were more likely to use social media and/or smartphone apps than Air Force personnel, and non-commissioned ranks were more likely to

use social media and/or telephone helplines than officers. However, members who had transitioned out of full-time service were more likely to use social media than those still serving, in contrast to the use of telephone helplines and smartphone apps, which was greater among Permanent ADF. Enabling factors were also different for social media users, who reported greater affective support from friends, but less affective and more negative support from family.

Overall, results suggest varying levels of uptake between modes depending on a range of demographic factors and predisposing beliefs, indicating that e-mental health is *not* a 'one size does fits all' proposition for current and former ADF members.

5.5.1 E-mental health and symptom severity

Overall, use of technology-based mental health resources increased with greater symptoms across various disorders: depression, PTSD, anxiety and alcohol use. These results support suggestions in the literature that use of e-mental health is modulated by the severity of users' mental health concerns (Christensen & Mackinnon, 2006) and is consistent with previous research on uptake (Gunn et al., 2018). Across all disorder types, professional service use consistently took precedence over website use at the moderate symptom range. This finding is encouraging and suggests that websites may provide an important source of information for those at all symptom levels but do not replace professional services for those with more severe symptoms. Previous analysis of the same dataset (Burns et al., 2019), found that the majority of those who used websites to seek information or help for mental health received the information they required and it helped them (either a little or a lot). Commentary on e-mental health has identified this typology of e-mental health users as 'attainers' – those that get the information they need and then move on without having to engage fully with online services (Christensen & Mackinnon, 2006). The current research provides support for this notion in ADF members using websites.

5.5.2 Reach of different modes of e-mental health

The reach of use in those with elevated symptoms was also consistent across e-mental health modes and indicates that the choice of online modality may be influenced by factors other than symptoms. Newer modalities such as internet treatments and smartphone apps were least commonly used by current and former ADF members. A number of factors could influence these results, for instance, it may be that websites are a more accepted and traditional source of information. A study conducted with current and former U.S. service members in 2010 and again in 2013 found considerable use of home computers for web browsing and searching

health information. This did not change greatly between time points, but in contrast, use of smartphone technology nearly doubled in this period (Bush & Wheeler, 2015). The authors note this is related to both advances in technology and changes in military factors such as reducing deployments. The U.S. study was unable to look at demographic characteristics and also did not assess mental health specific use.

5.5.2.1 Websites

In the current study the demographic groups most likely to use websites for mental health were those aged 58 or older, suggesting that familiarity with emerging technology might be worth exploring to inform implementation practices for older users. A study of U.S. veterans with PTSD and at least one comorbid health condition found that nearly half used technology for health management, mostly for information and communication, but were less comfortable and experienced with e-health technology for support groups and mobile health options (Whealin et al., 2016). However, another recent study of older U.S. veterans found that proficiency with technology was only one factor influencing choice of modality, with those residing in urban areas more likely to prefer smartphone apps (Gould et al., 2019). Websites also require less interaction by users than internet treatments and smartphone apps, and therefore may meet different needs and expectations of users (Christensen & Mackinnon, 2006).

5.5.2.2 Social media

Different expectations and intent for use may also be considered when interpreting the similar proportions of ADF members using telephone helplines and social media for mental health purposes. These findings might seem contradictory to one study on U.S. veterans measuring help-seeking intentions which found that veterans were unlikely to use Facebook for support when “experiencing an emotional problem or suicidal thoughts” compared to formal and informal sources of help and telephone helplines (Teo et al., 2018, p. 2). However, it is likely that the aims of use of these two forms of technologies are different, with telephone helplines likely to be used for crisis support (Pirkis et al., 2016) whereas social media use may be used in varying ways (information gathering, social support either through posts to friends or specially designed support groups) (Syed-Abdul, Gabarron, & Lau, 2016; Thackeray, Crookston, & West, 2013). Unfortunately, there is little research about the use of social media for mental health, particularly in military samples. Further work is needed to understand how and why military members use social media.

It is difficult to know what type of information and support was accessed on social media or indeed how participants interpreted the survey question. The poor fit of the logistic regression model predicting social media suggests that the question may be capturing ambiguous information. Yet, the current research does suggest that those who use social media are different to those who use more traditional sources of information and support (websites, telephone helplines). In particular, younger members are more likely to use social media, as are those in the lower ranks and those who had transitioned out of full-time military service. These are groups which consistently show higher risk of disorder and suicide in the Australian military population (McFarlane et al., 2011; Van Hooff et al., 2018). Also interesting about this group is that stigma was not associated with social media use but concerns about mental health services were, indicating greater distrust of services among those using social media. Previous research shows that social media can widen access to health information/interventions for those who may not access it elsewhere (Moorhead et al., 2013; Pedersen, Naranjo, & Marshall, 2017) but also has increased risk of false or misleading information or the modelling of unhealthy behaviours (Laranjo et al., 2015).

In addition, those who used social media were more likely to report positive affective support from friends, but lower affective support and greater negative interactions with family, pointing to an association between social media and differing social support structures. It is possible that members are using social media to reach outside of the family into broader social support structures. A systematic review of social media for health communication found that social media can facilitate peer, social and emotional support for the general public and patients specifically (Moorhead et al., 2013). It may be that social media offers an opportunity for ADF members to access support that may not otherwise be available. Overall, the results suggest that social media is a potential avenue to reach those at greatest risk in military populations, although differences in social media engagement according to other socio-demographic factors (e.g., gender) must be taken into account (Syed-Abdul et al., 2016). More information is required about social media use for mental health to inform future health promotion efforts in this space.

5.5.2.3 Internet interventions

One concerning aspect of the results of this research is the underutilisation of the mode of intervention with the strongest evidence for efficacy. Evidence-based internet interventions have shown to be as efficacious as evidence-based face-to-face therapy (Andersson et al., 2019;

Andrews et al., 2010; Ebert et al., 2015), yet in the current sample as a whole, and among those with probable disorder, use was low. The results indicate that the majority of these individuals are also using other online resources.

Despite the assertion that internet treatments can overcome barriers to care, the only factors associated with use of internet treatments in this sample were perceived need. This finding could be interpreted in different ways. Firstly, it could indicate that use of internet treatments is driven by need and not by other factors, meaning that treatments delivered in this manner provide reduced disparity in service access. Equally, it could be that the factors predicting use of internet treatments are not yet well understood or tested in the current research. This is evidenced by the poor fit of models of online service use overall, suggesting that the relationship between the factors considered in this thesis and online mental health resources may not be straightforward. Other factors that may be associated with uptake that were not assessed in the current research include consumer expectations, technology proficiency, user preferences, usability and generic versus population specific design (e.g., community or military) (Batterham et al., in press; Gould et al., 2019; Hermes, Merrel, Clayton, Morris, & Rowe, 2019c).

Another interpretation might be that the needs of those spontaneously using internet treatment are not being met by traditional care models. Those who used internet treatments were the most likely to have used other technology resources and, as with other modalities, use increased with number of comorbid disorders. If designed and delivered appropriately, internet treatments might be a useful tool for those with persistent or complex needs not being met by traditional therapy (Rosenberg & Hickie, 2019). However, the proportion of users previously reported as indicating helpfulness of online therapies in the current sample varied (between 10% to 50% depending on the intervention rated) (see Forbes et al., 2018). Currently many online therapies are developed based on traditional treatment models with strong evidence base (Andersson et al., 2019), but even with existing evidence-based therapies, many consumers may not recover (e.g., Steenkamp, Litz, Hoge, & Marmar, 2015). It may be that there is a need for internet interventions that better address complex needs, using transdiagnostic (Farchione et al., 2012) or clinical staging approaches (Shah et al., 2020) and treatment methods that better account for comorbidity (Kay-Lambkin, 2019). Further investigation of the relationship between use of online services and professional services is needed and is examined in Chapter 6.

5.5.2.4 Smartphone apps

The last category examined was the use of smart phone apps. mHealth (health interventions delivered via smartphones) is a rapidly developing field, with evidence struggling to keep pace with development and revisions of apps as well as expectations of consumers. In the current research, use of smart phone apps for mental health was largely accounted for by perceived need, and some increased use amongst full-time serving ADF compared to Transitioned ADF, and Army compared to Air Force. One of the key benefits stated about mHealth is the potential to support self-management (Bush et al., 2018; Erbes et al., 2014). Yet, in the current study there was no association between service concerns and smartphone app use. Greater resilience was related to less likelihood of use, suggesting that those with a greater belief in their abilities to cope with life stressors are less predisposed to use smartphone apps overall. Whilst the current research does not directly examine self-management preferences, the results suggest that further examination of the relationship between self-management preferences and actual e-mental health usage is warranted and provided in Chapter 7.

PTSD symptoms were associated with use of smartphone apps and may reflect the greater use of PTSD Coach Australia in this sample (see Forbes et al., 2018). PTSD Coach, originally developed in the U.S. and adapted for the Australian setting (Kuhn et al., 2018), is an established resource and more mature as a platform, which may account for the association with PTSD but not depression or anxiety symptoms. Previous research indicates that mobile health apps for self-managing mental health, such as PTSD Coach, are underutilised and outcomes may be improved with support from a clinician (Possemato et al., 2016; Possemato, Kuhn, Johnson, Hoffman, & Brooks, 2017). The relationship between smartphone apps and use of professional services is examined in Chapter 6.

5.5.3 Implications

This research has implications for how Defence and DVA might improve or expand the dissemination of mental health promotion and resources online. The current research, taken together with previous research on the same sample (Forbes et al; Burns et al), suggest that websites and telephone helplines are doing relatively well at meeting intended goals, whether it be delivering mental health information to a broad section of the current and former ADF community or crisis-specific support. However, the current research also points to a number of gaps and future potential.

Firstly, groups known to be at risk of mental disorder and with less service use are using social media to assess or inform their mental health, yet the relevant Australian Government departments do not currently have a mental health-related social media strategy. The U.S. Real Warriors Campaign (RWC), run by the U.S. Defense Department's Psychological Health Center of Excellence, is an example of a multimedia campaign aimed at reducing stigma and encouraging support seeking behaviour in military populations (Acosta, Martin, Fisher, Harris, & Weinick, 2012). RWC is a broad health communication program, under which social media is included. However, there are many challenges for public health departments in the implementation of health communication campaigns which include social media (Thackeray, Neiger, Smith, & Van Wagenen, 2012) including unintended consequences. For example, in an evaluation of the RWC, video profiles of service members' personal stories were considered one of the strongest elements of the program, yet previous research has found that testimonials can lead to psychological resistance if enacted poorly (Quintero Johnson, Yilmaz, & Najarian, 2017). The RWC evaluation in 2012 found promise in the program's ability to reach intended audiences but noted the need for it to be more nimble, streamlined and responsive to population needs (Acosta et al., 2012). The program has also taken many years to develop, particularly with regard to maximising social media followers. Partnerships with existing service organisations with established social networks may enable a faster development phase if Australian military organisations were to adopt this approach. The results presented here are preliminary in nature, and future research should focus on understanding how and why ADF members use social media to better inform future initiatives. However, it is clear from these findings that engagement with the ADF community via social media holds great potential to reach those who may not yet be engaged with services.

Secondly, this research suggests that avenues for self-directed or self-managed care are currently not meeting potential. In the case of both internet treatments and mHealth applications, use was low and such services were potentially not reaching the intended audiences; that is, those with moderate symptoms with a high degree of self-reliance. It is difficult to know why this is the case. Potential factors that could influence use of these e-mental health modes include: lack of specific military content (Burns et al., 2019); lack of knowledge of services available or overwhelming nature of sheer number of applications available (Whealin et al., 2015); lack of integration into existing services, uptake and promotion by clinicians (Hermes et al., 2019a); difficulty identifying the quality of the programs themselves (Batterham et al., in press).

The current research did not distinguish between self-management apps and treatment companion (clinician-guided) apps, and therefore rates of use may be driven by treatment companion apps such as PTSD Coach, which is one of the few apps adapted for the ADF context and available on the DVA website. There are currently no ADF-specific internet treatment apps and there has been minimal implementation as compared to mHealth in the U.S. military where mHealth has been the subject of implementation trials through the Practice Based Implementation Network. The U.S. trial included clinician training, local champions for change, an online community of practice and one-on-one support for individual therapist implementation plans (Owen et al., 2018). This approach recognises that training is necessary but not sufficient for adoption of new practices within a clinical and organisational settings and the many levels of influence on the translation of evidence-based research to practice (Creason et al., 2019). Regardless, the current findings point to the need for further work in implementation, complemented by relevant scientific approaches to assess factors impacting adoption and engagement of online services.

5.5.4 Limitations and strengths

A very broad definition of 'use' was applied in the current research, as depth of engagement / use was not measured (e.g., for social media this might include measurement of peer to peer support vs passive receipt of information vs recruitment to online trials, number of hours per day on social media, number and content of posts). However, the same may be said for the measurement of self-reported professional mental health service use. The data used for this research comes from a large survey designed to capture a broad range of topics relevant to military health policy initiatives and as such was not intended to capture minute detail within each topic. Indeed, the strength of this research was in the breadth of information collected from a large sample of current and former ADF members, enabling examination of relationships between a wide range of factors related to mental health help-seeking. This is the only known study to examine e-mental health use in the ADF and as such provides the first look of this issue at a population level, highlighting key areas for future research.

The current study was observational, providing an opportunity to examine relationships between variables but not causation. Also, low response rates for the survey, particularly among personnel transitioned out of ADF service increases the risk of bias in the sample and limits the generalisability of results. The current study was intended to provide a first look at reach of e-mental health in the ADF community. However, future research should expand on the current

results by using longitudinal sampling and focusing specifically on e-mental health and professional service use rather than broad physical, mental and social health issues. Longitudinal designs, with recruitment in-service and multiple personal contacts obtained, are also likely to improve response rates for those who subsequently transition out of service.

Lastly, even with such a large sample size overall, the low rate of use of internet treatments meant that the model for associations with internet treatment use was under-powered to detect differences in unequal subgroups. Future research should consider a more defined sampling frame or a different design to better address research questions about use of internet treatments within smaller subgroups of the military.

5.5.5 Conclusion

This study is the first to examine the reach of various modes of e-mental health in the ADF community and factors associated with uptake. Overall, this research shows that mental health websites are widely used in the ADF, but there is low uptake of other modes of e-mental health, such as internet treatments and smartphone apps. The varying levels of uptake between technology modes depends on, and vary with, a range of predisposing demographic factors, help-seeking beliefs and social support, indicating that 'one size does *not* fit all' in regard to e-mental health for current and former ADF members. The results indicate that online services may not overcome stigma and other barriers to care, but further examination (provided in Chapter 6) of use in relation to professional service use is required to disentangle this relationship. It is also important to understand whether online services are being used for self-management in those who would not otherwise seek care (Chapter 7).

Chapter 6 The relationship between use of e-mental health and professional services

"For greatest impact, eHealth implementations should focus on improving quality and access to care, increasing accountability, governance and client participation within health systems, and delivering health gains for the most disadvantaged populations."

Consensus Statement of the WHO Global eHealth Evaluation Meeting, Bellagio, September 2011

6.1 Introduction

6.1.1 Chapter overview

Previous reporting in Chapter 4 of this thesis has shown that a considerable proportion of the ADF with symptoms indicative of disorder are not receiving professional help (46%). Factors that appear to motivate mental health service use include greater need, both perceived by the individual, as well as symptom severity and impairment in certain functional domains. Whilst it is promising that those with greater need are more likely to access mental health care, there remain gaps in service use. A number of factors were shown to be associated with a lack of professional mental health service use in the ADF community. These include demographic factors (being male, transitioned from full-time ADF service, serving in the Army or Navy), help-seeking beliefs (greater self-stigma and concerns about existing mental health services not meeting individual needs) and resilience (greater belief in being able to cope with life stressors).

E-mental health services have been suggested as a means to address intervention gaps for those who might not otherwise use professional mental health services, including those reporting greater help-seeking stigma (Department of Health, 2012). The previous chapter of this thesis focused on the various modes of online mental health resources and factors associated with use of these resources, irrespective of concurrent professional mental health service use. However, some individuals may use both professional and e-mental health resources and some will use only e-mental health resources. To understand whether online services address gaps in service use, it is important to contextualise e-mental health resource use with respect to non-use of professional mental health services. This chapter examines 12-month online mental health resource use relative to 12-month professional mental health service use. More specifically, the

goal of this chapter is to identify the factors associated with use of e-mental health resources, with or without professional service use, particularly focusing on help-seeking beliefs.

6.1.2 Assumptions about e-mental health and mental health service gaps

Development and research of e-mental health resources is largely driven by assumptions that the internet is a readily-accessible resource and therefore services delivered online can overcome issues such as cost, inflexibility of appointment times, geographical dispersion and wait time for services (Lal & Adair, 2014; Musiat & Tarrier, 2014). Due to anonymity and ease of access, e-mental health is also assumed to overcome stigma and improve help-seeking behaviour. However, factors that are known to limit access to professional mental health services or impact help-seeking behaviour are rarely assessed or reported in trials of e-mental health programs (Musiat & Tarrier, 2014) so it is difficult to know how effective e-mental health is at bridging gaps in service use.

Assumptions about the ability of e-mental health to fill gaps in mental health services are echoed in federal policy outlining the government strategy for e-mental health development in Australia (Department of Health, 2012). However, given the lack of evidence supporting these assumptions, decisions regarding funding, development and implementation of digital mental health services may not lead to increased equity in mental health service access in the Australian community. Furthermore, poor policy decisions have the potential to lead to increased inequity. Researchers have raised concerns about a digital divide in e-Health literacy, with certain social characteristics (e.g., male, older age, lower education, lower socio-economic status) related to less willingness or ability to use emerging technologies to improve health (Kontos, Blake, Chou, & Prestin, 2014; Neter & Brainin, 2012).

Chapter 5 examined the use of e-mental health resources and found that many of the factors associated with non-use of e-mental health resources were similar to those associated with non-use of professional mental health services (e.g., sex, ADF transition status, self-stigma). These findings could indicate that e-mental health resources in their current form could perpetuate inequities in mental health service use in the ADF community, but the previous results form only part of the story. It is possible that many users of e-mental health resources use face-to-face professional services concurrently, and that use of e-mental health has formed part of the help-seeking process for some individuals. Therefore, extension of these services may be

beneficial. Understanding how these two forms of service delivery are related is important for future development and implementation decisions for Defence and DVA.

6.1.3 The role of e-mental health in improving access to mental health care

The relationship between e-mental health and help-seeking can take multiple forms. One form is facilitation, where e-mental health resources address either structural or attitudinal barriers to care and promote seeking professional help. Another form is where the e-mental health service acts as a treatment alternative, providing access to care online where individuals are either unable (e.g., due to cost or availability) or reluctant to use professional services. A third option is where professional and e-mental health options are blended, either as part of early stepped-care, supported by contact with a GP or mental health professional or as an adjunct during or post-treatment (Erbe, Eichert, Riper, & Ebert, 2017).

Self-directed internet-based treatment, such as computerised cognitive behavioural therapy would be considered a valid alternative to face-to-face care. There is strong evidence that e-mental health interventions are efficacious in supporting and delivering evidence-based psychological treatment (Andrews et al., 2010; Arnberg et al., 2014; Batterham et al., 2015; Griffiths et al., 2010). However, the extent to which these online interventions provide an alternative form of treatment in 'real world' settings for those who are unwilling or unable to access more traditional mental health services is unknown. In a systematic review of outcomes from general community e-mental health interventions, (Musiat & Tarrier, 2014) found "limited evidence … with regard to geographic flexibility, time flexibility, waiting time for treatment, stigma and the effects on help-seeking." (p. 3137) largely because these outcomes were not widely and systematically collected and reported in published research.

Furthermore, e-mental health services are diverse in their offerings and impacts, and various types of e-mental health resources might be seen to facilitate access to mental healthcare. Some programs aim to increase recognition of symptoms and provide direct referrals while other programs seek to ease the way to professional mental health services by targeting pre-existing beliefs and improving knowledge of services (Kauer et al., 2014). One example of programs designed to enhance symptom recognition and referral is computerised mental health screening. However, pragmatic trials both in the military and community setting have so far shown a lack of effectiveness in increasing service use (Batterham et al., 2016; Rona et al., 2017b). In contrast, other programs aim to reduce stigma, change attitudes to care and assist in decisions

about seeking care (e.g., Whealin, Kuhn, & Pietrzak, 2014). Whilst some research has shown the ability of online interventions to reduce stigma, this has also not necessarily translated into help-seeking behaviour (Gulliver, Griffiths, & Christensen, 2012a; Kauer et al., 2014). In fact, help-seeking interventions delivered face-to-face or via telephone may be more effective than those delivered online (Xu et al., 2018). However, research evaluating the ability of internet-based help-seeking interventions to address stigma and increase help-seeking behaviour is limited and hampered by an evidence base of low-quality studies, small samples and limited follow up (Kauer et al., 2014).

6.1.4 The relationship between e-mental health and professional service use

There is also limited research examining the relationship between e-mental health and professional service use outside of e-mental health trials, but that which does exist focuses largely on attitudes, preferences and intentions rather than behaviour. Research indicates that many individuals still prefer to use face-to-face rather than e-mental health services (March et al., 2018), and previous analysis on the data used in this thesis confirms this preference (Forbes et al., 2018). Between 50% and 56% of current and former ADF members preferred to receive health information face-to-face, and around 30% preferred to receive health information via the internet. Structural, attitudinal, knowledge and contextual barriers exist regardless of the modality of service provision (online or face-to-face), with concerns such as privacy and security, digital literacy/fluency, access to technology, preference for face-to-face services and perceptions of adequacy/efficacy all impacting willingness to engage in e-mental health care (Batterham et al., in press; Whealin et al., 2015). However, research rarely examines these barriers to online service use relative to concerns about professional face-to-face care.

One study that did examine e-mental health relative to professional care found a small number of factors associated with preference for online services over face-to-face, including confidence in using technology and more negative beliefs about the effectiveness of treatment (March et al., 2018). Along with technology confidence, older age was associated with intentions to use therapist-assisted online services, but not self-help services. Only previous use of online services was associated with use of self-help services. Although findings related to preferences and intentions are important, given the known gap between intentions and behaviour seen in professional mental health service use (Sharp et al., 2015), it is conceivable that a gap also exists with respect to e-mental health intentions and usage behaviour.

6.1.5 E-mental health, help-seeking and the military

In a military setting, the benefits of e-mental health are thought to both facilitate help-seeking and provide an alternative where face-to-face treatment is not available. For example, in a U.S. Department of Defense Mobile Health Practice Guide, online or mobile interventions are stated to offer promise in reducing or overcoming barriers such as access, cost, geographical dispersion, and are considered to enhance care through extension of services, improved data quality, improved engagement and efficiency (Armstrong et al., 2017). There is evidence that U.S. Defence members and veterans are interested in, and widely use various e-mental health services (Erbes et al., 2014; Owen et al., 2015; Whealin et al., 2016) but there is recognition that the technology requires considered implementation to fully realise expected benefits and impact (Bush et al., 2018; Owen et al., 2018). The U.S. Defense and veteran agencies have recognised the need for a strategic approach to the inclusion of e-mental health as part of a broader service system and have made significant gains in implementation (McGraw et al., 2019; Owen et al., 2018).

Whilst e-mental health receives mention in Australian strategic policy (Department of Defence, 2017; Department of Veterans' Affairs, 2013), it is not clear how e-mental health is envisioned to complement the existing service environment. Therefore, it is difficult to know the extent to which e-mental health can facilitate help-seeking behaviour or improve access to care in this context. There is currently no known research which examines use of e-mental health in the ADF relative to professional service use and therefore no understanding of overall usage gaps (face-to-face or online). In addition, factors associated with decisions to use e-mental health instead of professional mental health services are under-researched. Assumptions about the ability of online options to address gaps in mental health service use have not been widely tested and further research is necessary to determine the true impact of e-mental health currently in the ADF to inform future implementation efforts.

6.2 Research questions

The current chapter examines e-mental health use relative to concurrent professional service use with an intent to inform policy decisions about the implementation of e-mental health designed to increase access to evidence-based mental health treatment. The first aim was to describe the relationship between use of e-mental health resources and professional mental health service use within a 12-month period in the ADF community. The second aim was to examine use of e-mental health in those who do not use professional services and to examine

whether factors associated with exclusive online service use are the same or different to factors associated with more traditional forms of service use.

This chapter addresses the following research questions:

RQ4. What is the relationship between use of e-mental health modalities with use of professional mental health services within a 12-month period for ADF members?

a. Which modalities are associated with seeking professional help, including among those with probable disorder?

RQ5. Do e-mental health resources fill a gap in mental health service use for those who might not otherwise seek care, specifically:

a. What is the overlap between use of any online resource and professional services, and what is the remaining level of unmet need in those with symptoms of disorder?
b. What are the peak levels of symptom severity at which e-mental health resources are preferred over formal services?

RQ6. To what extent do online services overcome known barriers to seeking professional help in the ADF population?

a. What personal and psychological factors are associated with a behavioural preference for online mental health resources over professional service use?
b. What personal and psychological factors are associated with remaining unmet need, when both professional and online help-seeking is taken into account?

6.3 Method

6.3.1 Participants

As with previous chapters, data were extracted from Sample 1 which is described in more detail in Chapters 2 to 5. Participants comprised 11,587 Permanent ADF members (67.1%) and Transitioned ADF members (32.9%). The sample was predominantly Army (46.3%) and male (80.9%), with an age range of 18 to 74 (M = 41.7, SD = 10.2).

6.3.2 Measures

6.3.2.1 Online service use

Online service use was taken from 32 questions examining use of online self-help resources. Participants were asked about their use of a list of websites, smartphone apps, telephone helplines and internet interventions "in the last 12 months to inform or assess their mental health". Dichotomous (Yes/No) responses were obtained across a range of websites (e.g., ADF website, DVA website, Beyond Blue website, other health website), telephone helplines (e.g., ADF All-hours Support, VVCS Vetline, Lifeline, other telephone helpline), internet treatment (e.g., MoodGYM internet treatment, other internet treatment), smart phone apps (e.g., PTSD Coach Australia, On Track, other smart phone app) and one item assessing social media. Relevant items were grouped and collapsed to produce five dichotomous variables indicating 12-month use (1) or no use (0) of: Any information website, Any telephone helpline, Social media, Any internet treatment, and Any smart phone app. The survey did not ask about the extent of use (i.e., one contact vs multiple contacts) nor the way in which online resources were used (e.g., for information, engage with others, monitor symptoms).

For the purpose of examining associations with online service use versus face to face service use, a single service use variable was also derived. This variable categorised individuals as engaging in no service use ("None"), use of social media, internet treatment and/or smartphone app but no professional service use ("Online only"), professional mental health service use only ("Professional only") or a combination of online (social media, internet treatments and/or app) and professional service use ("Both"). A larger proportion (29.2%) of participants had used a mental health information website in the past 12-months compared to other modes (social media, 12.3%; internet interventions, 2.0%; smartphone apps, 6.4%) and informational website use was almost ubiquitous (94%) among users of other online modes, so website use was excluded from this variable.

6.3.2.2 Perceived need

Perceived need was assessed by one item measuring subjective mental health concerns. Participants were asked, "Have you ever been concerned about your mental health?" answering on a dichotomous Yes (1) or No (0) response.

6.3.2.3 Psychological health

Measures of psychological health included in this chapter are the same as those used in previous chapters, so a summary is provided here with more information available in section 2.3.2.

Posttraumatic stress symptoms were assessed using the 17-item Posttraumatic Checklist – Civilian (PCL-C: Weathers et al., 1993). The items were totalled to produce a response range of 17 to 85, with higher scores indicating more severe PTSD symptoms. A score ≥50 has been used in this research to represent probable PTSD. Risk categories have been used to examine level of symptom severity at which peak use of both online and formal services occurred. The risk categories are in line with those used in ADF psychological screening policy: low (17-29), moderate (30-39), high (40-49), very high (50-85)

The 9-item Patient Health Questionnaire (PHQ-9) was used to measure depressive severity in the previous two weeks. The scale is scored from 0 to 27, with a higher score indicative more severe depression symptoms (Kroenke et al., 2001). The authors of the scale indicate that PHQ-9 scores of 5, 10, 15, and 20 represented mild, moderate, moderately severe, and severe depression, respectively. A cut-off of 10 was used in this Study to represent probable depressive disorder (Manea et al., 2012).

Anxiety symptoms in the previous two weeks was measured using the 7-item Generalised Anxiety Scale (GAD-7: Spitzer et al., 2006), producing a total score between 0-21 with higher scores indicative of more severe anxiety. A cut-off of 10 is used in this study to represent probable anxiety disorder, and symptom severity is indicated by the following categories: Minimal (1-4), Mild (5-9), Moderate (10-14) and Severe (15-21) (Spitzer et al., 2006).

The Alcohol Use Disorders Identification Test (AUDIT: Saunders et al., 1993) was used to assess alcohol consumption and problematic alcohol use. Scores were summed to produce a total score ranging from 0 to 40, with higher scores indicating more problematic alcohol use. Alcohol use was not used in classification of probable disorder in this sample; however, risk categories were used to examine at what level of alcohol related risk peak use of both online and formal services occurs. There are four zones of increasing risk based on total AUDIT score: Zone I - Low risk (0-7), Zone II - Risky/Hazardous (8-15), Zone III - Harmful (16-19), Zone IV - High risk/dependent (20+).

6.3.2.4 Any probable disorder

A dichotomous variable was derived from the PCL-C, PHQ-9 and the GAD-7, with a score above cut-off on any of these scales representing any probable disorder. Alcohol disorder was not included in the Probable Disorder variable.

6.3.2.5 Functioning

Functional impairment was assessed using the Sheehan Disability Scale (SDS: Sheehan, 1983) , which assesses disability on three dimensions; work, family and social life. Answers on each dimension range from 0 (Not at all) to 10 (Extremely), with respondents indicating how much symptoms have disrupted their work, social life/leisure activities and family life/home responsibilities. A total disability score of 0-30 can be determined by adding scores on the individual dimensions together. A score of >5 on any of the individual dimensions is thought to represent functional impairment with higher scores indicating greater impairment.

6.3.2.6 Help-seeking beliefs

Attitudes and beliefs about mental health help-seeking were measured using sub-scales identified in the previous chapter. Three scales were used to measure:

1. anticipated stigma, 5 items measuring concerns about impact on career and the opinions/reactions of others;
2. self-stigma, 4 items measuring feelings of embarrassment, inadequacy and loss of control of emotions; and
3. concerns about services, 6 items covering practical access concerns (i.e., expense, time off, appointment difficulties), lack of trust and loss of agency.

Participants were asked to indicate how much each item might affect their decision to seek help with answers on a 5-point Likert scale from ‘Strongly Disagree’ (1) to ‘Strongly Agree’ (5).

6.3.2.7 Resilience

The Ohio State University Brief Resilience Scale (BRS: Smith et al., 2008) was used to measure resilience. The scale has six items with responses on a 5-point Likert scale (Strongly Disagree to Strongly Agree). Three items are reverse scored, with the total mean score ranging from 1 to 5. The scale reflects self-efficacy in dealing with life stressors, with items such as “I tend to bounce back quickly after hard times” and “I have a hard time making it through stressful events”.

6.3.2.8 Social support

The Schuster Social Support Scale (Schuster et al., 1990) was used to assess level of positive and negative social support interactions with family and friends. The scale has 10 items with each item scored on a 4-point scale from 'never' to 'often'. Affective support was measured by two questions about how often family (or friends) made them feel cared for and how often family (or friends) expressed interest in how they were doing. Three questions assessed negative interactions: how often family (or friends) made too many demands on them, how often they criticised them and how often they created tensions or arguments with them.

6.3.3 Analysis

All analyses were conducted in IBM SPSS Statistics Version 25. Variables were screened for accuracy of data capture, missing values, and fit with the assumptions of the statistical analyses to be employed, in accordance with guidelines suggested by Field (2013) and Tabachnick and Fidell (2007).

To examine the relationship between e-mental health help-seeking and formal help-seeking (RQ4 and 4a), binary logistic regressions were performed to test associations between use of each mode of e-mental health with a GP, mental health professional or any professional 12-month mental health service use (GP or mental health professional). Noting results from Chapter 5, showing differences in use of each modality across a range of demographic factors, regression results were adjusted for sex, age, transition status, Service and rank. Use of the other forms of e-mental health resources were added as covariates to each model. Regression analyses were performed for the entire sample, and a sub-sample who reported symptoms indicative of probable disorder (PTSD, depression or anxiety) at the time of the survey.

To answer research question 5 (5a and 5b), the data were collapsed into four categories of help-seeking: none, online only, professional only, or both. Proportions of the total sample reporting in each category, and across demographic sub-groups, to identify areas of remaining unmet need. Chi-square tests were used to assess associations between demographic categories and type of help-seeking. The proportion of participants using each type of help-seeking at different levels of psychological symptom severity was calculated for PTSD, depressive and anxiety symptoms, and alcohol use.

To examine factors associated with a preference for online help-seeking over formal help-seeking, as well as remaining unmet need (RQ6, 6a and 6b), a multinomial logistic regression

was performed to model the relationship between the independent variables (demographics, psychological health and help-seeking beliefs) and the four categories of help-seeking (none, online only, professional only, or both). A criterion of $\alpha = 0.05$ for statistical significance was employed for all tests.

Across all variables, 26.5% of cases were missing data, leaving a final sample of 8,521 for multivariate analysis. Little's MCAR test indicated that data was not missing completely at random, $\chi^2(1513) = 2{,}330.432$, $p < .001$. Missing data was nonmonotone and multiple imputation was undertaken using a Monte Carlo Markov Chain procedure and 30 imputations (White et al., 2011). Binary and multinomial logistic regressions were replicated using the imputed data and pooled results compared with results from the reduced data. Only slight differences in results were found and are provided in Table B-4 in Appendix B. Results were deemed not to be substantively different and therefore the original analysis with a sample of 8,521 was retained and reported here.

6.4 Results

6.4.1 Relationship between online and formal help-seeking

The proportion of e-mental health users and non-users who saw a General Practitioner (GP) for their mental health or Mental Health Professional (MHP) are provided in Table 6-1 for the entire sample. The proportion and odds of any professional mental health service use (GP and/or MHP) relative to e-mental health use is also provided, adjusted for sex, age, transition status, Service and rank. Note that use of the various e-mental health resources was not mutually exclusive and other e-mental health use was included as covariates in each analysis. Therefore, the odds represent the unique association between each resource and professional service use, controlling for other e-mental health resource use.

Overall, use of any professional services was more common among those who used e-mental health services compared to those who had not used e-mental health. Users of websites, telephone helplines and smartphone apps were significantly more likely to have also used any professional mental health service (GP and/or MHP) in the previous 12 months. Telephone helpline users showed the highest proportion of co-occurring professional service use, with 60.2% reporting having seen a GP or MHP in the previous 12-months, followed by Smartphone app users (54.8%). Least common to use any professional mental health service were social

media users at 36.0% with no significant association between social media use or internet treatment with formal help-seeking.

Table 6-1 Use of professional mental health services based on use of each e-mental health modality, in the entire sample (regardless of current symptoms)

E-mental health use	N	GP	MHP	Any MHSU†	aOR*	95% CI	*P*
Website					2.58	(2.33, 2.86)	<.001
No	7,364	11.2%	15.3%	17.0%			
Yes	2,973	32.8%	39.6%	43.4%			
Telephone Helpline					4.25	(3.73, 4.83)	<.001
No	9,101	14.3%	17.7%	19.8%			
Yes	1,236	40.6%	56.1%	60.2%			
Social Media					0.93	(0.81, 1.07)	0.29
No	9,066	16.0%	20.8%	23.0%			
Yes	1,271	27.9%	32.8%	36.0%			
Internet Treatment					0.89	(0.65, 1.21)	0.45
No	10,139	17.1%	22.0%	24.2%			
Yes	198	32.8%	40.4%	44.9%			
Smartphone App					2.38	(2.00, 2.83)	<.001
No	9,669	15.6%	20.3%	22.5%			
Yes	668	43.3%	50.9%	54.8%			

Abbreviations: aOR, adjusted odds ratio; GP, general practitioner; MHP, mental health professional; MHSU, mental health service use

† Any use of a GP and/or MHP in the previous 12 months

* Odds of Any 12-month MHSU adjusted for sex, age, transition status, Service and rank; other e-mental health resources added as covariates.

The same analyses were repeated within a sub-sample of those with probable disorder (see Table 6-2). Although proportional use of any resource was higher in those with probable disorder the pattern of results was similar to the overall sample, with website, telephone helpline and smartphone app use significantly associated with any professional mental health service use. Among all online resource users, social media users and internet treatment users were the least likely to have used formal services, and there was no significant association with any mental health service use among these groups.

6.4.2 Gaps in online and formal help-seeking

Table 6-3 shows the use of only online resources compared to 12-month professional mental health care, no service use and a combination of professional care and online. Online only help-seeking here refers to the use of social media, internet treatments and/or smartphone apps at the exclusion of any formal service use. Across the total sample, over two thirds of ADF participants (65.3%) had used no online resource or professional mental health service. Just over one third of those with a probable disorder had used no resource at all (35.6%) and 10.0% had used online resources only.

Table 6-2 Use of professional mental health services based on use of each e-mental health modality, among participants with probable disorder

E-mental health use	N	GP	MHP	Any MHSU†	aOR*	95% CI	*P*
Website					1.86	(1.53, 2.26)	<.001
No	1,178	32.5%	39.6%	43.1%			
Yes	1,041	54.2%	62.8%	67.1%			
Telephone Helpline					3.58	(2.79, 4.6)	<.001
No	1,708	37.4%	42.9%	46.7%			
Yes	511	60.5%	75.9%	79.8%			
Social Media					1.02	(0.8, 1.3)	0.87
No	1,774	40.6%	48.2%	52.3%			
Yes	445	50.8%	59.6%	62.5%			
Internet Treatment					0.74	(0.43, 1.27)	0.27
No	2,145	42.3%	50.2%	54.0%			
Yes	74	54.1%	58.1%	63.5%			
Smartphone App					2.09	(1.55, 2.82)	<.001
No	1,917	39.5%	47.4%	51.2%			
Yes	302	62.6%	69.9%	74.5%			

Abbreviations: aOR, adjusted odds ratio; GP, general practitioner; MHP, mental health professional; MHSU, mental health service use

† Any use of a GP and/or MHP in the previous 12 months

* Odds of Any 12-month MHSU adjusted for sex, age, transition status, Service and rank; other e-mental health resources added as covariates.

Across the total sample, including those with no current disorder, chi-square tests of association were significant at p<.001 for all demographic groups. Among those with probable disorder, there was a significant association between type of help-seeking and: sex, $\chi^2 = 8.34$, $p = .039$; age group, $\chi^2 = 30.70$, $p = .002$; transition status, $\chi^2 = 14.88$, $p = .002$; and Service, $\chi^2 = 22.99$, $p < .001$. There was no significant association by relationship status ($p = .168$) or rank ($p = .085$).

In those with probable disorder, post-hoc comparisons of proportions using Bonferroni correction revealed males were disproportionately represented in the 'no resource' group ($p = .008$), as were Permanent ADF ($p < .001$). Participants aged 18-27 were more likely to report 'online only' help-seeking compared to those aged 48-57 ($p = .012$), as were Army ($p < .001$) and Navy ($p = .047$) members compared to Air Force. Combination of professional and online help-seeking was more common for females ($p = .047$) and Transitioned ADF ($p = .002$).

Table 6-3 Proportion within demographic categories reporting use of online mental health resources to inform/assess mental health in the last 12months among those with a probable disorder.

		All					Probable disorder				
			No resource	Online only	Professional only	Online and face to face		No resource	Online only	Professional only	Online and face to face
		N	%	%	%	%		%	%	%	%
Total		**10,337**	65.3	10.2	17.4	7.1	**2,219**	35.6	10.0	34.5	19.8
Sex	Male	**8,344**	67.6	9.8	16.1	6.6	**1,807**	36.9	10.0	34.0	19.0
	Female	**1,965**	55.4	11.7	23.2	9.8	**411**	29.9	10.2	36.5	23.4
Age Group	18-27	**813**	62.2	13.3	17.8	6.6	**209**	40.7	16.3	27.3	15.8
	28-37	**2,989**	63.0	11.2	17.6	8.3	**643**	34.7	9.5	33.6	22.2
	38-47	**3,333**	62.7	10.4	18.5	8.4	**735**	32.7	10.1	34.8	22.4
	48-57	**2,429**	70.8	8.0	16.2	5.0	**475**	38.7	8.0	37.5	15.8
	58+	**617**	71.6	8.4	14.9	5.0	**123**	36.6	9.8	37.4	16.3
Relationship Status	Single	**1,656**	57.3	10.7	22.5	9.5	**477**	31.9	9.4	38.2	20.5
	In a relationship	**8,570**	66.8	10.0	16.5	6.7	**1,722**	36.7	10.0	33.5	19.7
Transition status	Permanent	**6,975**	67.6	9.1	17.3	6.0	**1,139**	38.8	9.6	34.3	17.3
	Transitioned	**3,362**	60.4	12.2	17.8	9.6	**1,080**	32.2	10.6	34.7	22.5
Service	Army	**4,766**	63.2	11.5	17.2	8.1	**1,192**	33.1	11.8	33.4	21.6
	Navy	**2,321**	66.5	9.8	17.0	6.7	**482**	38.6	10.2	33.8	17.4
	Air Force	**3,223**	67.4	8.3	18.2	6.1	**544**	38.4	6.1	37.5	18.0
Rank	Officer	**4,021**	69.9	8.6	15.9	5.6	**604**	36.9	8.9	37.9	16.2
	SNCO	**3,486**	64.8	10.0	18.0	7.2	**800**	36.1	10.1	33.5	20.3
	JNCO/OR	**2,810**	59.1	12.4	19.1	9.4	**811**	34.0	10.7	33.0	22.2

Note: Missing data is not included in the table. Only valid percentages are reported, and rows add to 100%. *N* = 10,337 due to missing data across variables shown.

6.4.3 Source of help-seeking and psychological health

Among those with probable disorder and subjective mental health concern, 32.0% used no resource, 9.8% used online only resources, and 58.2% used professional services (or a combination of professional and online). As might be expected, those with no perceived need were disproportionately represented in the group with no reported help-seeking ($p < .001$). For those with no perceived need, 74.3% used no resource, 12.8% used online only and 12.8% used professional services (alone or in combination with online resources).

Use of online only services relative to professional service use was examined with respect to disorder severity to identify the levels of severity at which peak use of the various resource is seen (Table 6-4). Peak use of only online resources was seen in the mild to moderate ranges of symptoms, whereas professional service use or combination of professional and online resources were seen in those with more severe symptoms.

6.4.4 Personal and psychological factors associated with help-seeking

To examine factors uniquely associated with any online service use and consistency with barriers to professional help-seeking, a multinomial logistic regression modelling the four categories of help-seeking (none, online only, professional only, or both) was conducted. The addition of the independent variables to a model that contained only the intercept significantly improved the fit between model and data, $\chi^2_{(81,\ N = 8{,}476)} = 3276.91$, Nagelkerke $R^2 = .37$, $p < .001$. As shown in Table 6-5, significant unique contributions were made by sex, age group, transition status and Service. Significant unique contributions were also made by perceived need, posttraumatic stress symptoms, work functioning, resilience, service concerns, self and anticipated stigma and positive friend interactions. Goodness of fit was explored by conducting Hosmer-Lemeshow tests for each pair of groups. In no case was this test significant, indicating acceptable goodness of fit for each pair of comparisons.

Table 6-4 Percentage frequency of various types of help-seeking with increasing symptoms of mental ill health (the points of peak use for each action are shown in bold)

	None			Online only		Professional only		Professional & online	
	N	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Posttraumatic Stress risk									
Low (17-29)	8079	74.4	(73.4, 75.3)	9.5	(8.9, 10.2)	12.8	(12.1, 13.5)	3.3	(2.9, 3.7)
Mod (30-39)	1228	49.8	(47.0, 52.6)	**13.9**	**(12.1, 15.9)**	25.4	(23.0, 27.9)	10.8	(9.2, 12.7)
High (40-49)	617	35.8	(32.1, 39.7)	12.0	(9.6, 14.7)	33.5	(29.9, 37.3)	18.6	(15.7, 21.9)
Very High (50-85)	852	19.6	(17.0, 22.4)	8.5	(6.7, 10.5)	**41.4**	**(38.2, 44.8)**	**30.5**	**(27.5, 33.7)**
Depression severity									
Minimal (1-4)	6238	78.3	(77.3, 79.3)	9.1	(8.4, 9.9)	10.3	(9.6, 11.1)	2.2	(1.9, 2.6)
Mild (5-9)	2671	59.6	(57.7, 61.4)	**12.3**	**(11.1, 13.6)**	20.3	(18.8, 21.9)	7.8	(6.9, 8.9)
Moderate (10-14)	1048	44.8	(41.8, 47.8)	10.9	(9.1, 12.9)	30.4	(27.7, 33.3)	13.9	(11.9, 16.1)
Moderately severe (15-19)	639	35.1	(31.4, 38.8)	9.1	(7.0, 11.5)	**37.2**	**(33.6, 41.0)**	18.6	(15.7, 21.8)
Severe (20-27)	510	19.2	(16.0, 22.8)	9.0	(6.8, 11.7)	**37.3**	**(33.1, 41.5)**	**34.5**	**(30.5, 38.7)**
Generalised Anxiety severity									
Minimal (1-4)	7592	76.2	(75.2, 77.2)	9.4	(8.7, 10.0)	11.4	(10.7, 12.2)	3	(2.6, 3.4)
Mild (5-9)	2211	51.3	(49.3, 53.4)	**13.0**	**(11.6, 14.4)**	25.7	(23.9, 27.5)	10.0	(8.8, 11.3)
Moderate (10-14)	786	33.5	(30.2, 36.8)	9.2	(7.3, 11.3)	36.1	(32.8, 39.5)	21.2	(18.5, 24.2)
Severe (15-21)	633	21.3	(18.3, 24.6)	9.2	(7.1, 11.6)	**38.4**	**(34.7, 42.2)**	**31.1**	**(27.6, 34.8)**
Alcohol Use risk									
Zone I - Low risk (0-7)	8739	68.8	(67.9, 69.8)	9.7	(9.1, 10.3)	15.9	(15.1, 16.7)	5.5	(5.1, 6.0)
Zone II - Risky/Hazardous (8-15)	2045	58.5	(56.3, 60.6)	11.1	(9.8, 12.5)	20.2	(18.5, 22)	10.2	(8.9, 11.5)
Zone III - Harmful (16-19)	284	39.8	(34.2, 45.6)	**13.0**	**(9.5, 17.3)**	31.0	(25.8, 36.5)	16.2	(12.3, 20.8)
Zone IV - High risk/dependent (20+)	322	31.1	(26.2, 36.3)	9.9	(7.0, 13.6)	**33.9**	**(28.8, 39.1)**	**25.2**	**(20.7, 30.1)**

Table 6-5 Independent variables' unique contributions in the multinomial logistic regression

		All	
Predictor	χ^2	*df*	*p*
Sex	49.52	3	.000
Age group	23.45	12	.024
Relationship status	5.27	3	.153
Transition status	31.23	3	.000
Service	21.89	6	.001
Rank	9.18	6	.164
Perceived Need	548.47	3	.000
Depression	2.51	3	.473
Posttraumatic stress	63.11	3	.000
General anxiety	2.98	3	.394
Alcohol use	4.44	3	.218
Disability - work	60.25	3	.000
Disability - social	5.50	3	.138
Disability - family	5.05	3	.168
Resilience	108.24	3	.000
Service concerns	22.49	3	.000
Self-Stigma	103.17	3	.000
Anticipate stigma	19.03	3	.000
Positive Friend interactions	17.08	3	.001
Negative Friend interactions	3.54	3	.316
Positive Family interactions	5.88	3	.118
Negative Family interactions	3.66	3	.301

The reference group was those who sought face to face care only. Accordingly, each independent variable has three parameters, one for predicting membership in the online only group rather than the face to face group, one for predicting use of both face to face and online, and one for predicting use of no services in the last 12 months. The parameter estimates are shown in Table 6-6. Note that in the first column, odds ratios >1 represent greater odds of reporting no help-seeking relative to professional service use, therefore odds ratios <1 represent greater odds of professional help-seeking.

The models were also culled to exclude all predictors that did not have significant unique effects in each model. The resulting model was statistically significant, $\chi^2_{(54,\ N\ =\ 9{,}170)} = 3525.98$, Nagelkerke $R^2 = .37$, $p < .001$.

Relative to professional service use, males were more likely than women to use no service at all, but there was no significant effect of sex for those using online only resources. Permanent

ADF members were more likely than Transitioned ADF to report service use and less likely to use online resources relative to professional care. Both Navy and Army personnel were more likely than Air Force personnel to report no service use at all or online service use only relative to professional care.

Table 6-6 Parameter estimates contrasting professional service use compared to online only, combination and no help-seeking

	None	Online only	Both
	MOR (95%CI)	MOR (95%CI)	MOR (95%CI)
Sex *(Ref. Female)*			
Male	**1.68 (1.44, 1.97)**	1.20 (0.98, 1.48)	0.9 (0.72, 1.13)
Age (*Ref. 58+*)			
18-27	0.91 (0.63, 1.32)	1.51 (0.93, 2.45)	0.95 (0.54, 1.66)
28-37	0.93 (0.68, 1.27)	1.39 (0.91, 2.11)	1.25 (0.78, 2.00)
38-47	0.94 (0.69, 1.28)	1.33 (0.88, 2.02)	1.15 (0.72, 1.83)
48-57	1.04 (0.76, 1.43)	1.11 (0.72, 1.71)	0.87 (0.53, 1.42)
Transition status *(Ref. Transitioned)*			
Permanent	**0.72 (0.61, 0.83)**	**0.59 (0.48, 0.71)**	0.93 (0.75, 1.16)
Service *(Ref. Air Force)*			
Navy	**1.23 (1.03, 1.46)**	**1.32 (1.04, 1.68)**	1.10 (0.85, 1.44)
Army	**1.18 (1.02, 1.37)**	**1.62 (1.32, 1.98)**	1.13 (0.90, 1.42)
Need			
Perceived need	**0.12 (0.10, 0.12)**	**0.20 (0.16, 0.26)**	1.43 (0.87, 2.33)
Posttraumatic stress	**0.96 (0.96, 0.97)**	**0.99 (0.98, 0.99)**	**1.02 (1.01, 1.03)**
Disability - work	**0.85 (0.83, 0.87)**	**0.88 (0.85, 0.91)**	**1.05 (1.01, 1.08)**
Predisposing beliefs			
Resilience	**1.66 (1.50, 1.83)**	**1.43 (1.25, 1.63)**	**0.87 (0.76, 0.99)**
Services concerns	**1.03 (1.01, 1.05)**	**1.07 (1.05, 1.10)**	1.01 (0.98, 1.04)
Self-Stigma	**1.13 (1.10, 1.15)**	**1.09 (1.06, 1.12)**	1.00 (0.97, 1.03)
Anticipated Stigma	**0.96 (0.95, 0.98)**	**0.96 (0.94, 0.98)**	1.00 (0.97, 1.02)
Enabling Social Support			
Friend +ve support	**0.94 (0.89, 0.98)**	0.99 (0.93, 1.05)	1.06 (1.00, 1.13)

Need was predominantly a driver of professional service use, or combination of professional and online resource, with perceived need and higher levels of symptoms and functional impairment at work associated with greater use of professional services over online only and non-service use. Higher levels of resilience, concerns about mental health services and self-stigma were associated with a greater likelihood of online-only service use relative to professional care. The only significant enabling factor was affective support from friends, which was associated with a greater likelihood of seeking professional help relative to no service use at all. This variable showed no effect for online only or combination use.

6.5 Discussion

This chapter sought to examine the relationship between use of technology for mental health and professional mental health service use, identify remaining gaps and barriers to help-seeking. Use of more traditional forms (website and telephone) were more strongly associated with seeking professional help than less conventional modes of social media and internet treatments. However, smartphone apps were also significantly associated with receipt of professional care.

Less conventional modalities were able to reach approximately one in five of those who were not already in professional care, yet one third of the sample who were likely to benefit from care had not used any form of mental health resource (face-to-face or online) in the previous 12 months. Men were still less likely to use any resource compared to women. Online resources partially reduced gaps for those aged 18 to 27, Army and Navy personnel, and those who reported no mental health concern (despite reporting symptoms indicative of disorder).

Current and former ADF members who preference online over professional services reported milder symptoms, higher levels of functioning and resilience but also higher levels of self-stigma and concerns about the relevance and adequacy of professional care. They were also less likely to perceive a need for mental healthcare relative to users of professional services.

6.5.1 Relationship of e-mental health with professional service use.

The results indicate a notable degree of overlap of professional care and use of technology-based mental health resources, in particular for those with current probable disorder for whom 19.8% had used both professional and online services. The odds of using any professional mental health service were over two times greater for website and/or smartphone app users compared to non-users, and over four times greater for those using telephone helplines. Whilst the current research cannot comment on the direct influence of e-mental health resources on help-seeking behaviour, the results here indicate a close association between use of telephone helplines, smartphone apps and websites with current and former ADF members seeking professional help.

6.5.1.1 Telephone helplines

Previous research has indicated that telephone crisis lines are only moderately successful in facilitating follow up health care utilisation (Assing Hvidt, Ploug, & Holm, 2016), with studies

showing around one third of those referred utilised the mental health service they were referred to (Gould, Kalafat, HarrisMunfakh, & Kleinman, 2007; Gould, Munfakh, Kleinman, & Lake, 2012; Kalafat, Gould, Munfakh, & Kleinman, 2007). In the current study, the high degree of overlap between telephone helpline use and seeking professional help may be influenced by use of ADF and veteran helplines which act primarily as a triage service rather than a telephone counselling or crisis service. Equally, the results may represent the use of telephone helplines as an adjunct to care where needs are complex or help is required out of regular hours, as seen in research on Australian telephone counselling service, Lifeline (Pirkis et al., 2016). Regardless, the data reported here support the need for ongoing telephone support for ADF going forward.

6.5.1.2 Mental health websites

The current research points to a relationship between the use of mental health websites and professional mental health services, but for those with probable disorder results were not as strong compared to telephone helpline, smartphone app and internet intervention use. This might reflect distinct motivations for using different modes of e-mental health resources. For example, website use may simply be information collecting with minimal commitment to action, whereas the other modes may reflect a greater level of intention to act.

The results of studies examining the ability of websites to influence help-seeking behaviours are inconsistent (Brijnath, Protheroe, Mahtani, & Antoniades, 2016; Gulliver et al., 2012b). Despite the demonstrated ability of online mental health literacy interventions to improve help-seeking attitudes these effects have not been confirmed with respect to actual behaviour (Gulliver et al., 2012b). In addition, other possible mediating factors, such as self-stigma, need to be considered when measuring actual behaviour, as demonstrated in Chapter 5 where results showed that resilience and self-stigma were associated with less likelihood of mental health website use. Taken together with the present results, it may be inferred that website use forms part of a help-seeking process (Rickwood & Thomas, 2012) once an individual has identified a concern with their mental health and is contemplating need for help but is not yet committed to action. However, websites alone may not be sufficient to reach and engage those with low to moderate need.

6.5.1.3 Smartphone apps

There was also a strong overlap between use of smartphone apps for mental health and use of professional mental health services, with nearly 75% of mental health app users with a probable disorder also using formal mental health services. This finding was unexpected and may be driven by apps that are designed to be used in conjunction with a therapist, such as PTSD Coach Australia. PTSD Coach Australia is adapted from a U.S. Department of Veterans' Affairs treatment companion app for PTSD (Kuhn et al., 2018). As noted in the previous chapter, the current research did not distinguish between self-management apps and treatment companion (clinician-guided) apps. It is possible that individuals were introduced to the apps by clinicians resulting in a high degree of overlap in service use among mHealth users.

It has been suggested that psychological health app development has moved primarily towards self-management (Bush et al., 2018) but apart from some research suggesting use for clinical communication, appointment and calendar management (Guy et al., 2012; Whealin et al., 2016), there is limited research on the relationship between smartphone use and professional service use. Results presented here indicate that, in the ADF at least, mHealth may not fully meet the stated objectives of aiding self-management outside of existing mental health service use, but that this may reflect the types of resources (i.e., clinician-assisted) currently designed for the ADF population rather than willingness of non-service users to use mHealth. Approximately one quarter of smartphone app users had not used professional services in the previous 12 months, indicating that there may be potential for further development of self-management apps. Researchers have argued for movement away from delivery of standard treatments in app format (Bush et al., 2018) and this is reflected in increasingly varied delivery formats that take into account individual needs and preferences and offer a more tailored and flexible experience (Bakker, Kazantzis, Rickwood, & Rickard, 2016; Batterham et al., in press).

6.5.1.4 Social media

The use of social media was not significantly associated with seeking professional help and may reflect the lack of content currently being generated in this medium deliberately targeting mental health of ADF members. There are very few studies examining the impact of social media on help-seeking (Clement et al., 2013) but evidence from health or other behaviour change efforts using social media suggest that this mode of communication may be most effective in influencing proximal outcomes such as attitudes and awareness rather than behaviour change at the population level (Halsall, Garinger, Dixon, & Forneris, 2019). Given

results in the previous chapter showing a relationship between social media use and greater concerns about services, more targeted content across different media may be important for addressing attitudinal changes.

Although, the current research did not examine how ADF members use social media for their mental health or the quality of information or support they receive through this mode, the current results and those presented in the previous chapter imply a basic minimum which could be applied in this medium. Health-promotion activities specifically designed for and with the Australian military to increase familiarity with mental health services and direction to online and face-to-face resources may be beneficial. Success factors shown in previous social media mental health campaigns include using language and expertise appropriate to the setting and not marketing as a government message (Calder et al., 2019), but risks and unintended consequences need to be considered and managed appropriately (Schlichthorst, King, Reifels, Phelps, & Pirkis, 2019). Noting the lack of high-quality evidence for social networking interventions (Ridout & Campbell, 2018) as well as various risks specific to this medium (Richardson, 2018), preliminary activities could include provision of resources for friends who may be providing support via social media whilst monitoring the expanding evidence-base in this area (Moorhead et al., 2013).

6.5.2 E-mental health in the absence of professional service use

To examine factors associated with online resources as a treatment alternative, online service use (combined use of social media, internet interventions and smartphone apps) was examined relative to no service use, use of professional services or a combination of professional and online service use. The results indicate that stand-alone e-mental health may fit well for those with low-moderate need as a prevention resource. Users of exclusively online services were more likely to be unconcerned about their mental health, had lower symptoms and less functional impairment relative to those who used professional services.

Previous e-mental health research has focussed largely on interventions for common mental disorders and recognises the value of e-mental health for those with mild to moderate symptoms (Andersson & Titov, 2014; Arnberg et al., 2014). However, targeting programs towards moderate symptom levels may present additional engagement challenges. Recent research examining an online suicide prevention program found that those with more severe suicidal ideation had greater engagement with an online program (Batterham et al., 2020). Given previous research pointing to high rates of attrition and issues with adherence to eHealth and

mHealth interventions, the lack of evidence and evaluation of online prevention interventions in real world settings is problematic (Batterham et al., 2019; Batterham, Neil, Bennett, Griffiths, & Christensen, 2008).

Need again had a clear association with seeking professional help, with those with subjective mental health concerns, greater symptoms or functional impairment more likely to use professional services over other options. More severe symptoms and impairment were also associated with use of a combination of resources, relative to professional services only. This is consistent with previous research that has found at-risk young people are likely to use online services in combination with other services rather than as a substitution (Gould, Munfakh, Lubell, Kleinman, & Parker, 2002). This may reflect a group with more complex needs for which e-mental health can provide additional support as an adjunct to clinical care. The results highlight the need to consider tailoring resources according to varying levels of needs and the way in which programs are likely to be used in daily life both as stand-alone and as adjuncts to therapy.

Similar to previous chapters, it remained the case that men compared to women, were more likely to use no resource at all. While males were less likely to seek mental health care than their female counterparts, either face to face or online, male ADF were no more or less likely to choose online services over face to face care. This is consistent with previous research which has found either that women are more likely to use online services or no differences by sex (Kauer et al., 2014). It may be that females are more likely than males to seek any form of help, regardless of the mechanism, but online services may provide a more equitable platform for the delivery of those services. Online services specifically designed for men taking into account men's preferences and barriers to care is an area for future development (Seidler, Rice, Kealy, Oliffe, & Ogrodniczuk, 2020; Smail-Crevier, Powers, Noel, & Wang, 2019; Wang et al., 2016).

Permanent ADF were less likely than Transitioned ADF to preference online over professional services, and more likely to use professional services than no service at all (when controlling for symptoms and functional impairment). This could be due to a number of reasons, including ease of access to professional services for serving members and health monitoring processes (e.g., mental health screening) for those still serving, compared to the self-managed healthcare in civilian settings.

In general, key help-seeking beliefs thought to be barriers to traditional mental health service use appeared to be overcome in part by e-mental health alternatives. Those with higher resilience, service concerns and self-stigma were more likely to choose online options over formal care. In one Swedish study investigating preference for online treatment over face-to-face, intentions to seek help online were higher for a perceived stigmatised problem (Wallin, Maathz, Parling, & Hursti, 2018). However, in the current study, participants with stigma were also likely to choose no resource at all, suggesting that e-mental health is not a panacea for overcoming barriers to care. Development of e-mental health services should consider the possibility that self-stigma may impede use of any resource and therefore design implementation strategies accordingly.

6.5.3 Implications

At least two systematic reviews examining outcomes of e-mental health studies suggested that evidence of online services facilitating formal help-seeking behaviour is lacking (Kauer et al., 2014; Musiat & Tarrier, 2014). The results reported here suggest that some forms of online services may be better than others at facilitating care access. For instance, telephone helplines showed clear association with service use and are designed specifically for this purpose in the ADF. Currently, social media and internet treatments do not appear to facilitate access to care, with no association in use present. The reason for this lack of association may be related to distinct motivations to use these services or a lack of military-specific programs offered in these domains.

Although results in the previous chapter indicated that existing online services were not reaching those with barriers to care, the results in the current chapter suggest that online services can overcome barriers such as perceived need, self-stigma and resilience. However, this potential is not currently harnessed to full capacity. Given the potential of e-mental health to overcome barriers to care, it may be helpful to expand notions of the role of e-mental health in public health and examine whether specific modes of technology might serve different purposes along the continuum of health promotion, from prevention and early intervention through to treatment and recovery. For instance, increasing awareness and changing attitudes to care may be focused in social media; some services might explicitly target active help-seeking behaviour (such as triage-based telephone help-lines which could be expanded into online chat and online mental health screening); whereas other services may target delivery of clinical care. One approach might be to examine the broad Defence and veteran mental health strategies and

identify specific gaps in services across this continuum that may be addressed using e-mental health. Regardless of the approach taken, a clear implementation strategy should guide delivery and evaluation of such services.

Despite the potential for e-mental health to overcome some barriers, other gaps remained in mental health resource access. In particular, men remained less likely to access any form of mental health service or resource, and although online resources did not appear to exacerbate this gap, there remains a need to improve help-seeking in this group. Consideration of mechanisms and potential changes to services required to better engage men in both formal and informal help-seeking would be particularly beneficial in male-dominated workplaces such as the ADF.

6.5.4 Limitations and strengths

As with previous chapters in this thesis, the data are cross-sectional and observational and therefore cannot be used to describe the sequence of e-mental health and mental health service use, limiting the interpretation of the data. In addition, the data did not include information about the extent of use (i.e., one contact vs multiple contacts), adherence to programs, nor the way in which online resources were used (e.g., for information, engage with others, monitor symptoms etc). The questions used in the survey also provide information about e-mental health used to 'inform or assess' mental health rather than to manage mental health. However, the research provides insight into use of e-mental health in a real-world setting and therefore adds to the body of literature measuring impact of these services at a population level.

Low response rates in the Transitioned ADF and underrepresentation of certain demographic sub-groups reduces the ability to generalise results to the ADF community. Wherever possible, these groups were included and controlled for in analyses, reducing the impact on final results.

6.5.5 Conclusion

These results suggest that online services can reach a proportion of individuals who do not seek professional care, particularly those who report barriers to care. However, the current gains from a public policy perspective are could be improved. The results indicated that 10% of participants had preferred online services over professional services, but that a third of those with probable disorder still had not sought formal or online help in the previous 12 months. This research was unable to comment on the extent or effectiveness of online modes used, but given previous research pointing to high rates of attrition and issues with adherence to eHealth

and mHealth interventions, the lack of evidence and evaluation of online interventions in real-world settings is problematic. This research supports assertions that technology-based care may be able to overcome existing barriers to mental health care in military populations, but further work influenced by implementation science approaches would be beneficial in improving the utility of such innovations.

Chapter 7 Self-reliance and self-management of mental health in the ADF

7.1 Chapter overview

Self-reliance is a known barrier to mental health care in military and civilian populations (Adler et al., 2015; Forbes et al., 2018; Gulliver et al., 2010; Mojtabai et al., 2011). In fact, across multiple countries, a desire to handle mental health problems on one's own has been found to be the most common barrier to initiating mental health treatment, amongst those who recognise a mental health need (Andrade et al., 2013). Despite the consistency of findings internationally, the issue has received surprisingly little attention in the literature in comparison to other potential barriers such as stigma and mental health literacy. Self-reliance influences a range of behaviours including, at the extreme end, handling problems on one's own all the time (Labouliere et al., 2015). However, self-reliance may also reflect a preference for maintaining a sense of self-efficacy and enacting self-management practices. In this thesis self-management is conceptualised as the self-determined activities and strategies used to maintain and improve one's mental health.

E-mental health is seen as a potential avenue to assist in the process of self-managing mental health. For instance, services delivered via smartphone (mHealth) are largely developed for this purpose (Bush et al., 2018). However, much research on self-management is focused in the recovery or maintenance phase of illness, post-treatment, rather than pre-treatment initiation, and there is little information on what self-management means to those who perceive a need for care, but do not seek treatment.

The current chapter examines preference for self-managed mental health among a non-treatment seeking sample of current and former ADF members. The relationships between self-reliance, symptoms and functioning as well as other known barriers to mental health care are explored as well as the techniques used by those who prefer to self-manage to improve or maintain their mental health. Understanding the relationship between self-reliance, beliefs about help-seeking and self-help behaviours may enable better design of preventative e-mental health support tools.

7.2 Self-reliance: help or hindrance?

At lower levels of symptoms, self-reliance might be seen as a resilient attribute that can support individuals through recovery without treatment but at higher levels it can delay or hinder access to mental healthcare altogether (Ortega & Alegría, 2002). Indeed, research has shown that attitudinal barriers, such as preference for self-management, were more important as a barrier to help-seeking among those with severe symptoms compared to those with moderate or mild symptoms (Andrade et al., 2013). Andrade et al. (2013) suggest that self-reliance amongst those with severe symptoms is associated with self-stigma and 'label avoidance' but did not test this assertion.

Self-reliance is also thought to be associated with individuals underestimating symptoms and a lack of perceived need, particularly compared to the perceived need of others. In a qualitative study of U.K. military personnel, Rafferty et al. (n.d.) report that self-reliance was associated with a perception that symptoms were not mental health related and individuals felt they were not 'deserving' of care when comparing themselves against the needs of others. Also, where individuals perceived they were able to self-manage and they could maintain at least some level of functioning, they were less likely to seek care. The authors note that minimisation of symptoms and functional impact was particularly an issue when mental health concerns have been identified but care had yet to be sought. This research highlights two issues. Firstly, self-reliance may be associated not just with symptoms and disability, but perceptions of need or perceptions of functioning. Secondly, self-reliance is potentially more important as a barrier at higher levels of need, once mental health concerns are realised.

Likewise, it has been suggested that desirable military attributes such as 'self-sufficiency, toughness and mission focus' are associated with stigma and lack of help-seeking behaviour (Coleman et al., 2017). While this the link between self-sufficiency and help-seeking is reflected in the proven association between self-reliant attitudes and non-care seeking behaviour, the relationship of self-reliance to military culture and stigma is less clear. In one study of U.S. soldiers returning from combat (Adler et al., 2015), preference for self-management was found to inversely predict treatment-seeking when controlling for symptom severity, but anticipated workplace stigma did not. Adler et al Adler et al. (2015)offer possible explanations for the results. Firstly, self-management could represent a preference for maintaining a sense of self-efficacy in dealing with life stressors. Secondly, the authors suggest it could reflect a preference for reaching out to informal support networks. Thirdly, self-reliance

could reflect a conservation of resources (COR: Hobfoll, Halbesleben, Neveu, & Westman, 2018). COR theory states that under high levels of psychological stress and reduced personal resources (e.g., self-efficacy), conservation of remaining resources increases in salience. However, under these conditions, resource gain becomes more difficult and people may enter a defensive mode (Hobfoll et al., 2018). Therefore, mental health services may represent a threat to existing resources.

Previously in this thesis, it was argued that high levels of general self-efficacy reflect a perception of self as resilient, where resilience is "the ability to maintain or return to previous levels of wellbeing and functioning in response to adversity" (Dell et al., 2019). In military populations self-reliance is seen as a desirable attribute representing competence and personal responsibility (Dabovich et al., 2019; Rafferty, Wessely, Stevelink, & Greenberg, 2019). Results presented previously in this thesis demonstrate that resilience may be a barrier to mental health care in the ADF, even when controlling for symptom levels, but the relationship between resilience and self-reliance was not able to be tested. However, it is likely that high levels of self-efficacy as represented by self-reported resilience, will be associated with greater preference for self-managing mental health.

If it is the case that resilience and self-management are positively related, it is also possible that self-reliance leads to increased wellbeing behaviours. The use of informal help-seeking is common in military populations as is the use of self-help strategies such as increasing physical activity and engaging in pleasurable activities (behavioural activation). Previous research shows that just under half of current and former ADF members use increased physical activity to manage their mental health and over a third increase enjoyable activities or use informal support networks (Forbes et al., 2018). Similar proportions of the Australian civilian population with a common mental disorder have been shown to use self-management strategies, and about 24% did so without the use of formal clinical services (Olesen et al., 2010). Researchers suggest the need to gain "a better understanding of the reasons that individuals use support services and self-management strategies for their mental health in addition, or at the exclusion, of formal services… to help determine if they are a viable alternative for some and/or reflect current service inadequacies" (Olesen et al., 2010, p.828).

7.2.1 Summary

Research has indicated that the effect of self-reliance varies depending on level of mental health need (Andrade et al., 2013; Mojtabai et al., 2011). However, little is known about how self-reliance operates in relation to functioning and attitudes to mental health help-seeking. In addition, there is little information on how self-reliance manifests in terms of other behaviours, such as self-help or informal help-seeking. There is a need for further evidence to indicate whether a preference for self-management reflects a barrier to formal service use and/or is associated with engagement in specific self-management strategies.

7.3 Research Questions

The aims of this chapter are threefold. The first aim is to describe the self-reliant, functional and fear characteristics of current and former ADF members who have been concerned about their mental health but did not seek treatment, relative to their reasons for not seeking help. The second aim is to examine the relationship between psychological health and help-seeking beliefs with self-reliance in this group of non-treatment seeking individuals. The third aim is to examine the relationship between self-reliance and self-help behaviours including physical exercise, informal help-seeking and behavioural activation in this same group. Specifically,

RQ7. What factors are associated with not seeking help among current and former ADF members who report mental health concerns?

a. Specifically, what are the roles of self-reliance, perceptions of ability to function and fear of help-seeking in not seeking help?

RQ8. What factors are associated with self-reliance and self-help behaviours in non-treatment seeking current and former ADF members?

a. What are the effects of help-seeking beliefs and resilience on self-reliance, when controlling for symptoms and functioning?

b. What is the relationship between self-reliance and self-help behaviours including physical exercise, informal help-seeking and behavioural activation, both overall and amongst those with probable disorder?

7.4 Method

7.4.1 Participants

This chapter used data from Sample 2 (N = 1,539), a subset of the larger sample of 11,587 current and recently transitioned ADF members reported in previous chapters. Data were included for analysis in this chapter if participants reported that they had 'ever' had a mental health concern *and* 'never' had assistance for their mental health.

Demographics of the Sample 2 are shown in Table 7-1. The age of non-help-seekers ranged from 19 to 74 with a mean of 41.1 years (SD = 10.1). The distributions of demographic sub-groups were similar between non-help-seekers and the total sample, with differences consistent with findings in Chapter 4 that males, Transitioned ADF and Navy or Army personnel are less likely to seek help. A total of 334 (24.5%) of this sub-sample reported symptoms indicative of probable posttraumatic stress disorder (PTSD), depression or anxiety disorder at the time of completing the survey.

7.4.2 Measures

All concerned non-help-seekers were asked the following question: "Previously in this section, you reported that although you have been concerned about your mental health at some point in your life (e.g., stress, anxiety, depression, anger, or relationship problems), you have never sought help / received treatment from the professionals listed. What are the reasons you did not seek help?" Responses were provided across several items including one measuring self-reliance (I preferred to manage myself), one measuring perception of functioning (I can still function effectively) and one measuring fear of help-seeking (I was afraid to ask for help, or of what others would think of me if I did). Responses were scored on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Table 7-1 Demographics of the subsample who had mental health concerns but did not seek help

		All participants		Concern but no formal help-seeking	
Sex		N	%	n	%
	Male	9,345	80.7	1,313	85.3
	Female	2,213	19.1	224	14.6
	Missing	29	0.3	2	0.1
Transition status					
	Permanent	7,779	67.1	975	63.4
	Transitioned	3,808	32.9	564	36.6
Service					
	Navy	2,598	22.4	356	23.1
	Army	5,348	46.2	749	48.7
	Air Force	3,613	31.2	432	28.1
	Missing	28	0.2	2	0.1
Rank					
	Officer	4,441	38.3	614	39.9
	Senior NCO	3,938	34.0	523	33.3
	Junior NCO/Other Rank	3,186	27.5	412	26.8
	Missing	22	0.2	0	0.0
Total		**11,587**		**1,539**	

7.4.2.1 Self-help behaviours

Self-help behaviour questions were administered to all participants. Participants were asked which strategies they had used in the last 12 months to maintain their mental health, and answered on four items: increased exercise, doing more things they enjoy, seeking help from family/friends, speaking to chaplain. Each item was scored with a dichotomous outcome 'Yes' (1), 'No' (0).

As with Chapters 4 and 5, online resource use was taken from 32 questions examining use of e-mental health resources in the 12-months prior to survey "to inform or assess" mental health. Dichotomous (Yes/No) responses were obtained across a range of websites (e.g., ADF website, DVA website, Beyond Blue website, other health website), telephone helplines (e.g., ADF All-hours Support, VVCS Vetline, Lifeline, other telephone helpline), internet treatment (e.g., MoodGYM internet treatment, other internet treatment), smart phone apps (i.e., PTSD Coach Australia, On Track, other smart phone app) and one item assessing social media. Relevant items were grouped and collapsed to produce two dichotomous variables indicating 12-month use (1) or no use (0) of: any information website; and any use of social media, internet treatment or smart phone app.

7.4.2.2 Mental health need

Measures of psychological health included in this chapter are the same as those used in previous chapters, so a summary is provided here with more information available in section 2.3.2.

Posttraumatic stress symptoms were assessed using the 17-item Posttraumatic Checklist – Civilian (PCL-C: Weathers et al., 1993). The items were totalled to produce a response range of 17 to 85, with higher scores indicating more severe PTSD symptoms. A score ≥50 has been used in this research to represent probable PTSD. Risk categories have been used to examine at what level of symptom severity peak use of both online and formal services occurs. The risk categories are in line with those used in ADF psychological screening policy: low (17-29), moderate (30-39), high (40-49), very high (50-85)

The 9-item Patient Health Questionnaire (PHQ-9) was used to measure depressive severity in the previous two weeks. The scale is scored from 0 to 27, with a higher score indicative more severe depression symptoms (Kroenke et al., 2001). The authors of the scale indicate that PHQ-9 scores of 5, 10, 15, and 20 represented mild, moderate, moderately severe, and severe depression, respectively. A cut-off of 10 was used in this Study to represent probable depressive disorder (Manea et al., 2012).

Anxiety symptoms in the previous two weeks was measured using the 7-item Generalised Anxiety Scale (GAD-7: Spitzer et al., 2006), producing a total score between 0-21 with higher scores indicative of more severe anxiety. A cut-off of 10 is used in this study to represent probable anxiety disorder, and symptom severity is indicated by the following categories: Minimal (1-4), Mild (5-9), Moderate (10-14) and Severe (15-21) (Spitzer et al., 2006).

Any current probable disorder was categorised as scoring above cut-off on any of the above scales (PCL-C (≥50), PHQ-9 (≥10) and/or GAD-7 (≥10)) at the time of the survey. Comorbidity was derived using the same three scales with a score of ‘0’ (no disorder), ‘1’ or ‘2 or more’ probable disorders at the time of completing the survey.

Functional impairment was assessed using the Sheehan Disability Scale (SDS: Sheehan, 1983) , which assesses disability on three dimensions; work, family and social life. Answers on each dimension range from 0 (Not at all) to 10 (Extremely), with respondents indicating how much the symptoms measured previously in the survey have disrupted their work, social life/leisure activities and family life/home responsibilities. A total disability score of 0-30 can be

determined by adding scores on the individual dimensions together. A score of >5 on any of the individual dimensions is thought to represent functional impairment with higher scores indicating greater impairment.

7.4.2.3 Predisposing beliefs

Attitudes and beliefs about mental health help-seeking were measured using sub-scales identified in the previous chapter. Three scales were used to measure:

4. anticipated stigma, 5 items measuring concerns about impact on career and the opinions/reactions of others;
5. self-stigma, 4 items measuring feelings of embarrassment, inadequacy and loss of control of emotions; and
6. concerns about services, 6 items covering practical access concerns (i.e., expense, time off, appointment difficulties), lack of trust and loss of agency.

Participants were asked to indicate how much each item might affect their decision to seek help with answers on a 5-point Likert scale from 'Strongly Disagree' (1) to 'Strongly Agree' (5).

The Ohio State University Brief Resilience Scale (BRS: Smith et al., 2008) was used to measure resilience. The scale has six items with responses on a 5-point Likert scale (Strongly Disagree to Strongly Agree). Three items are reverse scored, with the total mean score ranging from 1 to 5. The scale reflects self-efficacy in dealing with life stressors, with items such as "I tend to bounce back quickly after hard times" and "I have a hard time making it through stressful events" (reverse scored).

7.4.3 Analysis

Analyses were conducted in SPSS version 26. Descriptive statistics were examined and used to describe the sample in relation to self-reliance, perceived functioning and fear of help-seeking. 'Self-reliance' was negatively skewed (-1.20) and the data did not meet all assumptions for ordinal logistic regression, so the variable was dichotomised to Disagree/Neutral (No self-reliance preference) or Agree (Self-reliance). For consistency and comparative purposes, perceived functioning and fear of help-seeking were similarly dichotomised.

Tests of independence (chi-square) and mean difference (independent samples t-tests) were used to examine bivariate relationships between both categorical and continuous variables, and

the dichotomous outcome variables: self-reliance, perceived functioning and fear of help-seeking (RQ7 and 7a).

To assess the independent relationship between psychological health variables, resilience and help-seeking beliefs with self-reliance, a binary logistic regression was performed (RQ8a). Potential confounding variables of sex, age, ADF transition status and rank were entered as covariates. Model fit was assessed using the Hosmer and Lemeshow test, which showed good model fit (discrimination among groups), $\chi^2_{(17,\ N=1213)} = 4.32$, $p = .83$, Nagelkerke $R^2 = .15$.

Chi-square tests were conducted to assess associations between self-reliance and each self-management technique (i.e., physical activity, enjoyable activities, seeking support from family/friends, seeking support from Chaplain/faith leader, mental health website use, other online mental health resource) (RQ8b). Cramer's V was calculated to measure the effect size for each association.

7.4.3.1 Missing data

Investigation of missing data was conducted using SPSS Missing Value Analysis. A total of 1.22% of values were missing, with 21.18% of cases having any missing data. Of the individual scales/variables, more than 5% of data (5.5% and 5.8% respectively) were missing on the PCL-C and Brief Resilience Scale only. Comparisons of valid cases and cases with missing values across variables revealed no significant associations. Little's MCAR test showed that data were missing completely at random, $\chi^2_{(671)} = 731.77$, p=.052. As such, pairwise deletion was used during analysis.

7.4.3.2 Multicollinearity

Examination of the correlation matrix suggested a strong bivariate correlation ($r > .7$) between depression and anxiety scores ($r = .773$, $p < .001$), and functional impairment in work and social life ($r = .735$, $p < .001$). Tolerance values were all greater than 0.25 and therefore all variables were retained for analysis.

7.4.3.3 Outliers

Multivariate outliers were assessed using Mahalanobis Distance and Cook's Distance. Whilst 25 cases were identified as possible multivariate outliers, they appeared to be legitimate cases and did not unduly influence results, so were retained.

7.5 Results

7.5.1 Association between self-reliance and other reasons for not seeking help

Of those who indicated they had been concerned about their mental health in their lifetime but never received assistance for their concern (N = 1,539), 82.0% agreed that they would prefer to manage the problem on their own. Neutral responders made up 11.2% of participants and the remainder (6.5%) disagreed. Of those participants with a current probable disorder (N = 324), 78.7% agreed that they would prefer to manage the problem themselves. Noting that participants could provide multiple reasons for non-help-seeking, 85.5% of all participants agreed that they could still function effectively and 39.0% indicated they were afraid to ask for help. In those with probable disorder, 76.0% said they could still function and 57.9% feared asking for help.

The sample characteristics according to the proportion of individuals who agreed that their reason for not seeking care was self-reliance, could still function and/or fear of help-seeking were are provided in Table 7-2 (for categorical variables) and Table 7-3 (for continuous variables). Perceived functioning was significantly associated with self-reliance (χ^2 = 86.98, p < .001). In contrast, fear of help-seeking was not associated with self-reliance (χ^2 = 0.08, p = .773) and appeared to interact differently with demographic and psychological factors. Therefore, fear of help-seeking is considered separately below. It is important to note that although those who reported self-reliance were no more or less likely to report fear of help-seeking than those who did not, the majority (82.4%) of those who feared help-seeking still indicated a preference for managing problems on their own, reflecting the high rate of self-reliance across the sample.

Note that the following sections refer to ‘self-reliant’ and ‘functioning’ participants. This is for ease of expression and does not imply that those who did not agree with either statement were less able to self-manage or function.

Table 7-2 Characteristics of study sample according to preference for self-managed mental health, perceived functioning and fear of help-seeking

	Self-reliant*				Can still function**				Afraid to seek help***			
	n	%	*χ2*	*p*	n	%	*χ2*	*p*	n	%	*χ2*	*p*
Sex			*2.160*	*.142*			*1.933*	*.164*			*0.223*	*.637*
Male	1060	81.4			1106	85.0			510	39.2		
Female	189	85.5			194	88.6			83	37.6		
Transition status			*7.474*	*.006*			*8.475*	*.004*			*4.279*	*.039*
Permanent ADF	813	84.1			845	87.5			357	37.0		
Transitioned	438	78.5			456	82.0			237	42.4		
Service			*4.172*	*.124*			*0.880*	*.644*			*1.448*	*.485*
Navy	596	80.2			632	85.4			293	39.5		
Army	291	82.2			306	86.9			143	40.6		
Air Force	362	85.0			362	84.6			157	36.7		
Rank			*15.608*	*<.001*			*19.322*	*<.001*			*14.391*	*<.001*
Officer	531	86.8			548	90.1			216	35.4		
Senior NCO	399	78.5			427	83.7			189	37.2		
Junior NCO/OR	321	79.3			326	80.7			189	46.8		
Self-reliant			-	-			*86.979*	*<.001*			*0.083*	*.773*
Agree					1112	89.4			486	39.0		
Disagree/Neutral					184	67.4			104	38.1		
Can still function			*0.083*	*<.001*			-	-			*2.822*	*.093*
Agree	1112	85.8							492	37.9		
Disagree/Neutral	132	59.7							97	43.9		
Afraid to seek help			*86.979*	*.773*			*2.822*	*.093*				
Agree	486	82.4			492	83.5					-	-
Disagree/Neutral	759	81.8			805	86.7						
Comorbidity			*7.969*	*.019*			*39.289*	*<.001*			*87.410*	*<.001*
No disorder	859	83.3			908	88.3			331	32.2		
1 disorder	164	82.8			160	80.8			101	51.0		
2 or more	114	74.0			107	69.9			105	68.2		

* Agree/strongly agree to the item “I preferred to manage myself”

** Agree/Strongly agree to the item “I can still function effectively”

*** Agree/Strongly agree to the item “I was afraid to seek help, or of what others would think of me if I did”

7.5.1.1 Characteristics of 'self-reliant' and 'functioning' participants

The results indicate that self-reliance was associated with ADF transition status, with greater numbers of Permanent ADF reporting self-reliance than Transitioned ADF ($\chi^2 = 7.47$, $p < .01$). Rank was also associated with preference for self-managing mental health ($\chi^2 = 15.61$, $p < .001$), with Officers more commonly reporting self-reliance than non-commissioned ranks. However, there was no association between self-reliance and sex ($\chi^2 = 2.16$, $p = .14$) or Service ($\chi^2 = 4.17$, $p = .12$). Between those who did and did not prefer to self-manage, there were no differences in age ($t(1526)=1.608$, $p = .108$).

Similar to self-reliant participants, a greater proportion of Permanent ADF ($\chi^2 = 8.47$, $p < .01$) and Officers ($\chi^2 = 19.32$, $p < .001$) reported they did not seek help because they could still function. There were no significant associations between 'functioning' and sex ($\chi^2 = 1.93$, $p = .164$), age ($t_{(1520)} = -0.639$, $p = .523$) or Service ($\chi^2 = 0.880$, $p = .644$).

7.5.1.2 Characteristics of participants who feared seeking help

In contrast to the above findings on self-reliance, those who reported they were afraid to seek care were significantly younger ($t_{(1520)} = 3.20$, $p < .001$, Cohen's $d = 0.17$). Permanent ADF were less likely to report fear of help-seeking compared to Transitioned ADF ($\chi^2 = 4.28$, p=.039) and fewer officers reported fear of help-seeking compared to lower ranks ($\chi^2 = 14.39$, p<.001).

7.5.2 Relationship between mental health, help-seeking beliefs and reasons for not seeking help

7.5.2.1 Psychological health and self-reliance

Severity of symptoms was inversely related to self-reliance. Looking at co-morbidity of probable disorder (Table 7-2), those with one or no disorder were more likely to prefer self-reliance ($\chi^2 = 7.97$, $p < .019$). Depression and anxiety symptoms were significantly lower in those who preferred self-management ($t_{(1511)} = 4.30$, $p < .001$, $d = 0.29$; $t_{(1518)} = 3.66$, $p < .001$, $d = 0.25$, respectively), but there was no significant difference in PTSD symptoms ($t_{(1463)} = 1.69$, $p < .091$, $d = 0.12$). Level of disability at work and in social life was significantly lower in those who preferred to self-manage ($t_{(1532)} = 3.36$, $p < .001$, $d = 0.22$; $t_{(1538)} = 2.08$, $p = .04$, $d = 0.14$, respectively), but not impairment in family life ($t_{(1538)} = 1.88$, $p = .06$, $d = 0.14$).

Table 7-3 Sample characteristics according to self-reliance, perceived functioning and fear of help-seeking for all continuous variables

	Self-reliant			**Can still function**			**Afraid to seek help**		
	Disagree /neutral	**Agree**		**Disagree /neutral**	**Agree**		**Disagree /neutral**	**Agree**	
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Age	42.23 (10.19)	41.02 (10.11)	*ns*	40.76 (10.19)	41.37 (10.12)	*ns*	*41.91 (9.82)*	40.24 (10.55)	*.002*
Posttraumatic Stress	27.89 (10.76)	26.61 (10.05)	*ns*	30.26 (13.17)	26.23 (9.40)	*<.001*	24.51 (8.06)	30.57 (11.93)	*<.001*
Depression	7.60 (6.01)	6.03 (5.09)	*<.001*	8.72 (6.48)	5.90 (4.93)	*<.001*	5.10 (4.45)	8.21 (5.89)	*<.001*
General anxiety	5.36 (5.05)	4.30 (4.04)	*<.001*	6.32 (5.51)	4.17 (3.90)	*<.001*	3.61 (3.62)	5.84 (4.76)	*<.001*
Disability									
Work	2.44 (2.51)	1.93 (2.25)	*< .001*	2.90 (2.76)	1.88 (2.18)	*<.001*	1.72 (2.12)	2.51 (2.49)	*<.001*
Social	3.17 (2.83)	2.79 (2.69)	*.038*	3.78 (3.13)	2.71 (2.60)	*<.001*	2.28 (2.40)	3.79 (2.93)	*<.001*
Family	3.04 (2.68)	2.71 (2.60)	*ns*	3.74 (3.09)	2.60 (2.49)	*<.001*	2.25 (2.31)	3.60 (2.84)	*<.001*
Anticipated Stigma	15.64 (5.05)	15.86 (5.07)	*ns*	15.97 (5.23)	15.80 (5.04)	*ns*	14.02 (4.84)	18.65 (4.02)	*<.001*
Concerns about services	15.06 (4.68)	14.61 (4.75)	*ns*	15.41 (4.76)	14.57 (4.73)	*.017*	13.38 (4.45)	16.74 (4.45)	*<.001*
Self-stigma	10.83 (3.88)	11.50 (3.88)	*.012*	11.29 (4.11)	11.39 (3.86)	*ns*	9.90 (3.51)	13.74 (3.24)	*<.001*
Resilience	3.39 (0.69)	3.68 (0.64)	*<.001*	3.32 (0.68)	3.68 (0.64)	*<.001*	3.76 (0.63)	3.43 (0.66)	*<.001*

Abbreviations: SD, Standard Deviation; ns, not significant at p<.05.
Participants: Current and former ADF members who reported having been concerned about their mental health but did not seek help.

7.5.2.2 Psychological health and perceived functioning

Severity of symptoms was also inversely related to perceived functioning. Those with one or no disorder were more likely to report they did not seek help because they could still function effectively ($\chi^2 = 87.41$, $p < .001$) compared to those with two or more disorders. However, in contrast to self-reliance, PTSD symptoms were significantly less severe among those who reported greater perceived functioning as the reason they did not seek help ($t_{(1457)} = 5.16$, $p < .001$, $d = 0.38$). Depression and anxiety symptoms were also significantly lower in those who did not seek care because they were still able to function effectively ($t_{(1505)} = 7.07$, $p < .001$, $d = 0.52$; ($t_{(1511)} = 6.82$, $p < .001$, $d = 0.50$). Not surprisingly, impairment in all domains (work,

social and family life) was significantly lower in those who said that they could still function effectively.

7.5.2.3 Psychological health and fear of help-seeking

PTSD, depressive and anxiety symptoms were significantly greater in those who reported fear of help-seeking (remembering that all analysis was restricted to participants who reported a subjective lifetime mental health concern but had not sought treatment) ($t_{(1458)}$ = -10.73, $p < .001$, d = 0.63; $t_{(1505)}$ = -11.02, $p < .001$, d = 0.62; $t_{(1511)}$ = -9.86, $p < .001$, d = 0.55 respectively). Those with one, or two or more disorders were more likely to report being afraid to seek help (χ^2 = 39.29, $p < .001$) than those with no probable disorder. In line with results of disorder symptoms, disability was higher across all life domains in those who feared to seek help (Work: $t_{(1526)}$ = -6.41, $p < .001$, d = 0.35; Social: $t_{(1532)}$ = -10.56, $p < .001$, d = 0.58; Family: $t_{(1532)}$ = -9.78, $p < .001$, d = 0.54).

7.5.2.4 Help-seeking beliefs, resilience and self-reliance

Help-seeking beliefs differed depending on reason for not seeking help. Anticipated stigma and concerns about mental health services were not significantly different between self-reliant individuals and those who did not report a preference for self-reliance. However, self-stigma was slightly higher in self-reliant individuals ($t_{(1519)}$ = -2.56, p = .01, d = 0.17) as was resilience ($t_{(1460)}$ = -6.59, $p < .001$) with a moderate effect size (d = 0.45).

In contrast, neither anticipated nor self-stigma were significantly different according to perception of functioning. However, concerns about services were lower ($t_{(1498)}$ = 2.22, p = .03, d = 0.16), and resilience was higher ($t_{(1456)}$ = -7.62, $p < .001$, d = 0.54), in those who reported they were still able to function.

7.5.2.5 Help-seeking beliefs, resilience and fear of help-seeking

Anticipated and self-stigma, as well as service concerns, were all higher in those who feared help-seeking, and resilience was significantly lower in this group. Effect sizes were medium for resilience ($t_{(1456)}$ = 9.38, $p < .001$, d = .51), and large effect sizes for anticipated stigma ($t_{(1517)}$ = -20.12, $p < .001$, d = 1.02), self-stigma ($t_{(1515)}$ = -21.76, $p < .001$, d = 1.13) and concerns about mental health services ($t_{(1498)}$ = -14.33, $p < .001$, d = .76).

7.5.2.6 Relationship between psychological health, resilience and help-seeking beliefs on self-reliance

To assess the independent relationship between psychological health, resilience and help-seeking beliefs on self-reliance, a regression model was estimated, controlling for demographic factors (see Table 7-4). Among disorder symptoms, only depression symptoms were significantly associated with less likelihood of reporting self-reliance as the reason for not seeking mental health care. The effect of disability (functional impairment) was not significant, although perceived functioning was significantly associated with self-reliance. Fear of help-seeking was associated with lower likelihood of self-reliance, whilst self-stigma and resilience were associated with greater likelihood self-reliance.

Table 7-4 Relationship of self-reliance to symptoms, disability and help-seeking beliefs

	aOR (95%CI)*	***p***
Posttraumatic Stress	1.01 (0.99, 1.04)	.264
Depression	**0.95 (0.90, 0.99)**	**.047**
Anxiety	1.04 (0.98, 1.11)	.179
Disability		
Work	0.91 (0.83, 1.01)	.070
Social	1.05 (0.94, 1.17)	.432
Family	1.02 (0.92, 1.14)	.678
Perceived functioning	**1.63 (1.34, 1.98)**	**<.001**
Fear of help-seeking	**0.83 (0.69, 0.99)**	**.039**
Anticipated Stigma	0.98 (0.94, 1.03)	.415
Concerns about services	0.97 (0.92, 1.02)	.179
Self-stigma	**1.18 (1.10, 1.26)**	**<.001**
Resilience	**1.71 (1.30, 2.24)**	**<.001**

*Adjusted for age, sex, ADF transition status and rank
Note: Bold numbers denote results significant at $p<.05$

7.5.3 Self-reliance and self-management behaviours

Figure 7-1 shows the proportion of individuals using various types of self-help strategies to maintain their mental health in the 12 months prior to the survey. Individuals who reported a preference to manage their own mental health were more likely to report increasing physical activity ($\chi^2 = 23.68$ $p < .001$, Cramer's $V = .125$) and doing more things that they enjoy ($\chi^2 = 11.67$, $p < .001$, Cramer's $V = .087$). Seeking informal support from family or friends, or from Chaplain/faith leader was not associated with self-reliance, nor was use of e-mental health resources.

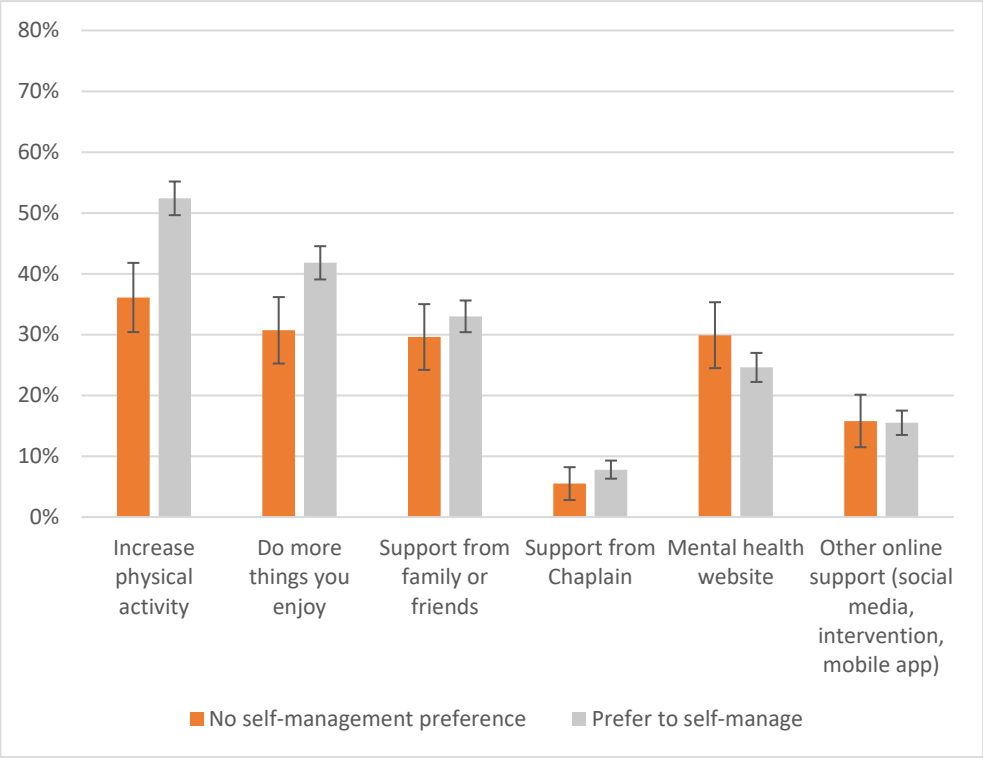

Figure 7-1 Self-help behaviours used to maintain mental health in the previous 12 months by self-management preference

Figure 7-2 shows the proportion of those with probable disorder using 12-month self-help behaviours by self-reliance. Patterns of responses to physical activity and behavioural activation (doing more enjoyable things) were similar to the overall sample but differences were not significant (physical activity, χ^2 = 2.89, p = .089; behavioural activation, χ^2 = 0.95, p = .329). Self-reliance was not associated with seeking informal support from family or friends (χ^2 = 0.76, p = .384), Chaplain (χ^2 = 0.34, p = .562), websites (χ^2 = 3.65, p = .056) or other online source (χ^2 = 3.94, p = .139).

7.6 Discussion

What do individuals mean when they say they did not seek mental health care because they preferred to manage themselves? Is this group of 'self-reliant' individuals more likely to have lower severity of symptoms and feel confident in their ability to manage these symptoms? Or are these preferences influenced by cultural expectations of self-sufficiency and 'toughness'? And, lastly, do these individuals actively manage their own mental health? The answers to these questions are important when designing programs either to support self-management practices or interventions to encourage help-seeking. The aim of the current chapter was to examine the relationship between self-reliance and symptoms, functional impairment, help-seeking beliefs

and self-help behaviours, among respondents who indicated that they had ‘ever’ had a mental health concern but ‘never’ sought assistance for their mental health.

There are various reasons for not seeking help and these reasons may operate differently in influencing help-seeking decisions depending on level of need and help-seeking beliefs. This chapter examined three of these reasons: self-reliance, perceived functioning and fear of help-seeking. The majority of participants reported they did not seek help for their mental health because they preferred to manage it themselves (82.0%) and they could still function effectively (85.5%). A smaller proportion indicated they were afraid to seek care (39.0%). Self-reliant participants were more likely to believe in their ability to function and less likely to report fear of help-seeking. When examining psychological and personal factors associated with each reason, there were differences in the relationship to symptoms, functional impairment and help-seeking beliefs for each. These results indicate there are potentially different thought processes associated with help-seeking decision making and different strategies to encourage help-seeking may be required to account for these different approaches.

Results indicated that whilst lower symptom severity was partially associated with self-reliance, the relationship between symptoms and reason for not seeking help was stronger for perceived functioning and fear of help-seeking. To assess the independent relationship between the constructs of interest and self-reliance, a regression model was estimated, controlling for demographic factors. In this model, depression symptoms were the only disorder category to be inversely related to self-reliance, while PTSD and anxiety symptoms had no significant association. Disability was less important in lack of help-seeking due to self-reliance than perceptions of functioning, self-stigma and resilience. Self-reliance was associated with use of physical activity and enjoyable activities, but not informal support seeking (in-person or online).

Supposing self-reliance is a barrier to mental health care, it is perhaps helpful to consider results with respect to previous suggestions about the meaning of self-managed mental health in the military. There has been limited research into self-reliance and its relationship to mental health service use in the military but Adler et al. (2015) posited self-reliance could reflect one of three possibilities: a preference for using informal support networks; a preference for maintaining a sense of self-efficacy in dealing with life stressors; or a conservation of resources. Each of these suggestions is examined below with respect to the results of the current research.

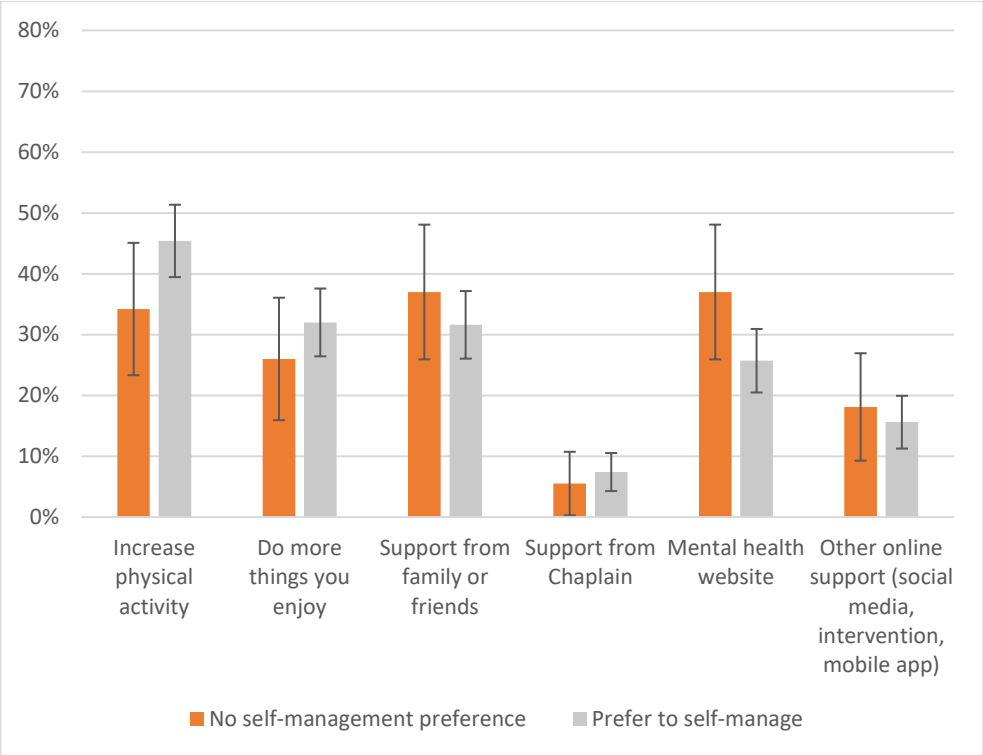

Figure 7-2 Self-help behaviours used to maintain mental health in the previous 12 months by self-management preference, in those with probable disorder

7.6.1 Self-reliance and informal support seeking

Preference for self-management did not reflect a substitution of professional mental health services for informal support. Results indicate that those who prefer self-reliance were more likely to report using active strategies to maintain their mental health, such as increasing physical or pleasurable activities. This is consistent with previous research which suggests these types of strategies are common in community (Olesen et al., 2010) and ADF (Forbes et al., 2018). However, there was no difference in use of informal support, both in terms of friend/family/faith networks or online, between those who preferred self-management and those who did not. This suggests that self-managing individuals may use a range of strategies, but active self-management strategies are more common than 'other focused' or support seeking strategies. Previous research with self-reliant adolescents found they were less likely to use informal sources of support, such as friends and parents, but were more likely to seek information from anonymous internet sources (Labouliere et al., 2015). In the military context, individuals are likely to have learned/developed more self-sufficient behaviours, but regardless, organisational and public health messaging around self-sufficiency and resiliency may still have unintended consequences.

7.6.2 Self-reliance and self-efficacy

The relationship between self-efficacy and self-reliance is reflected in the results showing resilience was lower in those who reported no preference for self-managing their mental health. Or, in other words, those who preferred to self-manage reported greater belief in their ability to manage life stressors. No known research has examined the relationship between resilience and self-reliance, but previous research has found that self-reliance was associated with lower feelings of control (mastery) (van Zoonen et al., 2016). Whilst mastery is a separate construct to resilience, it has been used interchangeably with self-efficacy (Han, 2017; Roepke & Grant, 2011) and therefore is contrary with results presented in this thesis.

Self-reliance in the current study was not associated with attitudes towards professional care. However, attitudes to care were associated with perceived functioning. Those who stated they did not seek assistance because they 'can still function' reported less negative attitudes. Higher resilience was also associated with greater perceived functioning. These associations may be related to a desire to maintain self-efficacy. Van Zoonen et al. (2016) postulated that negative attitudes to care might make people prefer to handle problems on their own. Dabovich et al. (2019), however, turn this around and suggest that a perceived loss of agency when engaging in military healthcare leads to mistrust of services. Agency was viewed as having the individual skills and confidence to adapt to stressors or challenges (both physically and psychologically). The current study supports the latter notion that self-reliance is not directly associated with negative perceptions of care, but that a loss of perceived functioning and therefore potential lower self-efficacy, is related to concerns about care.

It is important to note that prior experiences of care can impact on attitudes to care (Rafferty et al., n.d.), however the current chapter focuses on participants who have no previous personal experience with mental healthcare. It may be that these individuals have observed or are aware of friends or colleagues' experiences of care, but individuals may also have developed attitudes in isolation to knowledge of mental healthcare services. Understanding how individuals develop negative or positive attitudes to care is an area for future research.

Although previous research suggests that self-reliance is associated with elevated symptoms (Labouliere et al., 2015), the results presented here indicate that self-reliance is less related to symptoms and disability, and more to perceived functioning, self-belief and a degree of self-stigma. In Dabovich et al.'s (2019) research with Australian military personnel undergoing rehabilitation, loss of agency during health service use was particularly at odds with the military

culture of ‘collective capability’. The ability to self-manage health was seen as critical to role and identity within the team environment. Such a focus might explain why self-stigma plays a role in self-reliance. If one internalises the collective norms of self-sufficiency and personal responsibility, then need for care may engender feelings of shame about not meeting individual or perceived group expectations. As such, the results support the supposition that a desire to manage one’s own mental health may be a means to preserve a sense of self-efficacy.

The relationship between symptoms and self-reliance was only apparent for depressive symptoms. Those with more severe depression were less likely to report self-reliance. This is contrary to previous research which found extreme self-reliance was associated with clinical depression and suicidal ideation (Labouliere et al., 2015). Often depression results in changes to cognitions associated with helplessness, failure and inadequacy which may be directly related to less self-reliant beliefs. However, depression symptoms manifest differently for different individuals and some presentations may be characterised by altered cognitions and others may be characterised by physical manifestations. It is possible that self-reliance is less of a barrier for those with depression than other disorders, whilst other barriers may feature more prominently for depression. Previous research in the ADF found different rates of service use for depressive episodes (65.2%) and PTSD (50.2%) (McFarlane et al., 2011). If self-management is perceived as active strategies, then perhaps these are more at odds with some depressive symptoms, particularly anhedonia, lethargy and fatigue (Glowacki, Duncan, Gainforth, & Faulkner, 2017), than with PTSD or anxiety symptoms. This would make self-management more challenging for those with depressive symptoms. Therefore, self-efficacy in enacting self-management practices may be reduced in those with depression.

Noting the cross-sectional nature of this study, an alternative interpretation is that the association between self-reliance and active self-management practices may lead to a reduction in depressive symptoms. It is not clear why this would be the case for depressive symptoms and not PTSD or anxiety symptoms but the potential different interpretation of causality highlights the need for longitudinal research examining how self-reliance changes over time, and what impact this may have on mental health outcomes.

However, more severe symptoms and greater disability were consistently associated with a fear of help-seeking. Although fear of help-seeking was associated with less likelihood of self-reliance, it remains the case that 82.4% of individuals who were afraid to seek care indicated

that they preferred to manage the problem themselves. This group may reflect the more extreme end of self-reliance as found in Labouliere et al. (2015). Such an effect might also provide some support for a conservation of resources model.

7.6.3 Self-reliance as a conservation of resources

The Conservation of Resources (COR) theory is widely used in organisational psychology and explains the motivations that drive resource maintenance and gain (Hobfoll et al., 2018). Adler et al. (2015) suggested that motivation for self-managing mental health could reflect a conservation of resources, and that seeking new resources through mental health services was not 'worth the effort'. The central tenet of COR theory is that individuals seek to "obtain, retain, foster and protect" Hobfoll et al. (2018, p. 106) things that they value. The principles of the theory suggest that individuals must invest resources to protect, recover or gain resources; resource gains become more important in the context of resource loss; and where resources are strained, individuals act to preserve the self through potentially defensive or irrational behaviour.

Whilst the current research was not designed to test the COR theory, some aspects of the results fit the theoretical concepts. Self-efficacy in a military context may represent a valued personal resource and decreased functioning in response to increased symptoms could be viewed as a threat to, or loss of, that resource. This can be seen in the demonstrated relationships between self-reliance, perceived functioning, resilience and self-stigma. Seeking help (either professionally or informally) is a further threat to this resource with potential loss in personal agency, whereas active behavioural strategies represent a potential resource 'gain'.

Self-reliance is potentially adaptive where there are higher levels of resilience and functioning, where non-help-seeking is less about fear and more focused on resource gain. Researchers have argued that not all who experience a deficit in mental health require access to mental health treatment, with many symptoms self-limiting (Sareen et al., 2013) particularly in mild to moderate cases (Whiteford et al., 2013). However, despite the likelihood of remission without treatment, many individuals continue to have lower quality of life than healthy controls (Wang et al., 2017). This lower quality of life may reflect a slower recovery and subsequent psychosocial impact that could potentially be avoided with early intervention. In the ADF, there is evidence that those who experience disorder in the early years after separating from military service exhibit subclinical symptoms whilst still serving (Bryant et al., 2019). There is greater opportunity for early intervention in this group prior to transition, where it is more

straightforward to provide intervention services. Future research should examine if resilience and self-reliance reflect evidence of previous ability to overcome distressing or difficult events and therefore may represent an individual's ability to overcome adversity and recover without professional treatment. However, research also needs to consider the impact of non-treatment seeking on life domains other than remission of symptoms.

However, self-reliance could potentially be maladaptive where resilience and functioning resources are depleted. Fear of help-seeking might represent an extreme end of the COR spectrum with increased salience of threat associated with increased symptom severity and depleted functioning, resulting in potentially defensive and contradictory behaviour such as non-help-seeking and reduced self-management. In both instances, resource gain is required, but the strategies to engage these groups may be different. In the case of resource depletion and perceived threat, practices to reduce fear and enable care engagement may be more important than resources to aid in self-management.

7.6.4 Implications

The results presented in this chapter suggest some heterogeneity in those with a mental health concern who do not seek mental health treatment. Increasing personal agency in military mental health care systems and providing avenues to support those who express a desire to self-manage, may be beneficial and reduce negative perceptions of mental healthcare. However, there is also a need to identify and support those with extreme self-reliance due to fear of help-seeking for whom a lack of professional help may have devastating consequences (Labouliere et al., 2015). Regardless, it is clear that resources need to take into account the specific cultural and organisational factors within military settings which influence help-seeking and self-management behaviours.

Non-specific health coaching to improve general wellbeing, such as that trialled in the New Zealand Defence Force (Bennett, 2018) or similar holistic approaches, may be beneficial in engaging those with low to moderate symptoms who report self-reliance. These programs could engage individuals through active coping strategies, whilst maximising opportunity for instrumental support and flexible coping through stigma reduction messaging and collateral outcomes (e.g., increased social support). For those in-service, this might be linked to physical training and health assessments, but for those in transition or ex-serving, this might be achieved through personal training groups and sports programs. Online programs might focus on

physical performance enhancement whilst drawing attention to increased mental wellbeing and development of flexible coping styles (e.g., Swiss8 app).

However, such programs must incorporate processes to identify and engage with individuals who may require more intensive mental health support and ensure that messaging around self-management does not exacerbate feelings of shame for these individuals. This concern also applies to resilience training in military and organisation settings, where messaging is focused on building capacity to cope with adversity. This messaging may have unintended consequences of increasing stigma and perceptions that one should be able to cope, if not supported by strong evidence-based strategies to reduce stigma and encourage a range of self-help strategies, including informal and formal support seeking behaviour.

7.6.5 Limitations and strengths

As with other chapters in this thesis, data were drawn from a cross-sectional survey with low response rates and are therefore limited in terms of generalisability and causal inference. However, much research on self-management is with clinical populations already in care and has a recovery focus. This is the only known investigation of factors associated with self-reliance and self-management behaviours in non-help-seeking individuals at a population level. The research provides an initial exploration of issues that would benefit from further investigation in future, particularly using longitudinal methods

The current study was limited in the range of self-management practices included and other strategies known to be used in the self-help arena (e.g., meditation, mindfulness) were not included. Future research which uses qualitative or mixed methods might be beneficial to examine the range of self-management strategies used by current and former ADF members. Such research could also focus on those strategies which produce crossover effects and what support would be required for individuals to successfully enact self-management behaviours.

The current study did not assess maladaptive coping behaviours (such as alcohol abuse, gambling, anger and suicide) that may also be related to self-reliant attitudes. Future research should consider the ways in which self-reliance is associated with negative outcomes, to identify at what point self-reliance may become maladaptive.

7.6.6 Conclusion

The current chapter examined self-reliance and self-management behaviours in a group of individuals who had been concerned about their mental health but never received assistance. Overall, self-reliance was closely associated with perceptions of self as functional and resilient and seeking care either from mental health professionals or informally was likely to be incompatible with this view of self. Self-reliance was less likely to be reported by those with depressive symptoms and was associated with reported active self-management strategies. Whilst self-reliance may be an attempt to maintain a sense of self-efficacy, fear of help-seeking may reflect a conservation of resources at extreme risk to this self-efficacy. This heterogeneity within concerned non-help-seekers suggests a need for multi-pronged approaches to the support of non-help-seekers in managing their mental health and facilitating engagement in care when warranted.

Chapter 8 Discussion

8.1 Key findings

Military service carries inherent psychological risk as evidenced by high rates of mental disorders in current and former Australian military (McFarlane et al., 2011; Van Hooff et al., 2018). Whilst many ADF members and veterans do seek mental health care, not all within the military community will access mental health services (Forbes et al., 2018; McFarlane et al., 2011). There are considerable economic, organisational and human costs to this hidden unmet need, particularly when considering the ongoing impact on the individual, their family and the community (Australian Government, 2017; Forrest et al., 2014; National Mental Health Commission, 2017). The aim of this thesis was to examine mental health help-seeking beliefs and behaviours in the ADF and explore the role of e-mental health in supporting access to mental health care and self-managed mental health in the ADF.

In this study, one in five participants had symptoms indicative of a probable mental disorder (PTSD, depression or anxiety) at the time of the survey and 54% of these reported having seen a GP, psychologist, psychiatrist or other mental health professional in the 12 months prior to the survey. Using the Andersen Behavioural Model of Health Service Use, several predisposing demographic factors were identified as lowering the likelihood of mental health service use. These included being male, transitioned from full-time service, and Army or Navy service compared to Air Force. Need was the key driver of mental health service use, with subjective mental health concern, greater PTSD symptoms and impaired work function predicting use. Resilience, self-stigma and negative attitudes to services were all associated with less service use. In contrast, higher anticipated stigma was associated with increased likelihood of mental health service use. Lastly, positive social support from friends predicted greater likelihood of 12-month mental health service use.

Of those who had been concerned about their mental health at some point in their life but had never received assistance (N = 1,539), the majority (82%) said that they preferred to manage the problem on their own. This preference for self-management (self-reliance) was associated with lower depressive symptoms, greater perceived functioning regardless of reported disability, and greater resilience. A preference for managing own mental health was associated with behavioural activation (such as increasing physical activity and enjoyable activities) but not informal support seeking (family/friends/faith leaders) or e-mental health resource use.

However, self-reliant individuals also reported higher self-stigma. Self and anticipated stigma as well as lower resilience were also associated with fear of help-seeking. A total of 39% of those who had not sought assistance reported fear of help-seeking.

E-mental health in this thesis was defined as "the use of digital technologies and new media for the delivery of a range of mental health related services, from health promotion, prevention and early intervention, to crisis support, screening, treatment and relapse prevention …" (Riper et al., 2010, p. 1). Rates of e-mental health resource use increased monotonically with higher levels of symptoms (across all resource modalities and disorder categories). Mental health information websites were the most common online resource used (29.2%) across all participants, regardless of symptoms. Interestingly, the proportion of ADF community members using social media for mental health (12.3%) was similar to those using telephone helplines (12.2%). Overall, internet treatments (2.0%) and mHealth (smartphone apps; 6.4%) were the least used. Different modes of delivery of e-mental health appeared to appeal differently to sub-groups within the ADF community, with use varying with age, sex, rank and transition status.

Barriers to formal help-seeking from professional services were similarly associated with e-mental health resource use at the broad population level, with self-stigma and resilience associated with less likelihood of website, helpline and mHealth use. However, there was an overlap between e-mental health and professional service use, with many individuals using a combination of services (19.8% of those with current symptoms of disorder). Use of websites, telephone helplines and mHealth were significantly associated with 12-month mental health service use but use of social media and internet treatment were not. Where e-mental health resources were used in the absence of professional mental health care, users were less likely to be concerned about their mental health, had symptoms, were younger in age and report higher resilience, more self-stigma and concerns about mental health services.

8.2 Themes

There is now good evidence about the psycho-social factors influencing mental health care help-seeking in military communities (e.g., Adler et al., 2015; Coleman et al., 2017; Fikretoglu et al., 2009; Fikretoglu & Liu, 2015; Rosen et al., 2011; Sharp et al., 2015; Vogt et al., 2014). The findings in this thesis echo much of this evidence base but critically expand the research by demonstrating how perceptions of self (both negative and positive) relate to mental health

service use and self-management. The results demonstrate that non-service use in the Australian military is complex and requires a multifaceted response. There are three key themes across this research which can inform public health programs, mental health policy and service delivery. These three themes (help-seeking beliefs; self-management and defining unmet need; and, e-mental health) are discussed below and considered with regard to the literature.

8.2.1 The role of help-seeking beliefs

Help-seeking self-stigma in the current study was expressed as feelings of embarrassment and shame about having to seek mental health care. Throughout this study, help-seeking self-stigma was consistently a predictor of non-service use, both formally and online, as well as being associated with self-reliance and fear of help-seeking within non-service users. In addition, self-stigma was related to poor quality interactions with support networks. These findings are consistent with previous research in community samples (Corrigan & Rao, 2012) but add to the body of knowledge of stigma in military populations, where traditionally the focus has been on anticipated reactions of peers or leadership and impact on career (Sharp et al., 2015). A few key studies (e.g., Blais & Renshaw, 2013; Vogt, 2011; Wade et al., 2015) have demonstrated the negative influence of self-stigma on help-seeking intentions within U.S. military populations. The results of the current study confirm that self-stigma is a key area for Defence and DVA to address to encourage mental health service use.

Self-stigma represents an internalisation of externally perceived stigmas and is therefore part of a broad stigma construct (Corrigan & Rao, 2012; Vogel et al., 2013), as is anticipated perceived stigma. Results presented here are consistent with emerging evidence that anticipated stigma may not be a direct barrier to care for military members (Sharp et al., 2015; Vogt et al., 2014). However, anticipated stigma is commonly reported at high rates in military populations (Sharp et al., 2015) and may reflect broader stigmatising attitudes towards mental illness in the military. Previous research suggests that public or perceived stigma may precede self-stigma (Vogel et al., 2013). So, regardless of the relationship with help-seeking behaviour, both anticipated perceived stigma and self-stigma reflect a broader issue of stigma in the Australian military.

Whilst this research focused mostly on help-seeking beliefs, some structural barriers commonly reported in service use research (e.g., Andrade et al., 2013; Sareen et al., 2007) were recorded, such as cost, availability of appointments and difficulty getting time off work. In the current study these barriers aligned with negative attitudes to services, such as a lack of trust in service

providers and belief that clinicians would not understand military experiences. Such negative attitudes to services have been noted in previous research with military populations (Kim et al., 2011) and it has been shown that positive attitudes to services may facilitate mental health service use (Adler et al., 2015; Gulliver et al., 2010). In the current study practical barriers and negative attitudes were associated with lower likelihood of professional service use but higher likelihood of online resource use, particularly social media. Targeted social media campaigns may be a promising avenue in changing attitudes to care in the community.

8.2.2 Self-management and re-defining unmet mental health need

This study examined resilience in relation to mental health help-seeking behaviour. Resilience, in this thesis, reflected self-efficacy in managing life stressors or setbacks. In the help-seeking literature, self-efficacy has been conceived as belief in the ability to enact care seeking behaviour (Koeppl, 2012; Lee et al., 2016). Yet, decisions to take an action (e.g., to seek care) will be weighed against the consequences of inaction and therefore belief in ability to cope without treatment may also influence help-seeking. Some studies have shown that resilience and coping self-efficacy are associated with less likelihood of mental health service use (DeViva et al., 2016; Fikretoglu & Liu, 2015). In the current study, higher levels of resilience (even when controlling for symptoms and functioning) were associated with less likelihood of help-seeking behaviour and increased self-reliance. These results reflect the subjective nature of these beliefs and potential susceptibility to other factors such as low mental health literacy, social norms and misinformation.

Bandura (2001) states that self-efficacy beliefs are the foundation of human agency and are key to determining human motivation and choice processes. Self-reliance has been shown to be a barrier to mental health care in community and military populations, as has a lack of perceived need for care (Andrade et al., 2013; Fikretoglu et al., 2016). Results reported here provide preliminary evidence that self-reliance reflects a preference for maintaining a sense of self-efficacy. Seeking care either from mental health professionals or informally may be perceived as being incompatible with this view of self as functional and resilient (Dabovich et al., 2019). Therefore, increasing personal agency in decisions relating to mental health service use may be key to improving uptake of care.

However, self-efficacy beliefs are also influenced by social norms (Bandura, 2001) as well as mental health literacy: knowledge, beliefs and attitudes that aid recognition, management or prevention of mental illness (Jorm, 2000; Jorm, 2012). In the current study, higher self-stigma

was seen in those with a preference for self-reliance suggesting that decisions to self-manage mental health are influenced by, or influence, normative ideas about help-seeking. Research with military populations suggests that exaggerated self-reliance is associated with negative beliefs about help-seeking and mental health services, and an underestimation of symptom severity (Dabovich et al., 2019; Krill Williston, Roemer, & Vogt, 2019; Rafferty et al., n.d.). Likewise, in the current study self-reliance was associated with higher perceived functioning, irrespective of reported symptoms or disability. This complicates the issue of personal agency, as stigma and cultural expectations of self-sufficiency may increase desire to manage mental health issues on one's own regardless of the potential risk. To increase personal agency but not address these cultural issues may leave individuals at risk and military organisations exposed.

These results have implications for the way unmet mental health need is defined. It has been argued that meeting threshold for disorder is not sufficient to indicate need given the range of socio-demographic and attitudinal factors involved in perceptions of need (Mojtabai, Olfson, & Mechanic, 2002). In addition, longitudinal research has shown that many individuals with a common mental disorder will see a remission of symptoms without treatment (Sareen et al., 2013), particularly during early stages (Whiteford et al., 2013). The current research suggests there is heterogeneity in non-service users: those with the desire and resources (e.g., resilience, social support) to manage symptoms; and, those with fewer resources to self-manage, but with a high degree of fear about the consequences of seeking help. Although the current research did not measure outcomes, it could be inferred that outcomes for these groups may be different. The first group may reach remission without intervention, but they also may not. A continuum of support, ranging in intensity and duration, at early stages of illness (such as psychoeducation, low-intensity online or brief CBT through to therapist-assisted and face-to-face therapy) is important to consider (Shah et al., 2020). The second group, for whom the risk of non-treatment is potentially greatest, may benefit most from multi-modal treatment and structured support to recovery. Further research is required to examine outcomes for these groups and ascertain what individual characteristics and external supports facilitate recovery, both with and without formal treatment.

8.2.3 The role of e-mental health in reducing service gaps

One of the driving questions for the current research was whether online resources meet an unmet need in the ADF. Overall, the results indicate that e-mental health resources do reach a proportion of non-service users (10.0% of those with probable disorder), however current

resources are unlikely to be meeting full potential in terms of impact. Barriers to mental health help-seeking were associated with use of online services in isolation from professional care, but there was low uptake particularly of those services with strongest evidence base (i.e., internet interventions) (Andersson et al., 2019; Batterham et al., 2015). In addition, resources still did not reach a third of the population with potential need, indicating room for improvement in the design and delivery of e-mental health to current and former ADF members.

What was striking about the use of e-mental health in the ADF was the variation in use of technologies use across participant sub-groups. There is very little research on use of e-mental health at the population level and many studies have focused on outcomes from specific interventions, so it is difficult to contextualise the current results with regards to the published literature. There is some evidence of overall demographic disparities in use of e-mental health across gender, education and socio-economic status (Meurk et al., 2016), and the current study demonstrates that differences can exist also based on the type of technology accessed, in this case across gender, age, Service, rank and career stage. Moderate use of computers, tablets and mobile phones to access health information has been shown within the U.S military in 2013 to have increased considerably since 2010 (Bush & Wheeler, 2015), pointing to rapid change in this environment and the need for ongoing monitoring. These are important considerations in development and implementation of e-mental health to understand what groups within the community are likely to use services and where they might access those services.

Previous research suggests that willingness to use various e-mental health modalities was lower in veterans with PTSD compared to those without PTSD (Whealin et al., 2015). However, the current study demonstrated that actual use of e-mental health increased in frequency among those with more severe symptoms, and that a combination of modalities and professional service use most often occurred at levels of probable disorder. These findings were consistent across PTSD, depression and anxiety symptoms and suggest that e-mental health may be an acceptable adjunct to face-to-face service provision for a range of mental health conditions.

A corollary of the above findings is that use of e-mental health resources in the absence of professional care was most prevalent among those with subclinical symptoms of PTSD, depression and anxiety. It has been suggested that e-mental health may be most appropriate for those with moderate symptoms of disorder (Christensen & Hickie, 2010b). Taken together, the results of the current study support suggestions that e-mental health could fill a service gap for

the ‘missing middle’. In the Australian mental health sector, the ‘missing middle’ refers to individuals with moderate to severe symptoms, whose illnesses are either too complex or enduring to be managed in primary care, but not severe enough to access ongoing specialist or inpatient mental health services (Orygen & headspace, 2019). The ‘missing middle’ is widely accepted as one of the largest mental health service gaps in Australia and therefore the results presented here are an important piece of evidence for further development of e-mental health to meet the needs of this group.

There were a number of results that point to the importance of community and social support in addressing unmet mental health need in the ADF. Affective support from friends was associated with greater likelihood of mental health service use, and previous research has shown that social supports, particularly from family, peers and supervisors, are key in facilitating access to care in military populations (Forbes et al., 2018). However, in the current study, both anticipated and self-stigma were also related to lower social support, potentially arising from previous social rejection or avoidance of social situations in which rejection is anticipated (Corrigan & Rao, 2012). In addition, informal support seeking did not appear to feature strongly in self-managing mental health for self-reliant non-service-users. So, whilst some individuals have good support and are able to use their supports to access care, others may be less likely or less able to use social support in this manner.

E-mental health may provide an opportunity to reduce gaps in support through increased social support. Although social media is commonly thought to have a negative impact on mental health research is currently nascent and evidence inconclusive (Orben & Przybylski, 2019). Social media use in this sample was associated with stronger social support from friends and poorer social support from family. This may reflect the geographical dispersion seen in military populations and connection with others via social media may provide a valuable resource for current and former ADF members, particularly for those unable to access positive family support or during disruption to existing social supports, such as during transition out of service.

However, there is considerable potential for misinformation to be propagated online, particularly via social media (Chou, Oh, & Klein, 2018), highlighting a risk for lack of engagement in social media by Defence and DVA. Rates of social media use and telephone helplines were similar across all symptom levels and despite dedicated funding for multiple telephone helplines for ADF members and veterans, Defence and DVA do not have dedicated

social media strategies for mental health communication. In addition, rates of use were higher in groups at increased risk of mental illness in this population (members aged 18 to 27 and Transitioned ADF). Social media had no association with professional service use and was related to negative attitudes to care. This is a strategic gap in health promotion activity and represents a missed opportunity to reach out to at-risk groups regarding the availability and benefits of mental health services for current and former ADF members.

8.3 Implications and future research

Addressing service gaps using e-mental health is not a 'one size fits all' prospect. E-mental health in Defence and DVA currently consists of ADF and veteran specific websites, telephone helplines and a limited number of smartphone apps and minimal implementation activity. Whilst there are trials underway of online treatment programs (e.g., Hickie et al., 2019; Kay-Lambkin, 2019)), results presented here suggest that programs need to sit across a range of platforms, including social media, to reach the diverse audience within the military community. This approach would see e-mental health as an integrated set of resources, support mechanisms and interventions along the continuum of health promotion activities from prevention and early intervention through to treatment and relapse prevention.

8.3.1 Addressing stigma

The stigma of mental illness, particularly self-stigma of help-seeking, remains a critical impediment to mental health service use. Help seeking is further complicated in the military by cultural expectations of resiliency and self-sufficiency. Policies and programs designed to increase help-seeking behaviour should focus on empowering individuals to make informed choices about their own mental health care, and skill acquisition through mental health service use (Krill Williston et al., 2019). However, researchers warn against labelling stigma as an individual problem (Corrigan et al., 2014), so interventions at the individual, organisational and community level are warranted.

Three main approaches have shown success in reducing self-stigma: disclosure, psychoeducation and peer support (Corrigan et al., 2014). Programs designed to assist individuals make decisions about disclosing their mental illness to family, friends or colleagues have shown some success (Corrigan & Lundin, 2012). However, the challenge remains to encourage those not already in care to engage in such programs and to date the effects of stigma

reduction programs have been shown to be modest and transitory (Mehta et al., 2015). Further evidence of the effectiveness of broad scale stigma reduction programmes would be beneficial.

Psycho-education is currently undertaken across the military training continuum in the ADF, including annual mandatory mental health awareness training for all personnel, mental health training for peers and leaders and a suite of self-management and resilience training (SMART) targeted to high-risk career transitions (e.g., initial training, pre-deployment) (Department of Defence, 2017). The Open Arms veteran counselling service also conducts several psycho-educational and wellbeing programs for veterans. Results presented in this thesis indicate that such health promotion activities and prevention programs, particularly resilience training, are an opportunity to explicitly address the perceived conflict between maintaining pride in a resilient identity and seeking mental health care. Incorporating the principles of co-design and lived experience to develop programs could be useful for ensuring that training and support programs are acceptable and impactful, but again, more pragmatic trials to ensure effectiveness in real-world settings are required (Bombard et al., 2018; Duncan & Kolt, 2019; Sanders & Stappers, 2008). This could be further supported through e-mental health approaches, particularly expanding and integrating health promotion activities with more interactive media, such as social media and internet interventions.

At an organisational level, clinician training about stigma and its impact on service use and wellbeing is an important consideration, as is increasing military cultural competency (Gleeson & Hemmer, 2014) amongst civilian providers. The intent would be to improve initial experiences of mental health care and promote future use. The current study did not assess previous help-seeking experiences, but research has shown that previous negative experiences are likely to be a barrier to future service use (Rafferty et al., n.d.; Seidler et al., 2020). A review investigating men's help-seeking for depression makes a number of suggestions for improving men's engagement in therapy, including active-focused interventions (e.g., problem solving and practical activities rather than 'talk-therapy'), shared decision-making and collaborative therapeutic relationships (Seidler et al., 2016). Results here, in particular those showing self-reliance characterised by active self-management strategies rather than support seeking, indicate that such an approach would be worthy of investigation for military providers.

8.3.2 Scaffolding support networks

The results are also consistent with previous research indicating the various roles for peers and family in enabling access to mental health care for current and former ADF members, including

as practical facilitators of care access (Forbes et al., 2018), as support during episodes of illness, and in cultural change efforts to reduce stigma and improve attitudes to care. Open Arms has an existing peer program employing lived-experience peers (Australian Government, 2017) and Defence is investigating opportunities for engaging consumer peer workers to support policy, program and health promotions development.

E-mental health could provide a scaffold for enhancing peer support in Defence and DVA wellbeing programs, particularly where the boundaries between the military health service system and civilian systems can create challenges. One area where this is the case is in supporting both serving ADF members, and their families who often use a separate service system (civilian healthcare services). Whilst family sensitive practice is currently being rolled-out across the ADF, additional support to families of ADF members is likely to be beneficial. Assistance is required both in terms of supporting ADF members navigate mental health service systems and treatment, but also in terms of family members' own mental health. This assistance is especially relevant given the additional burden and negative outcomes associated with caring for an unwell ADF family member including intergenerational issues (Forrest et al., 2014). There are examples of e-mental health interventions which support families (Owen et al., 2020) or provide online communities to bolster support for members (Kay-Lambkin, 2019).

8.3.3 Matching programs with multi-dimensional need

Further research is required to delineate patterns of mental health need in the ADF and identify interventions that lead to improved health outcomes at all stages of illness. For example, identifying self-management strategies that are helpful at different levels of need could inform the development of self-management resources available either online or face-to-face as an adjunct to clinical care. This reflects a move towards personalised care that meets the needs of the individual within a time and place that is most beneficial for them and increases personal agency in healthcare choices. Rather than taking an approach that focuses on individual disorder, a transdiagnostic approach, in line with nascent discussion about moving beyond stepped care to clinical staging (Shah et al., 2020) allows for a multidimensional approach in assessing need and appropriate interventions at each stage of illness. Such a focus would also inform implementation strategies for e-mental health interventions.

Need for care may not simply be measured by symptoms or even disability but includes personal perceptions of capacity. Current methods for identifying risk in the ADF, such as mental health screening, are relatively blunt measures of need based largely on symptom

identification. Perhaps this approach accounts for a lack of effective online screening outcomes seen in other military populations (Rona et al., 2017b) where individuals were prompted to seek care based on symptom levels but no increase in service use was seen following screening. There is also a lack of evidence that screening reduces symptoms or improves functional outcomes (Gilbody et al., 2007; Rona, Hyams, & Wessely, 2005). In the ADF, screening includes completion of screening measures, then a follow-up consultation with either a psychologist, GP, mental health nurse or other mental health trained personnel (O'Donnell et al., 2014). This consultation is an opportunity to discuss issues of stigma and guided discussion of individual capacity or supports required for remission of symptoms. Future screening trials, both online and face-to-face, might also consider the inclusion of additional measures such as resilience and help-seeking stigma, and offer a choice of treatment and support options based on varying levels of need.

8.3.4 Supporting equitable access to care

Issues of personal agency and shared-decision making are complicated issues within a military setting where individual needs are balanced against operational capability. There is increasing pressure for Defence to be responsible for the future health of its personnel. Recent recommendations from the Australian Productivity Commission to improve veteran support include levying an annual premium on Defence to fund the expected future costs of the veteran support system entitlements (Productivity Commission, 2019). The intent of this premium is to increase accountability for veteran health both in the present and in the future. However, rigid policy approaches, focused on decreasing organisational risk without accounting for individual needs or preferences, could fundamentally reduce personal agency which may have unintended consequences for help-seeking behaviour and mental health service use in the future. The challenge will be to limit structural inequities (gender, stigma, military Service, transition status) to enable greater autonomy and choice in help-seeking whilst still ensuring accountability within the organisation.

E-mental health may present opportunities to reduce structural inequities in mental health service access, if design and implementation efforts consider the variation in use of e-mental health resources among sub-groups of the community. Previous research has pointed to a digital divide in eHealth literacy, with certain groups (including younger people) better able to use emerging technologies to improve or enable their health care (Kontos et al., 2014; Neter & Brainin, 2012). Researchers are concerned that such divides may increase health care inequities,

however, this diversity may be put to good effect if used strategically to access those groups in the community most at risk. For instance, younger personnel, those in non-commissioned ranks and Transitioned ADF represent higher risk groups for mental illness in the ADF community (McFarlane et al., 2011; Van Hooff et al., 2018) and all of these groups were also more likely to use social media than other services such as telephone helplines. Therefore, expanding delivery to other platforms, such as social networking sites, present an opportunity to reach at-risk groups that are otherwise difficult to reach and may be less likely to use other services.

This is not to say that e-mental health options should be ignored for older veterans. Research within U.S. veterans point to factors other than age (e.g., regional/urban location), influencing choices of modality (Gould et al., 2019). What this does suggest, however, is that understanding how different sections of the community use e-health and tailoring programs to suit target populations is required. It is also important to recognise that these preferences are regularly changing as technologies evolve (Bush & Wheeler, 2015) and will also be influenced by local and global events. The current COVID-19 pandemic has already considerably altered the landscape of virtual healthcare delivery (Angus, Connolly, & Salita, 2020) and the benefits of expanding online healthcare options for older individuals in the current environment are clear.

E-mental health may prove more impactful in the transitioned ADF community, who were less likely to report accessing 12-month mental health services than current ADF members, when considering the higher level of need in the transitioned population. However, developing familiarity with e-mental health resources whilst in-service would be beneficial in providing continuity during and beyond transition. There is growing recognition of the need to provide integration and continuity of services during and post-service (Productivity Commission, 2019). The lack of system boundaries in e-mental health provides greater opportunity for this continuity.

8.3.5 Implementation

Clear implementation strategies will be critical to finding the right balance between organisational requirements and individual autonomy. Whilst the delivery of services online may have the potential to address service gaps, the simple proposition that putting a resource online will spontaneously increase access is flawed. It is important to establish efficacy before implementing interventions, however the effectiveness of a service is not based solely on efficacy. Other factors such as reach within the community, adoption and maintenance (Glasgow et al., 1999) are also important considerations.

Implementation research and pragmatic trials which focus on the translation of e-mental health programs to practice, examining issues such as patient and clinician needs and resources, cultural considerations, leadership engagement, and procedural/logistic processes are necessary to increase the impact of e-mental health resources (Creason et al., 2019; Keith, Crosson, O'Malley, Cromp, & Taylor, 2017; Kirk et al., 2016; Nilsen, 2015). Building partnerships with community and engaging ADF voices in the design and implementation of services will also be crucial to achieving impact (K. McGraw, personal communication, May 2019). An additional consideration in implementation should be the strategic outlook, considering where and how interventions and activities fit within a broader approach to mental health policy and programs across the career spectrum. Using existing implementation frameworks (Damschroder et al., 2009; Kirk et al., 2016) the impact of e-mental health in improving access to mental health care may be maximised.

8.4 Strengths and limitations

This is the first study to investigate mental health help-seeking online and from professional services in the Australian military. It is also one of the few studies to examine overlap of online and professional service use from a population health perspective. Strengths and limitations of the research are noted in each analysis chapter (Chapters 3 to 7), with the major limitations to the study discussed below.

8.4.1 Observational design

The current study was not experimental in design and therefore interpretation of cause and effect is limited. However, the findings regarding the relationship between help-seeking beliefs, particularly anticipated and self-stigma, are consistent with previous longitudinal research showing the antecedent roles (or otherwise) of these beliefs in help-seeking behaviour. The research findings presented here support an argument for expanding measurement domains, particularly in military research, to include constructs seen in civilian research. The research also highlights new areas, such as resilience and personal agency, which might be addressed in experimental research examining modifiable factors influencing mental health service use.

8.4.2 Subjective data

The current study uses subjective reports of service use and is therefore subject to certain biases, particularly recall bias. Whilst it would be useful to corroborate subjective reports with medical records, privacy restrictions as well as a lack of systematic outcomes measurement meant such

corroboration was not practical. Recent government reviews bemoan the lack of available objective data (Productivity Commission, 2019) and although work is currently underway to address this issue, no such data was available at the time of undertaking the study.

The intent of the study was to examine unmet mental health need, which would not be fully captured in service data anyway. Just under half of the sample with probable disorder had not seen a GP or other mental health professional in the previous 12 months. Given the lack of available objective data, reporting such information even in subjective form, is critical to support service planning across ADF and veteran mental health services.

8.4.3 Generalisation and representativeness

Over-surveying and respondent burden are well-recognised issues within Australian Defence research and are reflected in consistently low response rates in this community (Crane et al., 2012; Steele et al., 2020). The current study was no exception. Coupled with a considerable lack of contact data for recently transitioned ADF, low response rates and under-representation of certain demographic groups increased the possibility of bias in this sample. The main focus of this thesis was on the relationships between barriers to help-seeking and service use behaviour. The size of the sample allowed for demographic variables to be controlled in the analysis and results of these analyses can be generalised to the ADF. However, it is noted that results with regard to prevalence may not be generalisable.

8.4.4 Selection of study measures

Preferably during the study design process appropriate measures are selected to directly answer research questions. However, research within organisations such as the ADF have many practical constraints. The process to gain access to ADF members for research purposes is rigorous and is motivated by a need to reduce burden on ADF members and the organisation. This PhD used data from a larger research programme which was seeking to address several broad aims covering prevalence of mental illness, physical health, pathways to mental health care, family and social wellbeing. This large study did not permit a high number of items to address individual research questions but also inhibited the ability to gain access to personnel for smaller, discrete studies. It is recognised that measures of stigma, barriers to care and mental health service use (including e-mental health use) in this study could be more comprehensive and provide greater depth of information about help-seeking, but practical constraints did not allow for such inclusion.

However, the strength of this research is the broad coverage of constructs allowing for examination of hidden, unmet need in the ADF community and associated factors. For example, in large epidemiological studies within Australian populations (e.g.,, National Health Survey: Australian Bureau of Statistics, 2019) or in military populations, issues such as self-stigma are rarely measured or reported in relation to service use behaviour. Conversely, studies focused on stigma or social support often do not have visibility of the broader context of prevalence and service use in which these functions operate. Likewise, research focused on e-services often fail to capture this broader context also. The current PhD is the only known study to take a population health perspective on e-mental health and service use in a military context and provides unique perspective on gaps in mental health resources, health promotion and service delivery in the ADF.

8.5 Concluding comments

This thesis offers the ADF the first empirical research examining factors associated with professional and online mental health help seeking. Findings demonstrate that perceived need, symptoms and functional impairment significantly predicted use of a GP or mental health professional in the 12-months prior to the study. However, when controlling for these need factors, there remained gaps in service use for ADF males, Transitioned ADF and those with more negative help-seeking beliefs such as self-stigma and other barriers or service concerns.

Whilst e-mental health has been suggested as a means to lessen gaps in mental health services, the findings demonstrate that the impact of current e-mental health resources provided by Defence and DVA can be improved. Resources with the strongest evidence base are least used, and platforms in which Defence and DVA have minimal engagement are being used by groups at greatest risk of mental ill-health in this community. The results present an opportunity to develop and test ADF specific content in a range of e-mental health domains with implementation focused on how resources are identified and used by at-risk individuals not yet engaged in mental health services.

This thesis also offers insight into how personal perceptions of capacity to cope and respond to stressful life events or setbacks are associated with service use behaviour and preference for self-managed mental health. These results are relevant not only to the ADF and other military organisations, but also for other workplace settings where there is a similar requirement to identify appropriate pathways to care for employees at increased risk of mental health concerns.

The study highlights the importance of addressing perceptions of self, both positive and negative, in health promotion and service delivery, to engage individuals across the spectrum of mental health need. Future work needs to identify opportunities for increasing personal agency in military mental health services and ways that e-mental health approaches can improve access to care in this context.

The results present an opportunity for targeted e-mental health implementation strategies across the continuum of mental health programmes in Defence and DVA and demonstrate the importance of diversifying content and platforms of delivery to meet increasing appetite for choice amongst this population.

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Appendix A Research Materials

Study Information sheet

Help Yourself Your family Your mates

Transition & Wellbeing Research Programme

THE UNIVERSITY of ADELAIDE

TRANSITION&WELLBEING RESEARCH PROGRAMME

Transition & Wellbeing Research Programme

Aim of the research

This research is being conducted to better understand the health and wellbeing of current and former Australian Defence Force (ADF) members and their families, and is part of the Australian Government's commitment to respond to the health impacts of military service.

Who is conducting the research?

A consortium of some of Australia's leading researchers will be conducting the research on behalf of the Departments of Veterans' Affairs (DVA) and Defence (Defence). The consortium is led by the Centre for Traumatic Stress Studies (CTSS) at The University of Adelaide and the Australian Institute of Family Studies.

Benefits of participating

By participating in the research programme, you will contribute to the largest and most comprehensive examination of the impact of military service on the mental, physical and social health of serving and ex-serving ADF members, including those deployed to contemporary conflicts. The knowledge gained through your participation in this study will help to identify unmet health needs and will assist in the planning of future health services.

Research results

The survey results will be released publicly and the information gained will help DVA and Defence to provide you with better health services and programs. No personal details or information identifying yourself will be publicised.

What's involved?

Complete a Survey

You will be invited to complete a survey about your health and wellbeing. This will take approximately 60 minutes to complete. You can do it online or on paper.

Nominate Family Members

You will be asked to provide the contact details of family members who have agreed to participate in a Study examining the health and wellbeing of family members and partners.

Participate in a Telephone Interview

You may be invited to participate in an interview with a trained research officer about your emotional health and wellbeing. This will be conducted over the telephone.

Participate in Biological/Neurocognitive/MRI Assessments

Those who underwent physical testing as part of the Middle East Area of Operations Prospective Health Study in 2010-12 will once again be invited to have a blood test, and/or neurocognitive assessments to track their health in more detail. Selected participants will also be invited to have a Magnetic Resonance Imaging assessment.

Medicare, Pharmaceutical Benefits Scheme, RPBS

Participants will be invited to consent to the release of Medicare and/or Pharmaceutical Benefits Scheme (PBS) and/or Repatriation Pharmaceutical Benefits Scheme (RPBS) claims information. Medicare records only include services that qualify for Medicare benefits and for which claims have been processed and will include information on your medical visits and procedures, as well as the associated costs. PBS/RPBS includes information on the prescription medications you have filled at pharmacies and only covers prescription claims for which the cost was greater than the patient contribution. Linkage to these records will give us an objective means of examining the relationship between the other measures we collect and your use of health services both now and into the future. This consent form will be sent securely to the Department of Human Services who holds this information confidentially.

How to participate

Online: you log in to the website shown below, and enter your unique Study ID # and Token Password (This study ID and token password will be emailed to you).

www.transitionwellbeing.adelaide.edu.au /registration.html

Mail: you can request a hard copy survey by contacting CTSS (1800 232 904); **transitionwellbeing@adelaide.edu.au**

We will mail you a hard copy survey, and once you have completed it, simply mail back in the reply-paid envelope provided.

Your Privacy

Your contact details were obtained in one of two ways:
(a) either through your previous involvement in the MilHOP programme of research, or
(b) through a Study Roll created by the Australian Institute of Health and Welfare on behalf of DVA and Defence. An opportunity to have your name removed from this Study Roll was emailed or mailed to you in March – April 2015. Anyone who did not opt out via this process is now being contacted and invited to participate. If you do not want to be contacted for future research using the Study Roll, email 'optout.studyroll@defence.gov.au' with your full name, date of birth and PMKeyS number in the body of the email and 'OPT OUT' in the subject line.

Your contact details will only be used for the purposes of this study and no other, unless you state otherwise.

To ensure your privacy, every participant will be given a study number which will be assigned to the information they provide. Any identifying information (e.g. your name) will be stored separately to the information you provide us.

Your data will only be accessed by personnel with the appropriate security clearance, and your hard copy data will be stored in secure facilities at the CTSS.

All study data and documentation will be maintained for a minimum period of 15 years following completion of the study, consistent with The University of Adelaide policy. Secure archiving of study information will be arranged on expiration of the Research Programme.

Taking part is voluntary

You are under no obligation to take part.

You may withdraw your participation and/or elect to have your information removed from the study at any time, without detriment to your career.

You can pick which parts of the study you wish to do when you give consent to do the study.

If you have a claim for compensation from the Department of Veterans' Affairs, your decision not to participate or to withdraw part way through will not affect your entitlements now or in the future in any way.

The Department of Defence or the Department of Veterans' Affairs will not be notified of your participation or non-participation.

We need YOU to give us a better understanding of your health.

4 Great Reasons to participate in the Transition & Wellbeing Research Programme

1. Australia's best health experts—The research is being conducted by leading university health experts and aims to find out more about your physical and mental health.
2. It's easy—The survey will take approximately 60 minutes to complete and you can do it online or on paper.
3. You can improve military and veteran health care—Your answers will help to improve the health services for you and your mates.
4. Your responses are confidential—DVA and Defence will not know whether or not you have taken part and will not have access to your individual responses.

We need YOU to give us a better understanding of your health.

Support

If you find involvement in the survey distressing in any way, you can talk to someone about it.

ADF All Hours Support Line
+ Call 1800 628 036 for the ADF All-hours Support Line
This is a 24 hours a day, 7 days a week confidential telephone support service for current ADF members including reservists and families (Outside Australia call +61 2 9425 3878)

1800 IMSICK
+ Call 1800 467 425
This is a national 24 hour call service providing world class nurse triage and health support for all ADF entitled personnel within Australia.

Defence Family Helpline
+ Call 1800 624 608 for 24 hour support for Defence families.

Veterans & Veterans Families Counselling Service
+ Call 1800 011 046
www.vvcs.gov.au
VVCS provides free and confidential, nation-wide counselling and support for war and service-related mental health conditions. During business hours 1800 011 046 connects you to the nearest VVCS centre. Outside business hours 1800 011 046 connects you with Veterans Line, the VVCS after-hours telephone crisis counselling service.

Lifeline
+ Call 13 11 14 for 24 hour telephone counselling services.

Department of Veterans' Affairs
+ Call: 133 254 Regional callers: 1800 555 254
www.dva.gov.au

At Ease
www.at-ease.dva.gov.au
At Ease helps serving and ex-serving ADF members and their family members to recognise the symptoms of mental health issues or concerns, locate self-help tools, mobile applications and advice, and access professional support.

ADF Health and Wellbeing Portal 'Fighting Fit'
www.defence.gov.au/health/healthportal
The ADF Health and Wellbeing Portal provides ADF members and their families with a single point of access to a wide range of information on health, mental health and rehabilitation support and services.

Ethics

If you have concerns about the way in which the research is conducted and prefer to speak to an independent University or Defence Force representative not involved in the study, contact an Ethics Officer:

The Department of Veterans' Affairs
Human Research Ethics Committee Secretary
(02) 6225 4659; ethics.committee@dva.gov.au

Director, Defence Health Research
0477 330 020; human.research@defence.gov.au

The University of Adelaide Research Branch
Secretary Human Research Ethics Committee
(08) 8313 6028

If you do not want to participate in this study - please phone the toll free number (1800 232 904). For questions, problems or concerns please contact the following:

The Study Team
The Centre for Traumatic and Stress Studies
1800 232 904 (toll free); transitionwellbeing@adelaide.edu.au

Principal Investigator: Dr Miranda Van Hooff
The University of Adelaide
(08) 8313 5356; miranda.vanhooff@adelaide.edu.au

Australian Government
Department of Veterans' Affairs
Department of Defence

www.transitionwellbeing.adelaide.edu.au

Consent form

Transition and Wellbeing Research Programme
Consent Form

I ……. give my consent to:

(Please circle the parts of the study you wish to consent to)

ALL *OF THE FOLLOWING PARTS:*	**Yes / No**

OR

➢ Completing the Transition and Wellbeing Research Programme Survey	**Yes / No**
➢ Being contacted for a telephone interview about my health and wellbeing	**Yes / No**
➢ Allowing linkage of my study data collected as part of the MilHOP Health Studies between 2010 and 2012, with data acquired/collected as part of the current study	**Yes / No**
➢ Allowing linkage of my data stored in other Defence or DVA research study datasets with data acquired/collected as part of the current study	**Yes / No**
➢ Allowing linkage of my PMKeyS data with my current study data	**Yes / No**
➢ Allowing linkage of my study data to information held in other health registries including cancer registries, and DVA and Defence health records (including but not exclusively RtAPS and POPS or other occupational data)	**Yes / No**
➢ Being contacted for future voluntary follow-up studies about my health and wellbeing using the details I have provided	**Yes / No**
➢ For my details to be retained on a separate DVA/Defence Research Participant List held by an independent Commonwealth approved data integrator	**Yes / No**

My consent is provided on the following basis:

- I have read the information provided to me about the aims of this research, how it will be conducted, and my role in it.
- I understand the risks involved as described in the information brochure/s.

- I am cooperating in this project on condition that:
    - The personal information I provide will be kept confidential;
    - Only approved researchers and a third party integrator have access to my personal information;
    - Defence & DVA will only be provided with whole-of-population data that does not identify me or my responses, and this de-identified data, which will be stored by a third party integrator may be used for future research purposes.
- I can discuss my participation at any time with the Chief Investigator, a Research Team Member, or a representative of the one of the relevant Ethics Committees.

I understand that:

- **All information that I provide will be managed solely by CTSS and is being collected independent of Defence and DVA. No personal details will be passed to Defence or DVA. Therefore, my answers will not affect any current or future pension, benefits or any health services I am entitled to.**
- **There is no obligation to take part in this study.**
- **If I choose not to participate there will be no detriment to my current or future career, health care, service pension, DVA pension or compensation claims.**
- **I am free to withdraw my participation and/or elect to have my information removed from the study at any time. If I do, there will be no detriment to my current or future career, health care, service pension, DVA pension or compensation claims.**
- If I choose to participate, I may be contacted either at work or at home by university research staff from CTSS using contact details currently held within Defence or DVA. I understand that if I would not like this to occur, I can contact CTSS on the toll free number: 1800 232 904 or by emailing transitionwellbeing@adelaide.edu.au with "DNC" in the subject line (DNC being do not contact me).
- If I am a currently serving ADF member I will be considered to be 'on duty' whilst participating in this study.

✓ I have kept a copy of the information and consent sheet, signed by me for my records.

✓ I have also been provided a copy of Australian Defence Human Research Ethics Committee's
(ADHREC) *Guidelines for Volunteers.*

✓ The study report will be made available to me at my request and any published reports of this study will preserve my anonymity.

_____ Signature of participant

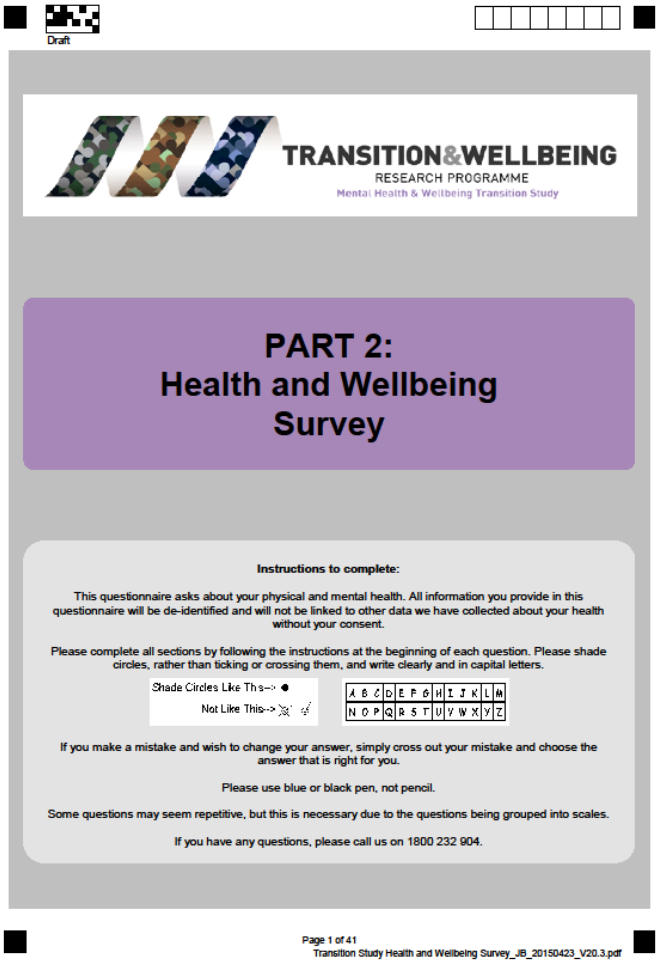
_____ Name in full

_____ Date

You have been provided with two copies of this consent form. Please sign both copies and keep one copy for your records and return the other to the Centre for Traumatic Stress Studies

Survey

The following survey is one of the surveys used in the Transition and Wellbeing Research Programme. Different cohorts from the programme received slightly different demographic sections (not included here) and deployment history, but the same questions on health and wellbeing.



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TRANSITION&WELLBEING
RESEARCH PROGRAMME
Mental Health & Wellbeing Transition Study

PART 2:
Health and Wellbeing Survey

Instructions to complete:

This questionnaire asks about your physical and mental health. All information you provide in this questionnaire will be de-identified and will not be linked to other data we have collected about your health without your consent.

Please complete all sections by following the instructions at the beginning of each question. Please shade circles, rather than ticking or crossing them, and write clearly and in capital letters.

Shade Circles Like This--> ●
Not Like This--> ⊗ ✓

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

If you make a mistake and wish to change your answer, simply cross out your mistake and choose the answer that is right for you.

Please use blue or black pen, not pencil.

Some questions may seem repetitive, but this is necessary due to the questions being grouped into scales.

If you have any questions, please call us on 1800 232 904.

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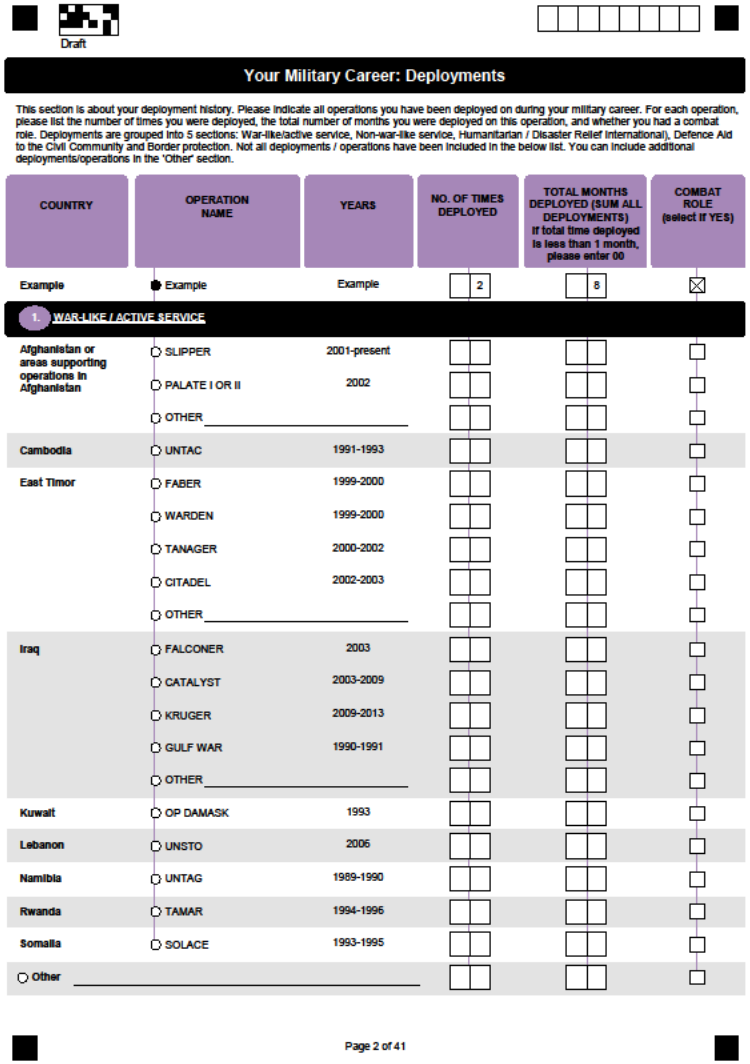
Transition Study Health and Wellbeing Survey_JB_20150423_V20.3.pdf



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Your Military Career: Deployments

This section is about your deployment history. Please indicate all operations you have been deployed on during your military career. For each operation, please list the number of times you were deployed, the total number of months you were deployed on this operation, and whether you had a combat role. Deployments are grouped into 5 sections: War-like/active service, Non-war-like service, Humanitarian / Disaster Relief International), Defence Aid to the Civil Community and Border protection. Not all deployments / operations have been included in the below list. You can include additional deployments/operations in the 'Other' section.

COUNTRY	OPERATION NAME	YEARS	NO. OF TIMES DEPLOYED	TOTAL MONTHS DEPLOYED (SUM ALL DEPLOYMENTS) If total time deployed is less than 1 month, please enter 00	COMBAT ROLE (select if YES)
Example	● Example	Example	2	8	☒
1. WAR-LIKE / ACTIVE SERVICE					
Afghanistan or areas supporting operations in Afghanistan	○ SLIPPER	2001-present			
	○ PALATE I OR II	2002			
	○ OTHER _____				
Cambodia	○ UNTAC	1991-1993			
East Timor	○ FABER	1999-2000			
	○ WARDEN	1999-2000			
	○ TANAGER	2000-2002			
	○ CITADEL	2002-2003			
	○ OTHER _____				
Iraq	○ FALCONER	2003			
	○ CATALYST	2003-2009			
	○ KRUGER	2009-2013			
	○ GULF WAR	1990-1991			
	○ OTHER _____				
Kuwait	○ OP DAMASK	1993			
Lebanon	○ UNSTO	2006			
Namibia	○ UNTAG	1989-1990			
Rwanda	○ TAMAR	1994-1996			
Somalia	○ SOLACE	1993-1995			
○ Other _____					

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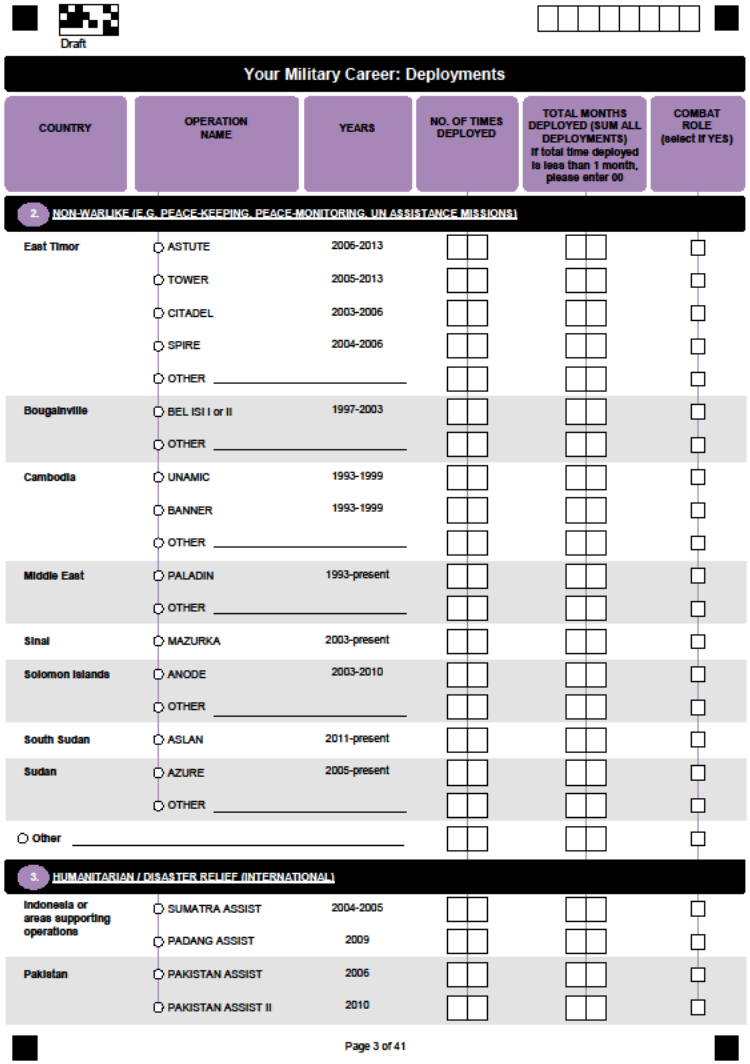

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Your Military Career: Deployments

COUNTRY	OPERATION NAME	YEARS	NO. OF TIMES DEPLOYED	TOTAL MONTHS DEPLOYED (SUM ALL DEPLOYMENTS) If total time deployed is less than 1 month, please enter 00	COMBAT ROLE (select if YES)
2. NON-WAR-LIKE (E.G. PEACE-KEEPING, PEACE-MONITORING, UN ASSISTANCE MISSIONS)					
East Timor	○ ASTUTE	2006-2013			
	○ TOWER	2005-2013			
	○ CITADEL	2003-2006			
	○ SPIRE	2004-2006			
	○ OTHER _____				
Bougainville	○ BEL ISI I or II	1997-2003			
	○ OTHER _____				
Cambodia	○ UNAMIC	1993-1999			
	○ BANNER	1993-1999			
	○ OTHER _____				
Middle East	○ PALADIN	1993-present			
	○ OTHER _____				
Sinai	○ MAZURKA	2003-present			
Solomon Islands	○ ANODE	2003-2010			
	○ OTHER _____				
South Sudan	○ ASLAN	2011-present			
Sudan	○ AZURE	2005-present			
	○ OTHER _____				
○ Other _____					
3. HUMANITARIAN / DISASTER RELIEF (INTERNATIONAL)					
Indonesia or areas supporting operations	○ SUMATRA ASSIST	2004-2005			
	○ PADANG ASSIST	2009			
Pakistan	○ PAKISTAN ASSIST	2006			
	○ PAKISTAN ASSIST II	2010			

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Your Military Career: Deployments

COUNTRY	OPERATION NAME	YEARS	NO. OF TIMES DEPLOYED	TOTAL MONTHS DEPLOYED (SUM ALL DEPLOYMENTS) If total time deployed is less than 1 month, please enter 00	COMBAT ROLE (select if YES)
HUMANITARIAN / DISASTER RELIEF (INTERNATIONAL) (CONTINUED)					
PNG	○ PNG ASSIST	2008			
○ Other _____					
4. DEFENCE AID TO THE CIVIL COMMUNITY					
Australia	○ VIC FIRE ASSIST	2009			
	○ YASI ASSIST	2011			
	○ QLD FLOOD ASSIST	2011			
	○ OTHER _____				
5. BORDER PROTECTION					
	○ RELEX I and II	2001-2006			
	○ RESOLUTE	2006-present			
	○ OTHER _____				

Your Military Career: Deployment Exposure

1. Thinking of all of your war-like, non-war-like (peacekeeping), humanitarian, Defence aid and border protection deployments during your military career, how often did you / were you?

	NEVER	ONCE	2-4 TIMES	5-9 TIMES	10+ TIMES
Seriously fear you would encounter an IED?	○	○	○	○	○
Go on combat patrols/missions or participate in support convoys?	○	○	○	○	○
Concerned about yourself or others (including allies) having an unauthorised discharge of a weapon?	○	○	○	○	○
Clear/search buildings, caves, vessel, etc.?	○	○	○	○	○
Come under fire (i.e. small arms or anti-aircraft fire, guided or directed mortar/artillery fire or missile attack, in-direct fire (e.g. rocket attack), IED/EOD detonation, suicide bombing, landmine strike, small arms fire from an unknown enemy combatant)?	○	○	○	○	○
In danger of being killed or injured?	○	○	○	○	○
Have casualties among people close to you (i.e were present or heard of a close friend, co-worker or loved one who had been injured or killed)?	○	○	○	○	○
Handle or see dead bodies?	○	○	○	○	○
Experience a threatening situation where you were unable to respond due to the rules of engagement?	○	○	○	○	○

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Your Military Career: Deployment Exposure

	NEVER	ONCE	2-4 TIMES	5-9 TIMES	10+ TIMES
Witness human degradation and misery on a large scale?	○	○	○	○	○
Discharge your weapon in direct combat?	○	○	○	○	○
Believe your action or inaction resulted in someone being seriously injured or killed?	○	○	○	○	○
Exposed to smoke and/or dust (i.e. smoke from fires/waste incineration/oil fire, dust storms, inhalation of fine dust or fibres, others' cigarette smoke)?	○	○	○	○	○
Exposed to fumes or fuels (i.e. Diesel exhaust, Aviation/marine/automotive fuels, aircraft fumes)?	○	○	○	○	○
Exposed to chemicals (i.e. toxic industrial chemicals, solvents, living area sprayed/fogged with chemicals)?	○	○	○	○	○
Exposed to hazardous materials (i.e. non-iodising radiation, contact with chemical or biological weapons, contact with depleted uranium shells, exposed to ionising radiation or radioactive shells, use of NBS suit (not for training))?	○	○	○	○	○
Exposed to local food or water (i.e. drank from local taps or wells, ate local food)?	○	○	○	○	○
Exposed to noise (i.e. close to loud noises without hearing protection (e.g. explosions, weapon fire), exposed to loud noises for extended periods of time without hearing protection (e.g. machinery aircraft operations))?	○	○	○	○	○

Your Current Wellbeing

1. In general, how would you say your health is? ○ Excellent ○ Very good ○ Good ○ Fair ○ Poor
2. How satisfied are you with your health? ○ Very dissatisfied ○ Fairly dissatisfied ○ Neither satisfied or dissatisfied ○ Satisfied ○ Very satisfied
3. How would you rate your quality of life? ○ Very poor ○ Poor ○ Neither good nor poor ○ Good ○ Very good

In answering the next series of questions please refer to the **last 2 weeks**.

4. Over the last 2 weeks, how often have you been bothered by any of the following problems?

	NOT AT ALL	SEVERAL DAYS	MORE THAN HALF THE DAYS	NEARLY EVERY DAY
Little interest or pleasure in doing things	○	○	○	○
Feeling down, depressed, or hopeless	○	○	○	○
Trouble falling or staying asleep, or sleeping too much	○	○	○	○
Feeling tired or having little energy	○	○	○	○
Poor appetite or overeating	○	○	○	○
Feeling bad about yourself, or that you are a failure, or have let yourself or your family down	○	○	○	○
Trouble concentrating on things, such as reading the newspaper or watching television	○	○	○	○
Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual	○	○	○	○
Thoughts that you would be better off dead or of hurting yourself in some way	○	○	○	○

If you checked off any of these problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? ○ Not difficult at all ○ Somewhat difficult ○ Very difficult ○ Extremely difficult

Draft

Your Current Wellbeing

5. Over the last 2 weeks, how often have you been bothered by any of the following problems?

	NOT AT ALL	SEVERAL DAYS	MORE THAN HALF THE DAYS	NEARLY EVERY DAY
Feeling nervous, anxious or on edge	○	○	○	○
Not being able to stop or control worrying	○	○	○	○
Worrying too much about different things	○	○	○	○
Trouble relaxing	○	○	○	○
Being so restless that it is hard to sit still	○	○	○	○
Becoming easily annoyed or irritable	○	○	○	○
Feeling afraid as if something awful might happen	○	○	○	○

6. Please rate the current (i.e. last 2 weeks) SEVERITY of any insomnia problem(s) you might have.

	NONE	MILD	MODERATE	SEVERE	VERY SEVERE
Difficulty falling asleep:	○	○	○	○	○
Difficulty staying asleep:	○	○	○	○	○
Problem waking up too early:	○	○	○	○	○

7. How SATISFIED/dissatisfied are you with your current sleep pattern?

○ Very satisfied ○ ○ ○ ○ Very dissatisfied

8. To what extent do you consider your sleep problem to INTERFERE with your daily functioning (e.g. daytime fatigue, ability to function at work/daily chores, concentration, memory, mood, etc.)?

○ Not at all interfering ○ A little ○ Somewhat ○ Much ○ Very much interfering

9. How NOTICEABLE to others do you think your sleeping problem is in terms of impairing the quality of life?

○ Not at all noticeable ○ Barely ○ Somewhat ○ Much ○ Very much noticeable

10. How WORRIED/distressed are you about your current sleep problem?

○ Not at all ○ A little ○ Somewhat ○ Much ○ Very much

In answering the next series of questions please refer to the **last 4 weeks.**

11. The following questions inquire about how you have been feeling over the last four (4) weeks. Please read each question carefully and then indicate, by shading the circle, the response that best describes how you have been feeling.

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	A LITTLE OF THE TIME	NONE OF THE TIME
In the past four (4) weeks, about how often did you feel tired for no good reason?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel nervous?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel so nervous that nothing could calm you down?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel hopeless?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel restless or fidgety?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel so restless that you could not sit still?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel depressed?	○	○	○	○	○

Draft

Your Current Wellbeing

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	A LITTLE OF THE TIME	NONE OF THE TIME
In the past four (4) weeks, about how often did you feel that everything was an effort?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel so sad that nothing could cheer you up?	○	○	○	○	○
In the past four (4) weeks, about how often did you feel worthless?	○	○	○	○	○

12. Thinking over the past 4 weeks, shade the circle that best describes the amount of time you felt that way.

	NONE OF THE TIME	A LITTLE OF THE TIME	SOME OF THE TIME	MOST OF THE TIME	ALL OF THE TIME
a) I found myself getting angry at people or situations	○	○	○	○	○
b) When I got angry, I got really mad	○	○	○	○	○
c) When I got angry, I stayed angry	○	○	○	○	○
d) When I got angry at someone, I wanted to hit them	○	○	○	○	○
e) My anger prevented me from getting along with people as well as I'd have liked to	○	○	○	○	○

13. How often over the last month did you get into a fight with someone and hit the person?

○ Never ○ One time ○ Two times ○ Three or four times ○ Five or more times

14. How often over the last month did you threaten someone with physical violence?

○ Never ○ One time ○ Two times ○ Three or four times ○ Five or more times

In answering the next series of questions please refer to the **last 12 months.**

15. Please shade the circles that best describe your experience.

In the last 12 months, have you ever felt that life was not worth living?	○ No ○ Yes
In the last 12 months, have you ever felt so low that you thought about committing suicide?	○ No ○ Yes
In the last 12 months, have you made a suicide plan?	○ No ○ Yes
In the last 12 months, have you attempted suicide?	○ No ○ Yes

If you require support in relation to any issues you have identified in this survey, we encourage you to refer to the contacts provided on the inside cover.

16. The next questions are about your perceptions of your current and future health. Please rate each statement.

I believe my current mental health has been negatively impacted upon by my ADF career.

○ Not at all ○ A little bit ○ Moderately ○ Quite a bit ○ Extremely

I believe my mental health will prevent me from serving out my full career as an ADF member.

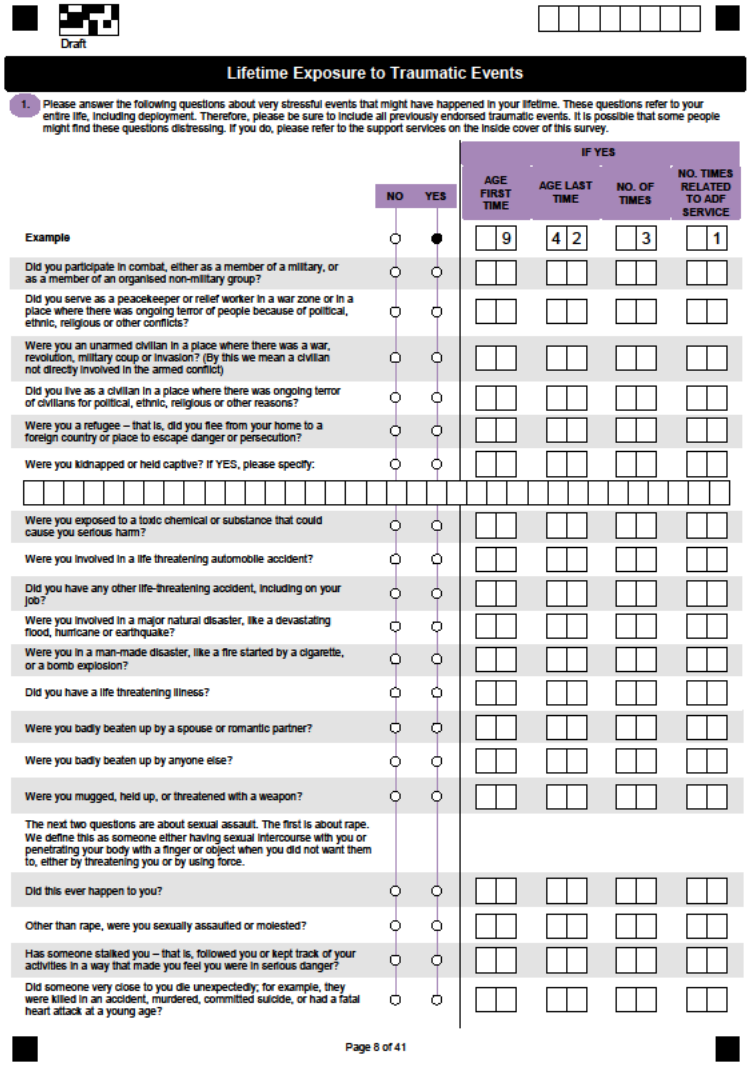
○ Strongly disagree ○ Disagree ○ Uncertain ○ Agree ○ Strongly agree

I believe my current physical health has been negatively impacted upon by my ADF career.

○ Not at all ○ A little bit ○ Moderately ○ Quite a bit ○ Extremely

I believe my physical health will prevent me from serving out my full career as an ADF member.

○ Strongly disagree ○ Disagree ○ Uncertain ○ Agree ○ Strongly agree

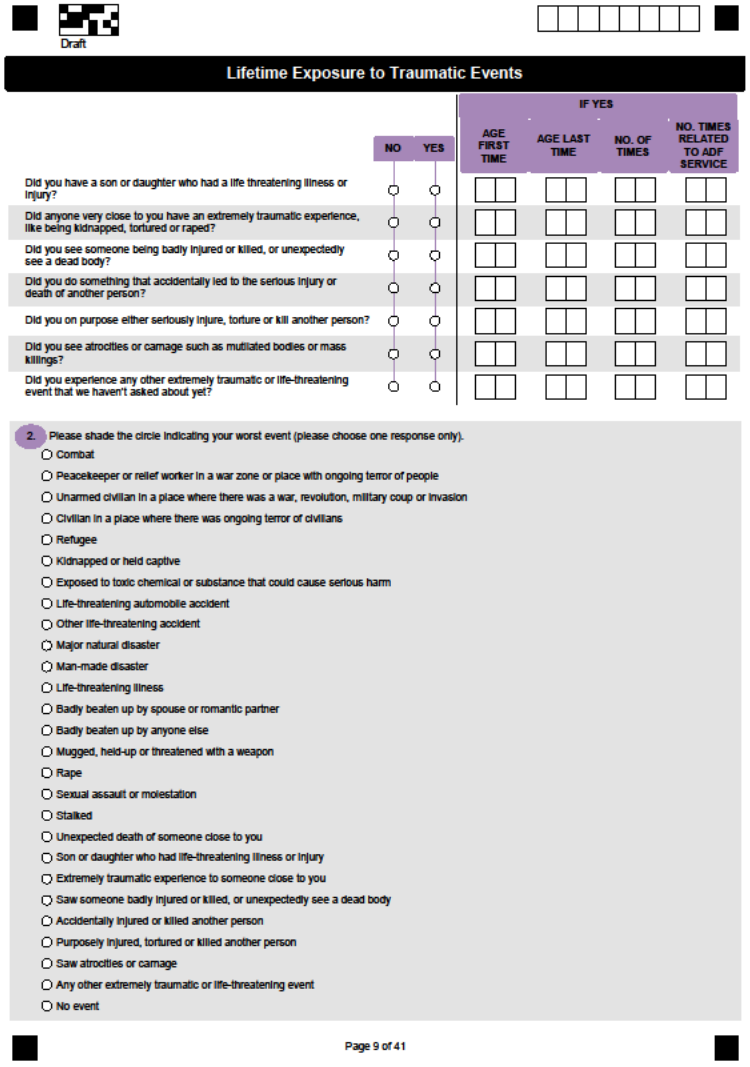


Draft

Lifetime Exposure to Traumatic Events

1. Please answer the following questions about very stressful events that might have happened in your lifetime. These questions refer to your entire life, including deployment. Therefore, please be sure to include all previously endorsed traumatic events. It is possible that some people might find these questions distressing. If you do, please refer to the support services on the inside cover of this survey.

	NO	YES	IF YES: AGE FIRST TIME	AGE LAST TIME	NO. OF TIMES	NO. TIMES RELATED TO ADF SERVICE
Example	○	●	9	42	3	1
Did you participate in combat, either as a member of a military, or as a member of an organised non-military group?	○	○				
Did you serve as a peacekeeper or relief worker in a war zone or in a place where there was ongoing terror of people because of political, ethnic, religious or other conflicts?	○	○				
Were you an unarmed civilian in a place where there was a war, revolution, military coup or invasion? (By this we mean a civilian not directly involved in the armed conflict)	○	○				
Did you live as a civilian in a place where there was ongoing terror of civilians for political, ethnic, religious or other reasons?	○	○				
Were you a refugee – that is, did you flee from your home to a foreign country or place to escape danger or persecution?	○	○				
Were you kidnapped or held captive? If YES, please specify:	○	○				
Were you exposed to a toxic chemical or substance that could cause you serious harm?	○	○				
Were you involved in a life threatening automobile accident?	○	○				
Did you have any other life-threatening accident, including on your job?	○	○				
Were you involved in a major natural disaster, like a devastating flood, hurricane or earthquake?	○	○				
Were you in a man-made disaster, like a fire started by a cigarette, or a bomb explosion?	○	○				
Did you have a life threatening illness?	○	○				
Were you badly beaten up by a spouse or romantic partner?	○	○				
Were you badly beaten up by anyone else?	○	○				
Were you mugged, held up, or threatened with a weapon?	○	○				
The next two questions are about sexual assault. The first is about rape. We define this as someone either having sexual intercourse with you or penetrating your body with a finger or object when you did not want them to, either by threatening you or by using force.						
Did this ever happen to you?	○	○				
Other than rape, were you sexually assaulted or molested?	○	○				
Has someone stalked you – that is, followed you or kept track of your activities in a way that made you feel you were in serious danger?	○	○				
Did someone very close to you die unexpectedly; for example, they were killed in an accident, murdered, committed suicide, or had a fatal heart attack at a young age?	○	○				



Draft

Lifetime Exposure to Traumatic Events

	NO	YES	IF YES: AGE FIRST TIME	AGE LAST TIME	NO. OF TIMES	NO. TIMES RELATED TO ADF SERVICE
Did you have a son or daughter who had a life threatening illness or injury?	○	○				
Did anyone very close to you have an extremely traumatic experience, like being kidnapped, tortured or raped?	○	○				
Did you see someone being badly injured or killed, or unexpectedly see a dead body?	○	○				
Did you do something that accidentally led to the serious injury or death of another person?	○	○				
Did you on purpose either seriously injure, torture or kill another person?	○	○				
Did you see atrocities or carnage such as mutilated bodies or mass killings?	○	○				
Did you experience any other extremely traumatic or life-threatening event that we haven't asked about yet?	○	○				

2. Please shade the circle indicating your worst event (please choose one response only).

- ○ Combat
- ○ Peacekeeper or relief worker in a war zone or place with ongoing terror of people
- ○ Unarmed civilian in a place where there was a war, revolution, military coup or invasion
- ○ Civilian in a place where there was ongoing terror of civilians
- ○ Refugee
- ○ Kidnapped or held captive
- ○ Exposed to toxic chemical or substance that could cause serious harm
- ○ Life-threatening automobile accident
- ○ Other life-threatening accident
- ○ Major natural disaster
- ○ Man-made disaster
- ○ Life-threatening illness
- ○ Badly beaten up by spouse or romantic partner
- ○ Badly beaten up by anyone else
- ○ Mugged, held-up or threatened with a weapon
- ○ Rape
- ○ Sexual assault or molestation
- ○ Stalked
- ○ Unexpected death of someone close to you
- ○ Son or daughter who had life-threatening illness or injury
- ○ Extremely traumatic experience to someone close to you
- ○ Saw someone badly injured or killed, or unexpectedly see a dead body
- ○ Accidentally injured or killed another person
- ○ Purposely injured, tortured or killed another person
- ○ Saw atrocities or carnage
- ○ Any other extremely traumatic or life-threatening event
- ○ No event

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Lifetime Exposure to Traumatic Events

If you require support in relation to any issues you have identified in this survey, we encourage you to refer to the contacts provided on the inside cover.

Thinking about the event you nominated as your worst:

3. Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then shade the circle to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	NOT AT ALL	A LITTLE BIT	MODERAT-ELY	QUITE A BIT	EXTREMELY
Repeated, disturbing memories, thoughts or images of a stressful experience from the past?	○	○	○	○	○
Repeated, disturbing dreams of a stressful experience from the past?	○	○	○	○	○
Suddenly acting or feeling as if a stressful experience from the past were happening again (as if you were reliving it)?	○	○	○	○	○
Feeling very upset when something reminded you of a stressful experience from the past?	○	○	○	○	○
Having physical reactions (e.g. heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past?	○	○	○	○	○
Avoiding thinking about or talking about a stressful experience from the past or avoiding having feelings related to it?	○	○	○	○	○
Avoiding activities or situations because they reminded you of a stressful experience from the past?	○	○	○	○	○
Trouble remembering important parts of a stressful experience from the past?	○	○	○	○	○
Loss of interest in activities that you used to enjoy?	○	○	○	○	○
Feeling distant or cut off from other people?	○	○	○	○	○
Feeling emotionally numb or being unable to have loving feelings for those close to you?	○	○	○	○	○
Feeling as if your future somehow will be cut short?	○	○	○	○	○
Trouble falling or staying asleep?	○	○	○	○	○
Feeling irritable or having angry outbursts?	○	○	○	○	○
Having difficulty concentrating?	○	○	○	○	○
Being "superalert" or watchful or on guard?	○	○	○	○	○
Feeling jumpy or easily startled?	○	○	○	○	○
Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	○	○	○	○	○
Blaming yourself or someone else severely for the stressful experience or what happened after it?	○	○	○	○	○
Having strong negative feelings such as fear, horror, anger, guilt, or shame?	○	○	○	○	○
Taking too many risks or doing things that cause you harm?	○	○	○	○	○

Recent Life Events

1. In the last 12 months, have you been personally affected by any of the following? Please shade the YES circle if the event has occurred. Please shade the SIGNIFICANTLY AFFECTED ME box if the event had a significant effect on your life.

You yourself suffered a serious illness, injury or assault?	○ No	○ Yes	○ Significantly affected me
A serious illness, injury or assault happened to a close relative?	○ No	○ Yes	○ Significantly affected me

Draft

Recent Life Events

Your parent, child or spouse died?	○ No	○ Yes	○ Significantly affected me
A close family friend or another relative (aunt, cousin, grandparent) died?	○ No	○ Yes	○ Significantly affected me
You had a separation due to marital/relationship difficulties?	○ No	○ Yes	○ Significantly affected me
You broke off a steady relationship?	○ No	○ Yes	○ Significantly affected me
You had any serious problem with a close friend, neighbour or relative?	○ No	○ Yes	○ Significantly affected me
You became unemployed or you were seeking work unsuccessfully for more than one month?	○ No	○ Yes	○ Significantly affected me
You were sacked from your job?	○ No	○ Yes	○ Significantly affected me
You had a major financial crisis?	○ No	○ Yes	○ Significantly affected me
You had problems with the police and a court appearance?	○ No	○ Yes	○ Significantly affected me
Something you valued was lost or stolen?	○ No	○ Yes	○ Significantly affected me
You had problems with custody of your children?	○ No	○ Yes	○ Significantly affected me
You had relationship problems with your spouse/partner?	○ No	○ Yes	○ Significantly affected me

Alcohol, Tobacco and Drug Use

1. How often do you have a drink containing alcohol?	Never	Monthly or Less	2 to 4 times a month	2 to 3 times a week	4 or more times a week
	○	○	○	○	○

In answering the following questions, please remember that a standard drink contains 10g of pure alcohol

2. How many 'standard' drinks (see above) containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	N/A
	○	○	○	○	○	○

Draft

Alcohol, Tobacco and Drug Use

	NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY
3. How often do you have six or more drinks on one occasion?	○	○	○	○	○
4. How often during the last 12 months have you found that you were not able to stop drinking once you had started?	○	○	○	○	○
5. How often during the last 12 months have you failed to do what was normally expected from you because of drinking?	○	○	○	○	○
6. How often during the last 12 months have you needed a drink in the morning to get yourself going after a heavy drinking session?	○	○	○	○	○
7. How often during the last 12 months have you had a feeling of guilt or remorse after drinking?	○	○	○	○	○
8. How often during the last 12 months have you been unable to remember what happened the night before because you had been drinking?	○	○	○	○	○

9. In the last 12 months how often did you have an alcoholic drink of any kind?

○ Every day
○ 5 to 6 days a week
○ 3 to 4 days a week
○ 1 to 2 days a week
○ 2 to 3 days a month
○ About 1 day a month
○ Less than 1 day a month
○ Never

10. In the last 12 months, how often did you have: (if none, please write "000")

11 or more standard drinks in one day	☐☐☐ times	or	○ Can't remember
Between 7 and 10 standard drinks in one day	☐☐☐ times	or	○ Can't remember
5 or 6 standard drinks in one day	☐☐☐ times	or	○ Can't remember
3 or 4 standard drinks in one day	☐☐☐ times	or	○ Can't remember
1 or 2 standard drinks in one day	☐☐☐ times	or	○ Can't remember

11. Have you or someone else been injured as a result of your drinking?	No ○		Yes, but not in the last 12 months ○	Yes, during the last 12 months ○
12. Has a relative, a friend, a doctor or other health professional been concerned about your drinking or suggested you cut down?	No ○		Yes, but not in the last 12 months ○	Yes, during the last 12 months ○

13. Do you presently have a problem with drinking?	No ○	Probably not ○	Unsure ○	Possibly ○	Definitely ○

14. In the next 3 months, how difficult would you find it to cut down or stop drinking?	Very easy ○	Fairly easy ○	Neither difficult nor easy ○	Fairly difficult ○	Very difficult ○	N/A ○

15. Have you personally ever tried smoking cigarettes or other forms of tobacco? ○ Yes ○ No - skip to question 24

16. Have you ever smoked a full cigarette, pipe or cigar? ○ Yes ○ No - skip to question 24

17. Would you have smoked at least 100 cigarettes (manufactured or roll-your-own), or the equivalent amount of tobacco in your life? ○ Yes ○ No

18. Do you currently smoke? ○ Yes ○ No

19. Have you ever smoked on a daily basis? (mark one response only)

○ Yes, I smoke daily now - skip to question 21
○ Yes, I used to smoke daily, but not now
○ No, I never smoked daily - skip to question 22

Draft

Alcohol, Tobacco and Drug Use

20. About what age were you when you stopped smoking daily? ☐☐ years old

21. At what age did you first start smoking daily? ☐☐ years old

22. In the past year, have you used any of the following tobacco products?	NO	YES
a. Cigarettes	○	○
b. Cigars	○	○
c. Pipes	○	○
d. Smokeless tobacco (e.g. chew, dip, snuff)	○	○

23. How often do you now smoke cigarettes, pipes or other tobacco products? (mark one response only)

○ Daily — How many per day? ☐☐☐
○ At least weekly (but not daily) — How many per week? ☐☐☐
○ Less often than weekly — How many per month? ☐☐☐
○ Not at all

The next few questions about drug use.

24. Have you ever used any of the following illicit drugs: i.e. meth/amphetamines, marijuana, heroin, methodone or Buprenorphine, cocaine, hallucinogens, ecstasy, ketamine, GHB, inhalants, opiates, opioids? ○ Yes ○ No

How old were you the first time you used any of the illicit drugs listed above? ☐☐ years old or ○ N/A

Have you used any of the illicit drugs listed above in the last 12 months? ○ Yes ○ No

25. Have you ever used any of the following drugs for non-medical purposes; e.g. painkillers/analgesics, tranquilisers/sleeping pills? ○ Yes ○ No

For this survey, the term "non-medical purposes" means drugs used:
1. Either alone or with other drugs in order to induce or enhance a drug experience;
2. For performance enhancement (e.g. athletic); or
3. For cosmetic purposes (e.g. body shaping)

How old were you the first time you used painkillers/analgesics or tranquilisers/sleeping pills for non-medical purposes? ☐☐ years old or ○ N/A

Have you used painkillers/analgesics or tranquilisers/sleeping pills for non-medical purposes in the last 12 months? ○ Yes ○ No

Functioning

1. How much have the symptoms disrupted your:

	NOT AT ALL	MILDLY			MODERATELY			MARKEDLY			EXTREMELY
	0	1	2	3	4	5	6	7	8	9	10
Work?	○	○	○	○	○	○	○	○	○	○	○
Social life/leisure activities?	○	○	○	○	○	○	○	○	○	○	○
Family life/home responsibilities?	○	○	○	○	○	○	○	○	○	○	○

2. On how many days in the last week did your symptoms cause you to miss work or leave you unable to carry out your normal daily responsibilities? ☐ days

3. On how many days in the last week did you feel so impaired by your symptoms, that even though you went to work, your productivity was reduced? ☐ days

Draft

Getting Help

1. The next series of questions are about ways in which people **inform/assess** their mental health. The phrase mental health includes but is not restricted to such things as stress, anxiety, depression or problems with alcohol and drugs. Which of the following have you used in the last 12 months to **inform/assess** your mental health?

	In the past 12 months, have you used:		Do/Did you find this helpful?	
	NO	YES	NO	YES
ADF website	○	○	○	○
DVA website	○	○	○	○
At Ease website	○	○	○	○
Black Dog Institute website	○	○	○	○
HeadSpace website	○	○	○	○
Beyond Blue website	○	○	○	○
Mindhealthconnect website	○	○	○	○
Lifeline website	○	○	○	○
Kids Helpline website	○	○	○	○
Mens Helpline website	○	○	○	○
Other health website	○	○	○	○
MoodGYM internet treatment	○	○	○	○
E-couch internet treatment	○	○	○	○
Other internet treatment	○	○	○	○
A self-help group	○	○	○	○
PTSD Coach Australia smart phone app	○	○	○	○
On Track smart phone app	○	○	○	○
Other smart phone app (mobile phone application)	○	○	○	○
Email subscriptions / mailing list	○	○	○	○
Blogs	○	○	○	○
Social media (i.e. Facebook, Twitter)	○	○	○	○
Defence Family Helpline	○	○	○	○
ADF All-hours Support	○	○	○	○
1800 IMSICK	○	○	○	○
VVCS Vetline	○	○	○	○
Lifeline	○	○	○	○
Mensline	○	○	○	○
Mindspot clinic helpline	○	○	○	○
Relationships Australia helpline	○	○	○	○
SANE Australia helpline	○	○	○	○
Other helpline	○	○	○	○
An ex-service organisation	○	○	○	○

Draft

Getting Help

2. Which of the following have you used in the last 12 months to **maintain** your mental health?

	In the past 12 months, have you:		Do/Did you find this helpful?	
	NO	YES	NO	YES
Communicated with a Chaplain/Church leader/Faith group	○	○	○	○
Increased your level of exercise or physical activity	○	○	○	○
Done more of the things you enjoy	○	○	○	○
Sought support from family or friends	○	○	○	○

3. Which is your preferred means of receiving information about **your** mental health?

○ Direct, face-to-face communication ○ Telephone ○ Internet

4. Here is a list of concerns that a person **might** have when they **consider** seeking help for problems with mental health. Please indicate how each of these concerns **might** affect YOUR decision to seek help.

	STRONGLY DISAGREE	DISAGREE	UNCERTAIN	AGREE	STRONGLY AGREE	N/A
I wouldn't know where to get help	○	○	○	○	○	
I would have difficulty getting time off work	○	○	○	○	○	
It would harm my career or career prospects	○	○	○	○	○	
It would be difficult to get an appointment	○	○	○	○	○	
People would treat me differently	○	○	○	○	○	
I would be seen as weak	○	○	○	○	○	
People might have less confidence in me	○	○	○	○	○	
It would stop me from being deployed	○	○	○	○	○	○
I don't trust mental health professionals	○	○	○	○	○	
I feel they wouldn't understand problems related to my veteran and military experience	○	○	○	○	○	
It is too expensive	○	○	○	○	○	○
Most of what would happen if I sought treatment for a mental health issue would be beyond my control	○	○	○	○	○	
I would feel inadequate if I went to a mental health professional for psychological help	○	○	○	○	○	
I would feel embarrassed if I had a mental health problem	○	○	○	○	○	
I would feel worse about myself if I could not solve my own problems	○	○	○	○	○	
People with a mental health problem could snap out of it if they wanted to	○	○	○	○	○	
If I sought mental health treatment from a professional, I might feel worse	○	○	○	○	○	
I would worry that seeking treatment might lead to me losing control of my emotions or reactions	○	○	○	○	○	

The next set of questions are specifically about **your** mental health concerns and help-seeking behaviour.

5. Have you ever been concerned about your mental health (e.g., stress, anxiety, depression, anger, relationship problems)?

○ No - continue ○ Yes - skip to question 7

6. Have you ever had assistance for **your** mental health (please mark all that apply)?

○ Yes, currently
○ Yes, in the last 12 months
○ Yes, more than 12 months ago
} skip to question 9

○ No - skip to next section: Health Professionals

Draft

Getting Help

7. When did you first become concerned about your mental health? M M / Y Y

8. Have you ever had assistance for **your** mental health (please mark all that apply)?
○ Yes, currently ○ Yes, in the last 12 months ○ Yes, more than 12 months ago ○ No - skip to question 24

Have you **ever** sought help / received help from any of the doctors or professionals listed below for your own mental health? For each health professional, please indicate whether you have ever sought / received help, if you have sought / received help in the past 12 months, how the service was paid for and whether you were satisfied with the service provided to you.

9. **General Practitioner / Medical Officer**
○ No - please skip to question 10
○ Yes, more than 12 months ago - please skip to question 10
○ Yes, in the last 12 months - please continue

How were these services paid for in the last 12 months (please mark all that apply)?
○ Medicare ○ DVA ○ Defence ○ Fully self-funded ○ Other, i.e. Workcover ○ Don't know

WHAT SERVICE(S) DID YOU RECEIVE FROM THIS PROFESSIONAL IN THE LAST 12 MONTHS?		WERE YOU SATISFIED WITH THIS SERVICE?
Referral	○	○ No ○ Yes
Information about mental illness, its treatment, available services	○	○ No ○ Yes
Medicine or tablets	○	○ No ○ Yes
Counselling – with the main focus on support for my day to day stressors, problems and concerns (e.g. supportive counselling)	○	○ No ○ Yes
Counselling – with the main focus on my early life experiences and their impact on me now (e.g. psychotherapy)	○	○ No ○ Yes
Counselling - with the main focus on changing unhelpful thoughts and behaviours (e.g. cognitive behavioural therapy)	○	○ No ○ Yes
Counselling – with the main focus on addressing memories of traumatic experience (e.g. trauma focused cognitive behavioural therapy (CBT), eye movement desensitisation (EMDR))	○	○ No ○ Yes
Other	○	○ No ○ Yes

10. **Psychologist**
○ No - please skip to question 11
○ Yes, more than 12 months ago - please skip to question 11
○ Yes, in the last 12 months - please continue

How were these services paid for in the last 12 months (please mark all that apply)?
○ Medicare ○ DVA ○ Defence ○ VVCS self referral ○ VVCS Defence referral ○ Private health fund ○ Fully self-funded ○ Other, i.e. Workcover ○ Don't know

WHAT SERVICE(S) DID YOU RECEIVE FROM THIS PROFESSIONAL IN THE LAST 12 MONTHS?		WERE YOU SATISFIED WITH THIS SERVICE?
Referral	○	○ No ○ Yes
Information about mental illness, its treatment, available services	○	○ No ○ Yes
Medicine or tablets	○	○ No ○ Yes
Counselling – with the main focus on support for my day to day stressors, problems and concerns (e.g. supportive counselling)	○	○ No ○ Yes
Counselling – with the main focus on my early life experiences and their impact on me now (e.g. psychotherapy)	○	○ No ○ Yes
Counselling - with the main focus on changing unhelpful thoughts and behaviours (e.g. cognitive behavioural therapy)	○	○ No ○ Yes
Counselling – with the main focus on addressing memories of traumatic experience (e.g. trauma focused cognitive behavioural therapy (CBT), eye movement desensitisation (EMDR))	○	○ No ○ Yes
Other	○	○ No ○ Yes

Draft

Getting Help

11. **Psychiatrist**
○ No - please skip to question 12
○ Yes, more than 12 months ago - please skip to question 12
○ Yes, in the last 12 months - please continue

How were these services paid for in the last 12 months (please mark all that apply)?
○ Medicare ○ DVA ○ Defence ○ Private health fund ○ Fully self-funded ○ Other, i.e. Workcover ○ Don't know

WHAT SERVICE(S) DID YOU RECEIVE FROM THIS PROFESSIONAL IN THE LAST 12 MONTHS?		WERE YOU SATISFIED WITH THIS SERVICE?
Information about mental illness, its treatment, available services	○	○ No ○ Yes
Medicine or tablets	○	○ No ○ Yes
Counselling – with the main focus on support for my day to day stressors, problems and concerns (e.g. supportive counselling)	○	○ No ○ Yes
Counselling – with the main focus on my early life experiences and their impact on me now (e.g. psychotherapy)	○	○ No ○ Yes
Counselling - with the main focus on changing unhelpful thoughts and behaviours (e.g. cognitive behavioural therapy)	○	○ No ○ Yes
Counselling – with the main focus on addressing memories of traumatic experience (e.g. trauma focused cognitive behavioural therapy (CBT), eye movement desensitisation (EMDR))	○	○ No ○ Yes
Other	○	○ No ○ Yes

12. **Other mental health professional including a social worker, occupational therapist, mental health nurse**
○ No - please skip to question 13
○ Yes, more than 12 months ago - please skip to question 13
○ Yes, in the last 12 months - please continue

How were these services paid for in the last 12 months (please mark all that apply)?
○ Medicare ○ DVA ○ Defence ○ VVCS self referral ○ VVCS Defence referral ○ Private health fund ○ Fully self-funded ○ Other, i.e. Workcover ○ Don't know

WHAT SERVICE(S) DID YOU RECEIVE FROM THIS PROFESSIONAL IN THE LAST 12 MONTHS?		WERE YOU SATISFIED WITH THIS SERVICE?
Information about mental illness, its treatment, available services	○	○ No ○ Yes
Counselling – with the main focus on support for my day to day stressors, problems and concerns (e.g. supportive counselling)	○	○ No ○ Yes
Counselling – with the main focus on my early life experiences and their impact on me now (e.g. psychotherapy)	○	○ No ○ Yes
Counselling - with the main focus on changing unhelpful thoughts and behaviours (e.g. cognitive behavioural therapy)	○	○ No ○ Yes
Counselling – with the main focus on addressing memories of traumatic experience (e.g. trauma focused cognitive behavioural therapy (CBT), eye movement desensitisation (EMDR))	○	○ No ○ Yes
Other	○	○ No ○ Yes

13. **Other provider including counsellor, complementary/alternative therapist (herbalist or naturopath), life coach**
○ No - please skip to question 14
○ Yes, more than 12 months ago - please skip to question 14
○ Yes, in the last 12 months - please continue

Overall, were you satisfied with the services you received from any other provider (including counsellor, complementary/alternative therapist (herbalist or naturopath), life coach) in the last 12 months? ○ No ○ Yes

Draft

Getting Help

14. Inpatient treatment, hospital admission

- ○ No - please skip to question 15
- ○ Yes, more than 12 months ago - please skip to question 15
- ○ Yes, in the last 12 months - please continue

How was this service paid for in the last 12 months (please mark all that apply)?

○ Medicare ○ DVA ○ Defence ○ Private health fund ○ Fully self-funded ○ Other, i.e. Workcover ○ Don't know

Were you satisfied with this service in the last 12 months? ○ No ○ Yes

15. Hospital-based PTSD program

- ○ No - please skip to question 16
- ○ Yes, more than 12 months ago - please skip to question 16
- ○ Yes, in the last 12 months - please continue

How was this service paid for in the last 12 months (please mark all that apply)?

○ Medicare ○ DVA ○ Defence ○ Private health fund ○ Fully self-funded ○ Other, i.e. Workcover ○ Don't know

Were you satisfied with this service in the last 12 months? ○ No ○ Yes

16. Residential alcohol and other drug program

- ○ No - please skip to question 17
- ○ Yes, more than 12 months ago - please skip to question 17
- ○ Yes, in the last 12 months - please continue

How was this service paid for in the last 12 months (please mark all that apply)?

○ Medicare ○ DVA ○ Defence ○ Private health fund ○ Fully self-funded ○ Other, i.e. Workcover ○ Don't know

Were you satisfied with this service in the last 12 months? ○ No ○ Yes

17. Please indicate how satisfied/dissatisfied you have been with the following factors in regard to all mental health services / care you have received in the past 12 months.

	VERY DISSATISFIED	DISSATISFIED	NEITHER SATISFIED OR DISSATISFIED	SATISFIED	VERY SATISFIED	N/A
Accessibility	○	○	○	○	○	
Cost	○	○	○	○	○	○
Location	○	○	○	○	○	
Effectiveness	○	○	○	○	○	
Health professional competence	○	○	○	○	○	
Health professional friendliness	○	○	○	○	○	
Convenience	○	○	○	○	○	
Confidentiality	○	○	○	○	○	
Medicare cap- number of services provided by Medicare	○	○	○	○	○	○
Other, please specify:	○	○	○	○	○	

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Getting Help

18. Has a medical doctor diagnosed you with, or treated you for, any of the following medical problems or conditions?

	NO	YES	IF YES: YEAR DIAGNOSED	IF YES: TREATED BY A DOCTOR IN THE PAST YEAR	IF YES: MEDICATION TAKEN IN PAST MONTH
Alcohol abuse or dependency	○	○		○ No ○ Yes	○ No ○ Yes
Drug abuse or dependency	○	○		○ No ○ Yes	○ No ○ Yes
Anxiety or stress	○	○		○ No ○ Yes	○ No ○ Yes
Depression	○	○		○ No ○ Yes	○ No ○ Yes
Post Traumatic Stress Disorder	○	○		○ No ○ Yes	○ No ○ Yes
Other psychiatric or psychological condition needing treatment or counselling, please specify:	○	○		○ No ○ Yes	○ No ○ Yes

If **YES** to any of question 18 above, please skip to question 20.
If **NO** to question 18 above, please continue.

19. Do you think you have ever had any of the following problems or conditions despite having never been diagnosed with or treated for them? (please mark all that apply)

- ○ Alcohol abuse or dependency
- ○ Drug abuse or dependency
- ○ Anxiety or stress
- ○ Depression
- ○ Post Traumatic Stress Disorder
- ○ Other psychiatric or psychological condition needing treatment or counselling
- ○ None of the above

20. When did you first seek help for your own mental health?

○ Within 3 months of becoming concerned ○ Within 1 year of becoming concerned ○ ☐☐ years after becoming concerned

21. Did someone else suggest you seek help for your mental health? ○ Yes ○ No

a. If YES, who?

- ○ GP (non-Defence)
- ○ Medical Officer (Defence)
- ○ Partner
- ○ Other family member
- ○ Friend/Colleague
- ○ Supervisor/Manager/Commander
- ○ Other

Draft

Getting Help

22. Did someone else actually assist you (e.g. ring for an appointment, assist with transport) in seeking care for your mental health? ○ Yes ○ No

a. If YES, who?
- ○ GP (non-Defence)
- ○ Medical Officer (Defence)
- ○ Partner
- ○ Other family member
- ○ Friend/Colleague
- ○ Supervisor/Manager/Commander
- ○ Other

23. What problem/s led you to seeking care?

a. Primary or main reason/problem (please choose one response only):
- ○ Anger
- ○ Anxiety
- ○ Relationship problems
- ○ Nightmares
- ○ Depression
- ○ Alcohol or other drug problems
- ○ Sleep
- ○ Pain
- ○ Problems at work
- ○ Gambling
- ○ Other:

b. Secondary reasons (please mark all that apply):
- ○ Anger
- ○ Anxiety
- ○ Relationship problems
- ○ Nightmares
- ○ Depression
- ○ Alcohol or other drug problems
- ○ Sleep
- ○ Pain
- ○ Problems at work
- ○ Gambling
- ○ Other:

Please skip to next section: Health Professionals

24. Previously in this section, you reported that although you have been concerned about your mental health at some point in your life (e.g. stress, anxiety, depression, anger, or relationship problems), you have never sought help / received treatment from the professionals listed. What are the reasons you did not seek help? Please indicate on the scale below how much you disagree with the following reasons.

	STRONGLY DISAGREE	DISAGREE	UNCERTAIN	AGREE	STRONGLY AGREE
I preferred to manage myself	○	○	○	○	○
I didn't think anything could help	○	○	○	○	○
I didn't know where to get help	○	○	○	○	○
I was afraid to ask for help, or of what others would think of me if I did	○	○	○	○	○
I couldn't afford the money	○	○	○	○	○
I can still function effectively	○	○	○	○	○
I got help from another source	○	○	○	○	○

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Health Professionals

1. Excluding any time spent in hospital, have you visited any of the following or consulted any of these health professionals for your own health in the past 12 months?

a. Outpatients section of a hospital	○ No	○ Yes
b. Casualty or emergency ward	○ No	○ Yes
c. Day clinic for minor surgery or diagnostic tests other than x-ray	○ No	○ Yes
d. General practitioner	○ No	○ Yes
e. Specialist doctor	○ No	○ Yes
f. Dentist or dental professional	○ No	○ Yes
g. Accredited counsellor	○ No	○ Yes
h. Alcohol or drug worker	○ No	○ Yes
i. Psychologist	○ No	○ Yes
j. Social worker/welfare officer	○ No	○ Yes
k. Physiotherapist/hydrotherapist	○ No	○ Yes
l. Chiropractor	○ No	○ Yes
m. Osteopath	○ No	○ Yes
n. Diabetes educator	○ No	○ Yes
o. Dietician/Nutritionist	○ No	○ Yes
p. Naturopath	○ No	○ Yes
q. Audiologist/Audiometrist	○ No	○ Yes
r. Other, please specify type of health professional:	○ No	○ Yes

2. In the past two weeks, how many times have you consulted the following health professionals? Write "0" (zero) if you have not consulted one of these health professionals in the past two weeks.

a. General Practitioner ☐☐ times

b. Specialist doctor ☐☐ times

3. Thinking back over the past two weeks, did you stay in bed or at home all or part of any day because you did not feel well or as a result of illnesses or injury? ○ No ○ Yes

Family and Children

1. The next group of questions are about your relationships with your family.

	OFTEN	SOMETIMES	RARELY	NEVER
a. How often do family make you feel cared for?	○	○	○	○
b. How often do family express interest in how you are doing?	○	○	○	○
c. How often do they make too many demands on you?	○	○	○	○
d. How often do family criticise you?	○	○	○	○
e. How often do they create tensions or arguments with you?	○	○	○	○

Please skip to question 3 if you do not currently have a partner.

Draft

Family and Children

2. Thinking about your current partner, please answer the following questions. These questions may not necessarily apply to you. If you would prefer not to answer any of these questions please leave them blank.

In general, how would you describe your relationship? ○ A lot of tension ○ Some tension ○ No tension

Do you and your partner work out arguments with: ○ Great difficulty ○ Some difficulty ○ No difficulty

	SOMETIMES	RARELY	NEVER
Do arguments ever result in you feeling put down or bad about yourself?	○	○	○
Do arguments ever result in hitting, kicking or pushing?	○	○	○
Do you ever feel frightened by what your partner says or does?	○	○	○
Has your partner ever abused you physically?	○	○	○
Has your partner ever abused you emotionally?	○	○	○
Has your partner ever abused you sexually?	○	○	○

3. In general, how often do you have contact with family <u>not living with you</u>?

○ Every day
○ Several times a week
○ About once a week
○ 2 or 3 times a month
○ About once a month
○ Once or twice every 3 months
○ Less often than once every 3 months

4. How negative or positive do you think that your military service experiences have been on...

	EXTREMELY NEGATIVE			NO INFLUENCE		EXTREMELY POSITIVE	DON'T KNOW / N/A
Your relationship with your spouse(s)/partner(s)?	○	○	○	○	○	○	○
Your other romantic relationships?	○	○	○	○	○	○	○
Your relationships with your children?	○	○	○	○	○	○	○
Your relationships with your other immediate family?	○	○	○	○	○	○	○
Your relationships with your wider family?	○	○	○	○	○	○	○
Your relationships with your friends?	○	○	○	○	○	○	○
Your employment?	○	○	○	○	○	○	○
Your physical health?	○	○	○	○	○	○	○
Your mental health?	○	○	○	○	○	○	○
Your financial situation?	○	○	○	○	○	○	○

5. Please indicate, by shading one circle on each line, how satisfied or dissatisfied you currently are with each of the following relationships. The more satisfied you are, the higher the number of the circle you should shade. The less satisfied, the lower the number of the circle you should shade. Shade N/A if not applicable.

How satisfied are you with:	Completely dissatisfied 0	1	2	3	4	5	6	7	8	9	Completely satisfied 10	N/A
Your relationship with your partner?	○	○	○	○	○	○	○	○	○	○	○	○
Your relationship with your children?	○	○	○	○	○	○	○	○	○	○	○	○

Draft

Family and Children

6. In general, how much conflict and tension was there in your household when you were growing up? ○ A lot ○ A little ○ None

7. Did your mother (or mother figure) suffer from nervous or emotional trouble or depression? ○ Yes ○ No ○ N/A ○ Don't know

8. Did your father (or father figure) suffer from nervous or emotional trouble or depression? ○ Yes ○ No ○ N/A ○ Don't know

9. Did your mother (or mother figure) have trouble with drinking or other drug use? ○ Yes ○ No ○ N/A ○ Don't know

10. Did your father (or father figure) have trouble with drinking or other drug use? ○ Yes ○ No ○ N/A ○ Don't know

11. Overall, as a parent, do you feel that you are....

○ Not very good at being a parent
○ A person who has some trouble being a parent
○ An average parent
○ A better than average parent
○ A very good parent

12. Thinking about your first-born child aged 4 to 17 who lives with you 50% or more of the time, over the last six months:

	NEVER/ ALMOST NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS/ ALMOST ALWAYS
a. How often did you express affection by hugging, kissing and holding this child?	○	○	○	○	○
b. How often did you hug or hold this child for no particular reason?	○	○	○	○	○
c. How often did you tell this child how happy he/she makes you?	○	○	○	○	○
d. How often did you have warm, close times together with this child?	○	○	○	○	○
e. How often did you enjoy listening to this child and doing things with him/her?	○	○	○	○	○
f. How often did you feel close to this child both when he/she is happy and upset	○	○	○	○	○

13. When parents spend time with their children, sometimes things go well and sometimes they don't. How often do the following happen?

	NEVER/ ALMOST NEVER	LESS THAN HALF THE TIME	ABOUT HALF THE TIME	MORE THAN HALF THE TIME	ALL THE TIME
a. Of all the times that you talk to this child about his/her behaviour, how often is this disapproval?	○	○	○	○	○
b. How often are you angry when you punish this child?	○	○	○	○	○
c. How often do you feel you are having problems managing this child in general?	○	○	○	○	○
d. Of all the times you talk to this child about his or her behaviour, how often is this praise?	○	○	○	○	○
e. How often do you tell this child that he/she is not as good as others?	○	○	○	○	○

Draft

Family Study Recruitment

We want to improve the help we provide to ADF personnel and their families during the transition to civilian life. To do this, we need to have a better understanding of the experiences of all during this period.

We would like to collect information from as many family members (parent or parent figure, partner or ex-partner, child aged 18 and over) of ADF personnel as possible about what life is like being a military family, by asking them to complete a questionnaire similar to this one.

1. Do you agree to have your survey data linked to the Family Study data?
   ○ Yes ○ No ○ N/A: I don't have a parent or parent figure, partner or ex-partner, or child 18+

2. Could you identify who you would be happy for us to contact, to find out if they would be interested in completing a questionnaire like this one?

PERSON 1	PERSON 2
First or given name	First or given name
Surname or family name	Surname or family name
Contact Phone Number	Contact Phone Number
Alternate Contact Phone Number	Alternate Contact Phone Number
Street address / PO Box	Street address / PO Box
Suburb	Suburb
State	State
Postcode	Postcode
Country	Country
Email	Email
Relationship to you? ○ Parent or parent figure ○ Partner ○ Ex-partner ○ Child aged 18+ ○ Other, please specify:	Relationship to you? ○ Parent or parent figure ○ Partner ○ Ex-partner ○ Child aged 18+ ○ Other, please specify:

3. I agree to inform the family members above that I have nominated them to be contacted for the family study, and that this process will involve their contact details being forwarded to the Australian Institute of Family Studies who will contact them using this information provided ○ Yes ○ No

Draft

Friends and Other Social Contacts

1. The next group of questions are about your relationships with your friends.

	OFTEN	SOMETIMES	RARELY	NEVER
a. How often do friends make you feel cared for?	○	○	○	○
b. How often do they express interest in how you are doing?	○	○	○	○
c. How often do friends make too many demands on you?	○	○	○	○
d. How often do they criticise you?	○	○	○	○
e. How often do friends create tensions or arguments with you?	○	○	○	○

2. In general, how often do you have contact with **friends** not living with you?
   ○ Every day
   ○ Several times a week
   ○ About once a week
   ○ 2 or 3 times a month
   ○ About once a month
   ○ Once or twice every 3 months
   ○ Less often than once every 3 months

3. Please indicate, by shading one circle, how satisfied or dissatisfied you currently are with your relationship with your friends.
   ○ Completely dissatisfied - 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 - Completely satisfied ○ N/A

4. How many ex-service organisations (ie. Naval Association Australia, Returned and Services League of Australia Ltd (RSL), Soldier On) do you belong to?
   Write in the number, if none, write "0"

5. How do these ex-service organisations benefit you?

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	N/A
They assist me in helping my colleagues and friends	○	○	○	○	○	○
They are a source of information	○	○	○	○	○	○
They are a source of support	○	○	○	○	○	○
They are a way of socialising with serving and ex-serving personnel	○	○	○	○	○	○
They assist in gaining veterans entitlements	○	○	○	○	○	○

6. Excluding ex-service organisations, how many other voluntary groups or organisations do you belong to – like parent groups, clubs or lodges, church groups, etc ("voluntary" means because you want to).
   Write in the number, if none, write "0"

Resilience

1. Please respond to each item by marking one circle for row to indicate how much you disagree or agree with the statements.

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
I tend to bounce back quickly after hard times	○	○	○	○	○
I have a hard time making it through stressful events	○	○	○	○	○
It does not take me long to recover from a stressful event	○	○	○	○	○
It is hard for me to snap back when something bad happens	○	○	○	○	○
I usually come through difficult times with little trouble	○	○	○	○	○
I tend to take a long time to get over set-backs in my life	○	○	○	○	○

2. How do you feel about your life as a whole, taking into account what has happened in the last year and what you expect to happen in the future? (please choose one response only)
   ○ Delighted ○ Pleased ○ Mostly satisfied ○ Mixed ○ Mostly dissatisfied ○ Unhappy ○ Terrible

Draft

Gambling

1. Thinking about the last 12 months:

	NEVER	SOMETIMES	MOST OF THE TIME	ALMOST ALWAYS
Have you bet more than you could really afford to lose?	○	○	○	○
Have you needed to gamble with larger amounts of money to get the same feeling of excitement?	○	○	○	○
When you gambled, did you go back another day to try to win back the money you lost?	○	○	○	○
Have you borrowed money or sold anything to get money to gamble?	○	○	○	○
Have you felt that you might have a problem with gambling?	○	○	○	○
Has gambling caused you any health problems, including stress or anxiety?	○	○	○	○
Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	○	○	○	○
Has your gambling caused any financial problems for you or your household?	○	○	○	○
Have you felt guilty about the way you gamble or what happens when you gamble?	○	○	○	○
Have you lied to family members or others to hide your gambling?	○	○	○	○
Have you bet or spent more money than you wanted to on gambling?	○	○	○	○
Have you wanted to stop betting money or gambling, but didn't think you could?	○	○	○	○

Driving Behaviour

1. Thinking back over the last TEN TIMES you drove a car (or rode a motorbike), how many times did you ...

Drive more than 25km/h over the limit?	○ 0	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9	○ 10
Drive between 11 and 25km/h over the limit?	○ 0	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9	○ 10
Driven when probably affected by alcohol?	○ 0	○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7	○ 8	○ 9	○ 10

Experience with the Law

1. Have you ever been arrested? ○ Yes ○ No
   a. If YES, when was this (please mark all that apply)?
   ○ Prior to entry to the ADF
   ○ Prior to transition from regular ADF service
   ○ Since transition from regular ADF service
2. Have you ever been convicted of a crime in a court of law (including civil court, criminal court or military court)? ○ Yes ○ No
   a. If YES, when was this (please mark all that apply)?
   ○ Prior to entry to the ADF
   ○ Prior to transition from regular ADF service
   ○ Since transition from regular ADF service
3. Have you ever been sent to prison by a judge in a court (or spent time on remand awaiting a court hearing)? ○ Yes ○ No
   a. If YES, when was this (please mark all that apply) and for how long in total were you in jail during the times shown below?
   ○ Prior to entry to the ADF for ____ days
   ○ Prior to transition from regular ADF service for ____ days
   ○ Since transition from regular ADF service for ____ days

Draft

Internet Usage

1. How often do you use the Internet?
   ○ Everyday or almost everyday ○ Once or twice a week ○ Once or twice a month ○ Less than once a month ○ Never
2. When searching for information on the Internet, how would you usually begin?
   ○ Using a search engine (e.g. Google, Yahoo)
   ○ Deliberately accessing a specific website
   ○ Follow a link you accidentally came across
   ○ Some other way:
3. Approximately how much time would you spend using the Internet on a normal work day? ____ hours ____ minutes
4. And, do you use the Internet after 11pm at night? ○ Yes ○ No
5. How true are the following statements for you?

	NOT TRUE	A BIT TRUE	VERY TRUE
I find it easier to be myself when online than when I am with people face-to-face	○	○	○
I talk about different things with people when online than I do when face-to-face	○	○	○
When I am online, I talk about private things that I do not share with people face-to-face	○	○	○
I go online much more on the weekends than I do on a regular work day	○	○	○
When I am going through a difficult time, I go online more often	○	○	○
When I am going through a difficult time, going online makes me feel better	○	○	○

6. Do you use the Internet to seek help or information for, or manage, mental health issues?
   ○ Yes
   ○ No - please skip to next section: Emerging Technologies
7. If YES, which of these devices do you mainly use to access the Internet? (please mark all that apply)
   ○ A desktop computer shared with other members of your family
   ○ A games console (e.g. Playstation, Xbox, Wii)
   ○ A laptop shared with other members of your family and that you cannot use in private
   ○ A portable gaming device (e.g. PSP, DS. Gameboy)
   ○ A smart phone (e.g. IPhone, Blackberry)
   ○ A television set (TV)
   ○ Your own desktop computer
   ○ Your own laptop or laptop that you mainly use and can use in private
   ○ Other handheld portable devices (e.g. MP3 player, IPod Touch, IPad or other Android tablets)
   ○ Other:
8. How often do you use the Internet to seek help or access information about your mental health?
   ○ Everyday or almost everyday ○ Once or twice a week ○ Once or twice a month ○ Less than once a month ○ Never
9. What time are you most likely to use the Internet to seek help or access information about your mental health?
   ○ Between 6am and 9am (before work hours)
   ○ Between 9am and 5pm (during work hours)
   ○ Between 5pm and 8pm (straight after work)
   ○ Between 8pm and 12 midnight (late at night)
   ○ Between 12 midnight and 6am (early hours of the morning)
10. Have you ever talked about your mental health on the Internet with a peer, family member or friend? ○ Yes ○ No
    a. If YES, Did you find this harmful, helpful or neither? ○ Harmful ○ Helpful ○ Neither

Draft

Internet Usage

11. Have you ever talked about your mental health on the Internet with other people (e.g. online forums, chatrooms, blogs, MSN or gmail messenger)? ○ Yes ○ No

a. If YES, Did you find this harmful, helpful or neither? ○ Harmful ○ Helpful ○ Neither

12. Have you ever talked about your mental health on the Internet with a psychologist or other mental health professional? ○ Yes ○ No

a. If YES, Did you find this harmful, helpful or neither? ○ Harmful ○ Helpful ○ Neither

13. If NO to question 10, 11 AND 12: Which of the following barriers might prevent you from talking about your mental health issues online? Please mark all that apply

- ○ Lack of access to technology
- ○ Lack of awareness about available online services
- ○ Unaffordable technology
- ○ Concerns about validity of information available online
- ○ Lack of technological/computing skills
- ○ Preference for face-to-face contact
- ○ Concerns about a lack of privacy/confidentiality
- ○ Concerns about a lack of website security

14. Thinking about the kinds of activities you engage in online in relation to mental health, what types of people do you have contact with?

- ○ People who you first met in person face-to-face
- ○ People who you first met on the Internet, but who are friends or family of other people who you know in person
- ○ People who you first met on the Internet, but who have no other connection to your life outside the Internet
- ○ I don't engage with people online

15. By using the Internet, did you get the kind of information you needed in relation to mental health? Would you say... ○ Not at all ○ Somewhat ○ Very much

16. Did the Internet help you deal more effectively with mental health problems? Would you say the Internet... ○ Made it a lot worse ○ Made it a little worse ○ Neither ○ Helped a little ○ Helped a lot

17. Overall, how satisfied were you with the information you received on the Internet in relation to mental health? Would you say... ○ Very dissatisfied ○ Somewhat dissatisfied ○ Somewhat satisfied ○ Very satisfied

Emerging Technologies

We live in a world where technology is part of our everyday lives and is constantly being created then continually upgraded in a quest to meet all our wants and needs. Today, new and emerging technologies have the potential to help us improve our health and wellbeing, which in turn will reduce the burden on the health care system.

1. Do you currently use any new or emerging technologies (eg. software applications or "apps", wearable technology)?
   - ○ No - go to question 1a
   - ○ Yes - go to question 1b
   - ○ Don't know

1a. If NO, why don't you use any new or emerging technologies?

- ○ No need or interest
- ○ No time to learn new technology
- ○ Too confusing
- ○ Too expensive
- ○ Upgrades required too often
- ○ Privacy issues
- ○ Other (please specify):

Please skip to question 3

Draft

Emerging Technologies

1b. If YES, what new or emerging technologies do you currently use?

- ○ Google Glass or similar
- ○ Smartwatch
- ○ Software applications or "apps"
- ○ Wearable technology (eg. Fitbit, Jawbone)
- ○ Other (please specify):

2. And, do you use any new or emerging technologies to help you improve your health and wellbeing?
   - ○ No - go to question 2a
   - ○ Yes - go to question 2b
   - ○ Don't know

2a. If NO, how or why do you use new and emerging technologies?

- ○ Enhance social interaction
- ○ Fun or recreation
- ○ Study or work
- ○ To make videos or take photos
- ○ Other (please specify):

Please skip to question 3

2b. If YES, how or why do you use new and emerging technologies to improve your health and wellbeing?

- ○ Improve my fitness
- ○ Improve my mood
- ○ Improve my sleep
- ○ Keep me organised
- ○ Maintain my diet/ track food intake
- ○ To keep me motivated
- ○ Track my progress
- ○ Other (please specify):

3. In an ideal world where money and time were no obstacle, what new and emerging technologies would you like to use to help improve your health and wellbeing?

- ○ Google Glass or similar
- ○ Smartwatch
- ○ Software applications or "apps"
- ○ Wearable technology (eg. Fitbit, Jawbone)
- ○ Other (please specify):

4. Because new and emerging technologies are constantly being created then continually upgraded, when is the right time for you to buy a product?

- ○ When it is first released
- ○ When it has been on the market for a while and all the bugs have been removed
- ○ When the product has been improved and updated
- ○ When I have used and tested products from friends/ family
- ○ When it has been on the market for a while and cheaper because a newer version has been released
- ○ I don't buy new and emerging technologies
- ○ Other (please specify):
- ○ Don't know

Draft

Head Injuries

1. The next set of questions asks about head injuries that you may have experienced anytime in your lifetime.

	NO	YES	IF YES: NUMBER OF TIMES	IF YES: DURING MILITARY SERVICE	IF YES: DURING DEPLOYMENT
In your lifetime, have you ever been hospitalised or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about.	○	○		○	○
In your lifetime, have you ever injured your head or neck in a car accident or from a crash with another moving vehicle like a bicycle, motorcycle or All-Terrain-Vehicle (ATV)?	○	○		○	○
In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock, playing sports or on the playground)?	○	○		○	○
In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, from being shaken violently, or being shot in the neck or head?	○	○		○	○
In your lifetime, have you ever been nearby when an explosion or a blast occurred? Think about any military combat- or training-related incidents or prior work-related incidents (for example, construction).	○	○		○	○

IF YOU ANSWERED "YES" TO ANY OF QUESTION 1 ABOVE, THEN CONTINUE TO QUESTION 2. IF YOU ANSWERED "NO" TO ALL 5 QUESTIONS, THEN SKIP TO NEXT SECTION: PAIN.

2. Were you ever knocked out or become unconscious as a result of any of the injuries you reported above? ○ Yes ○ No - skip to question 7
3. What was the longest time you were knocked out or unconscious (choose just one)?
   - ○ Knocked out or unconscious for less than 30 min
   - ○ Knocked out or unconscious between 30 min and 24 hours
   - ○ Knocked out or unconscious for 24 hours or longer
4. How old were you the first time you were knocked out or become unconscious? ☐☐ years old
5. How old were you the last time you were knocked out or become unconscious? (If you were only knocked out once, this will be the same as Question 4) ☐☐ years old
6. How many times were you knocked out or become unconscious? ☐☐☐☐ times
7. Were you ever dazed or confused (i.e. saw stars), but did not become unconsious as a result of any of the injuries you reported above? ○ Yes ○ No - skip to question 11
8. How old were you the first time you were dazed or confused (i.e. saw stars)? ☐☐ years old
9. How old were you the last time you were dazed or confused (i.e. saw stars)? (If you were only dazed or confused once, this will be the same as Question 8) ☐☐ years old
10. How many times were you dazed or confused (i.e. saw stars)? ☐☐☐☐ times
11. Did you **ever** not remember the event as a result of the injuries listed in question 1 above? ○ Yes ○ No - skip to question 15
12. How old were you the first time did not remember the event as a result of the injuries listed in question 1 above? ☐☐ years old
13. How old were you the last time you did not remember the event as a result of the injuries listed in question 1 on the previous page? (If you did not remember the event once, this will be the same as Question 12) ☐☐ years old
14. How many times did you not remember the event as a result of the injuries listed in question 1 above? ☐☐☐☐ times
15. Have you ever lost consciousness from a drug overdose? ○ Yes ○ No - skip to question 17
16. How many times did you lose consciousness from a drug overdose? ☐☐☐☐ times

Draft

Head Injuries

17. Have you ever lost consciousness from being choked? ○ Yes ○ No - skip to question 19
18. How many times did you lose consciousness from being choked? ☐☐☐☐ times
19. Did any of the following problems begin or get worse after any of the injuries listed in question 1 above? (please mark all that apply)
    - ○ Memory problems or lapses
    - ○ Balance problems or dizziness
    - ○ Sensitivity to bright light
    - ○ Irritability
    - ○ Headaches
    - ○ Sleep problems
    - ○ None
20. Have you ever had a period of time in which you experienced multiple, repeated blows or impacts to your head in relation to the following events?

A history of abuse	○ Yes	○ No
Contact sports	○ Yes	○ No
ADF training exercises or deployment	○ Yes	○ No

The next set of questions are about post-concussive symptoms.

21. Over the past four weeks, have you experienced problems with any of the following symptoms as a result of an injury to your head or neck:

	NOT AT ALL		MODERATELY		EXTREMELY
Anxiety	○	○	○	○	○
Headaches	○	○	○	○	○
Dizziness	○	○	○	○	○
Fatigue	○	○	○	○	○
Visual problems	○	○	○	○	○
Sensitivity to noise	○	○	○	○	○
Ringing in the ears	○	○	○	○	○
Memory	○	○	○	○	○
Concentration	○	○	○	○	○
Judgement problems	○	○	○	○	○
Irritability	○	○	○	○	○

Physical Exercise

1. During the last 7 days, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling? Think about *only* those physical activities that you did for at least 10 minutes at a time. ☐ days per week
   or
   ○ None - skip to question 2
   a. How many times in the last week did you do vigorous physical activities? ☐☐ times per week
   b. How much time in total did you usually spend on one of those days doing vigorous physical activities? ☐☐ hours ☐☐ minutes

Draft

Physical Exercise

2. Again, think about *only* those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.
   - ☐☐ days per week
   - or
   - ○ None - skip to question 3

   a. How many times in the last week did you do moderate physical activities? ☐☐ times per week

   b. How much time in total did you usually spend on one of those days doing moderate physical activities? ☐☐ hours ☐☐ minutes

3. During the last 7 days, on how many days did you **walk** for at least 10 minutes at a time? This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.
   - ☐☐ days per week
   - or
   - ○ None - skip to question 4

   a. How many times in the last week did you walk for at least 10 minutes at a time? ☐☐ times per week

   b. How much time in total did you usually spend walking on one of those days? ☐☐ hours ☐☐ minutes

The last question is about the time you spent **sitting** on weekdays while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, traveling on a bus, or sitting or lying down to watch television.

4. During the last 7 days, how much time did you spend *sitting* on a **week day**? ☐☐ hours ☐☐ minutes

Pain

1. We are interested in learning more about your pain intensity and disability. For the following questions with a scale of 0-10, please mark one response only. Please complete these questions regardless of whether you have pain.

a. How would you rate your pain on a 0-10 scale at the present time, that is right now, where 0 is 'no pain' and 10 is 'pain as bad as could be'?

	0	1	2	3	4	5	6	7	8	9	10	
No pain	○	○	○	○	○	○	○	○	○	○	○	Pain as bad as could be

b. In the past 6 months, how intense was your worst pain rated on a 0-10 scale where 0 is 'no pain' and 10 is 'pain as bad as could be'?

	0	1	2	3	4	5	6	7	8	9	10	
No pain	○	○	○	○	○	○	○	○	○	○	○	Pain as bad as could be

c. In the past 6 months, on the average, how intense was your pain rated on a 0-10 scale where 0 is 'no pain' and 10 is 'pain as bad as could be'? (That is, your usual pain at times you were experiencing pain)

	0	1	2	3	4	5	6	7	8	9	10	
No pain	○	○	○	○	○	○	○	○	○	○	○	Pain as bad as could be

d. About how many days in the last 6 months have you been kept from your usual activities (work, school or housework) because of pain? ☐☐☐ days

e. In the past 6 months, how much has pain interfered with you daily activities rated on a 0-10 scale where 0 is 'no interference' and 10 is 'unable to carry on any activities'?

	0	1	2	3	4	5	6	7	8	9	10	
No interference	○	○	○	○	○	○	○	○	○	○	○	Unable to carry on any activities

f. In the past 6 months, how much has pain changed your ability to take part in recreational, social and family activities where 0 is 'no change' and 10 is 'extreme change'?

	0	1	2	3	4	5	6	7	8	9	10	
No change	○	○	○	○	○	○	○	○	○	○	○	Extreme change

g. In the past 6 months, how much has pain changed your ability to work (including housework) where 0 is 'no change' and 10 is 'extreme change'?

	0	1	2	3	4	5	6	7	8	9	10	
No change	○	○	○	○	○	○	○	○	○	○	○	Extreme change

Draft

Injuries

Did you experience any of the following **injuries** that required **time off work** during your military career?

	NO	YES	IF YES: NUMBER SUSTAINED DURING MILITARY CAREER	IF YES: NUMBER SUSTAINED ON DEPLOYMENT	IF YES: NUMBER SUSTAINED DURING TRAINING
1. Fractured/broken bone	○	○	☐☐☐	☐☐☐	☐☐☐

If YES please indicate all body site/s where fractures have occurred during your military career:

- ○ Head
- ○ Neck
- ○ Shoulder/Upper arm
- ○ Elbow/Forearm
- ○ Hand/Wrist
- ○ Lumbar spine
- ○ Pelvis
- ○ Hip
- ○ Femur
- ○ Knee/Lower leg
- ○ Ankle
- ○ Foot
- ○ Other

2. Other musculoskeletal injury (i.e. injury to ligaments, muscles, tendons, blood vessels, nerves, other soft tissues)	○	○	☐☐☐	☐☐☐	☐☐☐

If YES please indicate all body site/s where other musculoskeletal injuries have occurred during your military career:

- ○ Head
- ○ Neck
- ○ Shoulder/Upper arm
- ○ Elbow/Forearm
- ○ Hand/Wrist
- ○ Lumbar spine
- ○ Pelvis
- ○ Hip
- ○ Femur
- ○ Knee/Lower leg
- ○ Ankle
- ○ Foot
- ○ Other

3. Heat stress, exhaustion, dehydration	○	○	☐☐☐	☐☐☐	☐☐☐
4. Effects of cold or exposure	○	○	☐☐☐	☐☐☐	☐☐☐
5. Burn injury (not including sunburn)	○	○	☐☐☐	☐☐☐	☐☐☐

Draft

Respiratory Health

The following questions ask you about any respiratory symptoms you may have experienced in the last 12 months.

	NO	YES
1. Have you had wheezing or whistling in your chest at any time in the last 12 months?	○	○
If YES:		
a. Have you been at all breathless when the wheezing noise was present?	○	○
b. Have you had this wheezing or whistling when you did not have a cold?	○	○
2. Have you woken up with a feeling of tightness in your chest at any time in the last 12 months?	○	○
3. Have you had an attack of shortness of breath that came on during the day when you were AT REST at any time in the last 12 months?	○	○
4. Have you had an attack of shortness of breath that came on FOLLOWING strenuous activity at any time in the last 12 months?	○	○
5. Have you been woken by an attack of shortness of breath at any time in the last 12 months?	○	○
6. Have you been woken by an attack of coughing at any time in the last 12 months?	○	○
7. Do you usually cough first thing in the morning (or getting up if on night shift)?	○	○
8. Do you usually cough during the day or at night?	○	○
If NO to ALL of questions 6, 7, and 8 above, please skip to question 10		
9. If YES to ANY of questions 6, 7, and 8, would you have coughed like this for as much as 3 months in each of the past 2 years?	○	○
10. Do you usually bring up any phlegm from your chest first thing in the morning in winter?	○	○
11. Do you usually bring up any phlegm from your chest during the day, or at night in winter?	○	○
a. If YES, have you have brought up phlegm like this on most days for as much as 3 months of a year for at least 2 successive years?	○	○
12. Do you ever have trouble with your breathing?	○	○
a. If YES, do you have this trouble (choose one): ○ continuously so that your breathing is never quite right? ○ repeatedly, but it always gets completely better? ○ only rarely?		
13. Are you disabled from walking by a condition other than heart or lung disease?	○	○
14. Are you troubled by shortness of breath when hurrying on level ground or walking up a slight hill?	○	○
If YES:		
a. Do you get short of breath walking with other people of your own age on level ground?	○	○
b. Do you have to stop for breath when walking at your own pace on level ground?	○	○
15. Do you have any nasal allergies including hay fever?	○	○
16. Have you ever had asthma?	○	○
If YES:		
a. Was this confirmed by a doctor?	○	○
b. At what age did it start?	☐☐ years	
c. Have you had an attack of asthma in the last 12 months?	○	○
d. Are you currently taking any medicine (including inhalers, aerosols, or tablets) for asthma?	○	○

Draft

Physical Health

1. We would like to know about your health in the past month. Please indicate whether or not you have suffered any of the following symptoms in the past month, and if so, please indicate whether your symptoms were mild, moderate or severe in nature.

In the past month, have you:	NO	YES		
Chest pain	○ No	○ Mild	○ Moderate	○ Severe
Headaches	○ No	○ Mild	○ Moderate	○ Severe
Rapid heartbeat	○ No	○ Mild	○ Moderate	○ Severe
Irritability / outbursts of anger	○ No	○ Mild	○ Moderate	○ Severe
Unable to breathe deeply enough	○ No	○ Mild	○ Moderate	○ Severe
Faster breathing than normal	○ No	○ Mild	○ Moderate	○ Severe
Feeling short of breath at rest	○ No	○ Mild	○ Moderate	○ Severe
Wheezing	○ No	○ Mild	○ Moderate	○ Severe
Sleeping difficulties	○ No	○ Mild	○ Moderate	○ Severe
Feeling jumpy / easily startled	○ No	○ Mild	○ Moderate	○ Severe
Feeling unrefreshed after sleep	○ No	○ Mild	○ Moderate	○ Severe
Fatigue	○ No	○ Mild	○ Moderate	○ Severe
Double vision	○ No	○ Mild	○ Moderate	○ Severe
Intolerance to alcohol	○ No	○ Mild	○ Moderate	○ Severe
Itchy or painful eyes	○ No	○ Mild	○ Moderate	○ Severe
Rash or skin irritation	○ No	○ Mild	○ Moderate	○ Severe
Skin infections e.g. boils	○ No	○ Mild	○ Moderate	○ Severe
Skin ulcers	○ No	○ Mild	○ Moderate	○ Severe
Shaking	○ No	○ Mild	○ Moderate	○ Severe
Tingling in fingers and arms	○ No	○ Mild	○ Moderate	○ Severe
Tingling in legs and toes	○ No	○ Mild	○ Moderate	○ Severe
Numbness in fingers / toes	○ No	○ Mild	○ Moderate	○ Severe
Feeling distant or cut off from others	○ No	○ Mild	○ Moderate	○ Severe
Constipation	○ No	○ Mild	○ Moderate	○ Severe
Flatulence or burping	○ No	○ Mild	○ Moderate	○ Severe
Stomach cramps	○ No	○ Mild	○ Moderate	○ Severe
Diarrhoea	○ No	○ Mild	○ Moderate	○ Severe
Indigestion	○ No	○ Mild	○ Moderate	○ Severe
Dry mouth	○ No	○ Mild	○ Moderate	○ Severe
Pain in the face, jaw, in front of the ear, or in the ear	○ No	○ Mild	○ Moderate	○ Severe
Persistent cough	○ No	○ Mild	○ Moderate	○ Severe
Lump in throat	○ No	○ Mild	○ Moderate	○ Severe
Sore throat	○ No	○ Mild	○ Moderate	○ Severe
Forgetfulness	○ No	○ Mild	○ Moderate	○ Severe
Dizziness, fainting or blackouts	○ No	○ Mild	○ Moderate	○ Severe

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Physical Health

	NO	YES		
Seizures or convulsions	No	Mild	Moderate	Severe
Feeling disorientated	No	Mild	Moderate	Severe
Loss of concentration	No	Mild	Moderate	Severe
Difficulty finding the right word	No	Mild	Moderate	Severe
Pain on passing urine	No	Mild	Moderate	Severe
Passing urine more often	No	Mild	Moderate	Severe
Burning sensation in the sex organs	No	Mild	Moderate	Severe
Loss of interest in sex	No	Mild	Moderate	Severe
Problems with sexual functioning	No	Mild	Moderate	Severe
Increased sensitivity to noise	No	Mild	Moderate	Severe
Increased sensitivity to light	No	Mild	Moderate	Severe
Increased sensitivity to smells or odours	No	Mild	Moderate	Severe
Ringing in the ears	No	Mild	Moderate	Severe
Avoiding doing things or situations	No	Mild	Moderate	Severe
Pain, without swelling or redness, in several joints	No	Mild	Moderate	Severe
Joint stiffness	No	Mild	Moderate	Severe
Feeling that your bowel movement is not finished	No	Mild	Moderate	Severe
Changeable bowel function (mixture of diarrhoea / constipation)	No	Mild	Moderate	Severe
General muscle aches or pains	No	Mild	Moderate	Severe
Loss of balance or coordination	No	Mild	Moderate	Severe
Difficulty speaking	No	Mild	Moderate	Severe
Low back pain	No	Mild	Moderate	Severe
Night sweats which soak the bed sheets	No	Mild	Moderate	Severe
Feeling feverish	No	Mild	Moderate	Severe
Tender or painful swelling of lymph glands in neck, armpit or groin	No	Mild	Moderate	Severe
Loss of, or decrease in, appetite	No	Mild	Moderate	Severe
Nausea	No	Mild	Moderate	Severe
Vomiting	No	Mild	Moderate	Severe
Distressing dreams	No	Mild	Moderate	Severe
Stomach bloating	No	Mild	Moderate	Severe
Unintended weight gain greater than 4kg	No	Mild	Moderate	Severe
Unintended weight loss greater than 4kg	No	Mild	Moderate	Severe

2. Which of the following do you have?

- DVA Gold Card (physical, mental)
- DVA White Card (physical, mental)
- Private health insurance - with extras
- Private health insurance - without extras
- Health care concession card
- None of these

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Doctor Diagnosed Medical Conditions

1. Please indicate by shading the circle how your physical health has been over the past year.

Very poor ○ Poor ○ Fair ○ Good ○ Excellent

2. We would like to know whether a medical doctor has **diagnosed you with**, or **treated you for**, any of the following medical problems or conditions. If YES, please indicate the year you were first diagnosed, whether you have been treated by a medical doctor for this condition in the **past year**, and whether you have taken any medications for the condition in the **past month**. This could include medications requiring a prescription or other medications bought 'over the counter' such as Ventolin, Aspirin, and Voltaren.

			IF YES		
	NO	YES	YEAR DIAGNOSED	TREATED BY A DOCTOR IN THE PAST YEAR	MEDICATION TAKEN IN PAST MONTH
High blood pressure	○	○		No ○ Yes	No ○ Yes
Heart attack / Myocardial infarction	○	○		No ○ Yes	No ○ Yes
Angina	○	○		No ○ Yes	No ○ Yes
High cholesterol	○	○		No ○ Yes	No ○ Yes
Stroke	○	○		No ○ Yes	No ○ Yes
Epilepsy	○	○		No ○ Yes	No ○ Yes
Migraines	○	○		No ○ Yes	No ○ Yes
Motor neurone disease	○	○		No ○ Yes	No ○ Yes
Multiple sclerosis	○	○		No ○ Yes	No ○ Yes
Pneumonia	○	○		No ○ Yes	No ○ Yes
Stomach or duodenal ulcers	○	○		No ○ Yes	No ○ Yes
Colitis / Crohn's disease	○	○		No ○ Yes	No ○ Yes
Irritable Bowel Syndrome (IBS)	○	○		No ○ Yes	No ○ Yes
Chronic Obstructive Pulmonary Disease (COPD)	○	○		No ○ Yes	No ○ Yes
Hepatitis	○	○		No ○ Yes	No ○ Yes
Cirrhosis of the liver	○	○		No ○ Yes	No ○ Yes
Polyp/s in the bowel	○	○		No ○ Yes	No ○ Yes
Kidney disease e.g. stones, infection, bleeding	○	○		No ○ Yes	No ○ Yes
Diabetes	○	○		No ○ Yes	No ○ Yes
Temporomandibular Joint (TMJ) Dysfunction	○	○		No ○ Yes	No ○ Yes
Fibrositis or Fibromyalgia	○	○		No ○ Yes	No ○ Yes
Traumatic Brain Injury	○	○		No ○ Yes	No ○ Yes
Sinus problems	○	○		No ○ Yes	No ○ Yes

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Doctor Diagnosed Medical Conditions

	NO	YES	IF YES: YEAR DIAGNOSED	TREATED BY A DOCTOR IN THE PAST YEAR	MEDICATION TAKEN IN PAST MONTH
Hearing loss	○	○		○ No ○ Yes	○ No ○ Yes
Dermatitis	○	○		○ No ○ Yes	○ No ○ Yes
Eczema	○	○		○ No ○ Yes	○ No ○ Yes
Psoriasis	○	○		○ No ○ Yes	○ No ○ Yes
Malignant melanoma	○	○		○ No ○ Yes	○ No ○ Yes
Other skin cancer e.g. squamous cell or basal cell skin cancers	○	○		○ No ○ Yes	○ No ○ Yes
Other kind of cancer, tumour or malignancy (please specify type)	○	○		○ No ○ Yes	○ No ○ Yes
Chronic Fatigue Syndrome	○	○		○ No ○ Yes	○ No ○ Yes
Impotence	○	○		○ No ○ Yes	○ No ○ Yes
Sleep apnoea	○	○		○ No ○ Yes	○ No ○ Yes
Carpal Tunnel Syndrome	○	○		○ No ○ Yes	○ No ○ Yes
Gout	○	○		○ No ○ Yes	○ No ○ Yes
Arthritis	○	○		○ No ○ Yes	○ No ○ Yes
Rheumatoid arthritis	○	○		○ No ○ Yes	○ No ○ Yes
Other inflammatory arthritis e.g. ankylosing spondylitis, psoriatic arthritis, Reiter's Syndrome	○	○		○ No ○ Yes	○ No ○ Yes
Osteoarthritis	○	○		○ No ○ Yes	○ No ○ Yes

If YES to doctor diagnosed or treated osteoarthritis, please indicate main body site/s that this has been a problem at:

○ Neck ○ Shoulder ○ Elbow ○ Hand ○ Lower back ○ Hip ○ Knee ○ Ankle ○ Other:

Osteoporosis	○	○		○ No ○ Yes	○ No ○ Yes
Chronic low back pain	○	○		○ No ○ Yes	○ No ○ Yes
Chronic neck pain	○	○		○ No ○ Yes	○ No ○ Yes
Any other musculoskeletal condition (please specify type)	○	○		○ No ○ Yes	○ No ○ Yes

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Doctor Diagnosed Medical Conditions

	YEAR DIAGNOSED	TREATED BY A DOCTOR IN THE PAST YEAR	MEDICATION TAKEN IN PAST MONTH
Please list any other medical problems or conditions which a medical doctor has diagnosed you with, or treated you for?			
_____		○ No ○ Yes	○ No ○ Yes
_____		○ No ○ Yes	○ No ○ Yes
_____		○ No ○ Yes	○ No ○ Yes

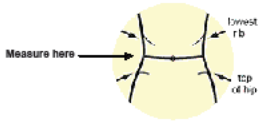
Height, Weight, Waist and Hip Circumference

We would now like you to measure your height, your weight using scales and to measure your waist and hip circumference using the tape measure supplied. So that measurements are collected in a standard way for all study participants, please follow the given instructions.

1. How tall are you? Please measure your height, with shoes or boots removed, as the maximum distance from the floor to the vertex of your head to the nearest centimetre. ☐☐☐ cm

2. Please weigh yourself using scales. How much do you weigh in light clothing without shoes, to the nearest kg? ☐☐☐ kg

3. **For an accurate waist measurement:**
   - Stand comfortably straight up, weight evenly distributed across both legs, feet 25-30 cm apart.
   - Measure directly over your skin or no more than one item of light clothing.
   - Have the tape measure fitting snug, but not compressing the skin.
   - Take the measurement after breathing out normally.
   - Measure at the halfway point between your lowest rib and the top of your hipbone. This will be rougly in-line with your belly button.

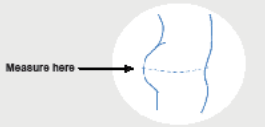


   - At "Reading 1" below, record your waist measurement in centimetres (cm) to one decimal place (nearest millimetre).
   - Repeat and record your waist measurement at Reading 2.

For example, if your waist measurement is 95cm and 6mm, record it as: ☐9☐5.☐6 cm

Waist Reading 1 ☐☐☐.☐ cm Waist Reading 2 ☐☐☐.☐ cm

4. **For an accurate hip measurement:**
   - Stand comfortably straight up, feet together, with your muscles relaxed.
   - Measure directly over your skin or no more than one item of light clothing.
   - Hold the tape horizontally, have the tape measure snug, but not compressing the skin.
   - Measure at the point where your buttocks extend the maximum when viewed from the side. Any fatty aprons should be excluded from the measurement.



   - Record your measurement in centimetres (cm) to one decimal place (nearest millimetre) at Reading 1 below.
   - Repeat and record your hip measurement at Reading 2.

Hip Reading 1 ☐☐☐.☐ cm Hip Reading 2 ☐☐☐.☐ cm

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Other Health Information or Comments

1. In addition to the information you have provided in this questionnaire already, are there other important health or well-being concerns or additional comments you have? ○ Yes ○ No

If YES: please give details in the space provided here.

Telephone Interview

1. This study includes an important over-the-phone interview about your psychological health.

Please provide the most appropriate phone number/s to contact you on to arrange that interview.

1: 2:

2. Please indicate the best days and times to call you about the interview appointment.

☐ weekdays- ○ morning ○ afternoon ○ evening

☐ weekends- ○ morning ○ afternoon ○ evening

Please provide more information if necessary :

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Alternative Contact Information

1. In case you move and we lose contact with you, please give us the names of up to two relatives or friends who may be able to tell us where you are. These should be people who are at long-term addresses but who are not living with you. We would only use these alternative contacts in the event that we could not contact you at the address you have provided.

FIRST ALTERNATIVE CONTACT:

Surname

Given names

Street address

Suburb/Town

State Postcode

Country

Phone number

Email address

SECOND ALTERNATIVE CONTACT:

Surname

Given names

Street address

Suburb/Town

State Postcode

Country

Phone number

Email address

THANK YOU FOR PARTICIPATING IN THE STUDY. PLEASE RETURN THIS QUESTIONNAIRE WITH THE SIGNED CONSENT FORM IN THE REPLY PAID ENVELOPE PROVIDED.

RESULTS FROM THIS STUDY WILL BE PUBLISHED ON THE DVA / DEFENCE WEBSITES ON COMPLETION OF THE STUDY.

Appendix B Results from pooled multiple imputation datasets

Table B-0-1 Predisposing, need and enabling factors associated with 12-month mental health service use (pooled results, N=11,587)

		Model 1 (Demographic) OR (95% CI)	**Model 2 (Model 1 + Need)** OR (95% CI)	**Model 3 (Model 2 + Functioning)** OR (95% CI)	**Model 4 (Model 3 + Beliefs)** OR (95% CI)	**Model 5 (Model 4 + Enabling)** OR (95% CI)
Predisposing demographics						
Sex *(Ref. Female)*						
	Male	**0.60 (0.54, 0.67)*** **	**0.61 (0.53, 0.69)*** **	**0.61 (0.54, 0.7)*** **	**0.62 (0.54, 0.71)*** **	**0.65 (0.56, 0.74)*** **
Age		1.00 (0.99, 1.00)	1.00 (0.99, 1.01)	1.00 (1.00, 1.01)	1.00 (0.99, 1.01)	1.00 (0.99, 1.00)
Relationship Status *(Ref. In a Relationship)*						
	Single	**1.34 (1.19, 1.51)*** **	**1.20 (1.05, 1.38)** **	**1.24 (1.08, 1.43)** **	**1.25 (1.08, 1.45)** **	**1.25 (1.07, 1.46)** **
Transition status *(Ref. Transitioned)*						
	Permanent	**0.84 (0.76, 0.92)*** **	**1.55 (1.38, 1.74)*** **	**1.55 (1.37, 1.75)*** **	**1.45 (1.28, 1.65)*** **	**1.46 (1.28, 1.66)*** **
Service *(Ref. Air Force)*						
	Army	1.07 (0.96, 1.18)	**0.85 (0.75, 0.96)** **	**0.83 (0.73, 0.94)** **	**0.84 (0.74, 0.96)** **	**0.85 (0.74, 0.96)***
	Navy	0.96 (0.85, 1.09)	**0.83 (0.72, 0.96)***	**0.84 (0.72, 0.96)***	**0.83 (0.72, 0.96)***	**0.83 (0.71, 0.96)***
Rank (*Ref. Officer)*						
	SNCO	**1.27 (1.14, 1.41)*** **	1.11 (0.99, 1.26)	1.10 (0.97, 1.24)	1.11 (0.98, 1.26)	1.13 (0.99, 1.28)
	JNCO/OR	**1.38 (1.22, 1.56)*** **	**1.22 (1.05, 1.41)** **	**1.18 (1.01, 1.36)***	**1.18 (1.01, 1.37)***	**1.19 (1.02, 1.39)***
Need						
Perceived Need			**7.95 (6.44, 9.81)*** **	**7.00 (5.67, 8.65)*** **	**6.42 (5.18, 7.96)*** **	**6.40 (5.16, 7.93)*** **
Depression			**1.02 (1.00, 1.04)***	0.99 (0.97, 1.01)	1.00 (0.98, 1.02)	1.00 (0.98, 1.02)
Posttraumatic stress			**1.03 (1.03, 1.04)*** **	**1.02 (1.01, 1.03)*** **	**1.02 (1.02, 1.03)*** **	**1.02 (1.02, 1.03)*** **
Anxiety			**1.04 (1.02, 1.07)*** **	**1.04 (1.02, 1.06)*** **	**1.03 (1.01, 1.05)** **	**1.03 (1.01, 1.05)** **
Alcohol Use			1.00 (0.99, 1.01)	1.01 (1,.00 1.02)	1.01 (1.00, 1.02)	1.01 (1.00, 1.02)

	Model 1 (Demographic) OR (95% CI)	Model 2 (Model 1 + Need) OR (95% CI)	Model 3 (Model 2 + Functioning) OR (95% CI)	Model 4 (Model 3 + Beliefs) OR (95% CI)	Model 5 (Model 4 + Enabling) OR (95% CI)
Disability					
Work			**1.16 (1.13, 1.19)*** **	**1.14 (1.10, 1.17)*** **	**1.14 (1.10, 1.17)*** **
Social			0.99 (0.95, 1.02)	0.99 (0.95, 1.03)	0.99 (0.96, 1.03)
Family			**1.06 (1.02, 1.10)****	**1.07 (1.03, 1.10)*** **	**1.06 (1.02, 1.10)*** **
Predisposing beliefs					
Resilience				**0.64 (0.59, 0.69)*** **	**0.63 (0.57, 0.68)*** **
Service Concerns				**0.96 (0.94, 0.97)*** **	**0.96 (0.94, 0.98)*** **
Self-Stigma				**0.90 (0.88, 0.92)*** **	**0.90 (0.88, 0.92)*** **
Anticipated Stigma				**1.04 (1.02, 1.05)*** **	**1.04 (1.02, 1.05)*** **
Enabling - Social Support					
Friend +ve					**1.07 (1.03, 1.11)****
Friend -ve					0.99 (0.95, 1.02)
Family +ve					1.00 (0.96, 1.05)
Family -ve					1.02 (0.99, 1.05)

Abbreviations: MHSU, Mental Health Service Use; SNCO, Senior Non-Commissioned Officer; JNCO/OR, Junior Non-Commissioned Officer/Other Rank
**p<.05, **p<.01, ***p<.001*

Table B-0-2 Predisposing, need and enabling factors associated with 12-month mental health service use from GP or mental health professional (pooled results, N=11,587)

	Mental Health Service			
	GP		Mental health professional	
	OR (95% CI)	***p***	**OR (95% CI)**	***p***
Sex				
(Ref. Female)				
Male	0.61 (0.53, 0.71)	*<.001*	0.67 (0.59, 0.77)	*<.001*
Age	1.01 (1, 1.01)	*0.061*	1.00 (0.99, 1.00)	*0.251*
Relationship Status				
(Ref. In a Relationship)				
Single	1.29 (1.1, 1.51)	*0.001*	1.25 (1.08, 1.45)	*0.004*
Transition status				
(Ref. Transitioned)				
Permanent	1.49 (1.3, 1.72)	*<.001*	1.64 (1.44, 1.88)	*<.001*
Service				
(Ref. Air Force)				
Navy	0.79 (0.68, 0.90)	*<.001*	0.87 (0.76, 0.99)	*0.030*
Army	0.82 (0.70, 0.96)	*0.014*	0.86 (0.74, 0.99)	*0.041*
Rank				
(*Ref. Officer)*				
SNCO	1.21 (1.05, 1.39)	*0.009*	1.10 (0.97, 1.26)	*0.134*
JNCO/OR	1.35 (1.14, 1.58)	*<.001*	1.15 (0.99, 1.34)	*0.067*
Perceived Need	7.00 (5.62, 8.72)	*<.001*	7.07 (5.90, 8.48)	*<.001*
Depression	1.00 (0.98, 1.02)	*0.797*	1.00 (0.98, 1.01)	*0.604*
Posttraumatic stress	1.02 (1.01, 1.03)	*<.001*	1.02 (1.02, 1.03)	*<.001*
Anxiety	1.03 (1.01, 1.06)	*0.003*	1.03 (1.01, 1.05)	*0.005*
Alcohol Use	1.01 (1.00, 1.02)	*0.026*	1.01 (1.00, 1.02)	*0.084*
Disability				
Work	1.14 (1.11, 1.18)	*<.001*	1.15 (1.12, 1.18)	*<.001*
Social	1.00 (0.95, 1.04)	*0.819*	0.99 (0.95, 1.03)	*0.477*
Family	1.07 (1.03, 1.11)	*0.001*	1.07 (1.03, 1.11)	*0.001*
Resilience	1.05 (1.03, 1.07)	*<.001*	1.04 (1.03, 1.06)	*<.001*
Service Concerns	0.65 (0.60, 0.72)	*<.001*	0.62 (0.57, 0.68)	*<.001*
Self-Stigma	0.95 (0.94, 0.97)	*<.001*	0.95 (0.94, 0.97)	*<.001*
Anticipated Stigma	0.91 (0.90, 0.93)	*<.001*	0.90 (0.88, 0.92)	*<.001*
Social Support				
Friend +ve	1.05 (1.01, 1.10)	*0.021*	1.07 (1.03, 1.11)	*0.002*
Friend -ve	1.00 (0.97, 1.04)	*0.869*	0.98 (0.95, 1.02)	*0.271*
Family +ve	1.00 (0.95, 1.04)	*0.839*	1.01 (0.96, 1.05)	*0.812*
Family -ve	1.01 (0.98, 1.04)	*0.345*	1.02 (1.00, 1.05)	*0.096*

Abbreviations: MHSU, Mental Health Service Use; SNCO, Senior Non-Commissioned Officer; JNCO/OR, Junior Non-Commissioned Officer/Other Rank

Table B-0-3 Predisposing, need and enabling factors relationship to 12-month reach of e-mental health modalities, using pooled results from multiple imputation datasets

	Website		**Telephone Helpline**		**Social Media**		**Internet Treatment**		**Smart Phone App**	
	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*
Predisposing demographics										
Sex *(Ref. Female)*										
Male	0.89 (0.80, 1.01)	*0.062*	**0.85 (0.72, 0.99)**	***0.033***	**0.68 (0.59, 0.79)**	***<.001***	**0.66 (0.47, 0.92)**	***0.014***	1.04 (0.84, 1.28)	*0.730*
Age (Ref. 18-27)										
28-37	1.07 (0.90, 1.29)	*0.439*	**1.53 (1.17, 1.99)**	***0.002***	0.98 (0.79, 1.21)	*0.844*	1.01 (0.60, 1.72)	*0.956*	0.99 (0.73, 1.35)	*0.969*
38-47	1.19 (0.99, 1.44)	*0.070*	**1.56 (1.19, 2.06)**	***0.002***	0.98 (0.78, 1.23)	*0.848*	0.91 (0.52, 1.59)	*0.728*	1.00 (0.72, 1.38)	*0.987*
48-57	1.31 (1.07, 1.59)	*0.009*	1.24 (0.92, 1.66)	*0.160*	0.70 (0.54, 0.91)	*0.007*	1.10 (0.61, 2.00)	*0.750*	0.72 (0.51, 1.03)	*0.072*
58+	1.48 (1.15, 1.90)	*0.003*	1.35 (0.92, 2.00)	*0.129*	0.83 (0.59, 1.15)	*0.261*	1.17 (0.54, 2.54)	*0.686*	0.61 (0.37, 1.01)	*0.053*
Relationship Status *(Ref. In a Relationship)*										
Single	0.90 (0.79, 1.02)	*0.087*	0.91 (0.77, 1.08)	*0.276*	0.95 (0.81, 1.12)	*0.555*	0.87 (0.60, 1.26)	*0.459*	0.93 (0.75, 1.16)	*0.508*
Transition status *(Ref. Transitioned)*										
Permanent	1.09 (0.98, 1.21)	*0.101*	**2.07 (1.78, 2.42)**	***<.001***	**0.70 (0.62, 0.81)**	***<.001***	**1.42 (1.02, 1.98)**	***0.036***	**1.41 (1.16, 1.71)**	***<.001***
Service *(Ref. Air Force)*										
Army	1.10 (0.99, 1.22)	*0.068*	1.07 (0.93, 1.24)	*0.334*	**1.25 (1.08, 1.44)**	***0.002***	0.95 (0.69, 1.31)	*0.770*	**1.26 (1.04, 1.53)**	***0.017***
Navy	1.14 (1.01, 1.28)	*0.036*	1.04 (0.88, 1.23)	*0.640*	1.10 (0.93, 1.30)	*0.270*	0.93 (0.64, 1.35)	*0.691*	1.06 (0.84, 1.33)	*0.632*
Rank (*Ref. Officer)*										
SNCO	1.06 (0.96, 1.18)	*0.249*	**1.28 (1.11, 1.49)**	***<.001***	**1.43 (1.23, 1.66)**	***<.001***	1.10 (0.79, 1.53)	*0.578*	0.85 (0.70, 1.03)	*0.094*
JNCO/OR	0.95 (0.84, 1.07)	*0.409*	**1.41 (1.20, 1.67)**	***<.001***	**1.55 (1.31, 1.82)**	***<.001***	1.13 (0.77, 1.65)	*0.532*	0.85 (0.69, 1.06)	*0.147*
Need										
Perceived Need	**1.75 (1.57, 1.95)**	***<.001***	**2.08 (1.76, 2.45)**	***<.001***	**1.25 (1.08, 1.45)**	***0.003***	**2.46 (1.63, 3.71)**	***<.001***	**2.42 (1.91, 3.07)**	***<.001***
Depression	0.99 (0.98, 1.01)	*0.453*	**0.98 (0.96, 1.00)**	***0.046***	1.01 (0.99, 1.03)	*0.534*	1.00 (0.96, 1.04)	*0.989*	0.99 (0.96, 1.01)	*0.339*
Posttraumatic stress	**1.02 (1.02, 1.03)**	***<.001***	**1.02 (1.01, 1.03)**	***<.001***	1.01 (1.00, 1.01)	*0.070*	1.01 (1.00, 1.03)	*0.154*	**1.03 (1.02, 1.04)**	***<.001***
Anxiety	1.01 (0.99, 1.02)	*0.522*	1.02 (1.00, 1.04)	*0.096*	1.00 (0.98, 1.03)	*0.746*	1.03 (0.98, 1.08)	*0.279*	1.01 (0.98, 1.04)	*0.507*
Alcohol Use	0.99 (0.98, 1.00)	*0.061*	1.00 (0.99, 1.01)	*0.902*	1.00 (0.99, 1.01)	*0.784*	1.01 (0.99, 1.04)	*0.262*	1.01 (0.99, 1.02)	*0.287*

	Website		**Telephone Helpline**		**Social Media**		**Internet Treatment**		**Smart Phone App**	
	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*
Disability										
Work	**1.04 (1.01, 1.07)**	***0.007***	1.02 (0.98, 1.05)	*0.334*	1.00 (0.97, 1.04)	*0.782*	0.96 (0.90, 1.03)	*0.305*	1.03 (0.99, 1.08)	*0.119*
Social	**1.04 (1.01, 1.08)**	***0.013***	1.01 (0.97, 1.06)	*0.645*	**1.05 (1.01, 1.10)**	***0.028***	1.01 (0.91, 1.11)	*0.855*	1.03 (0.97, 1.09)	*0.312*
Family	1.01 (0.97, 1.04)	*0.716*	**1.07 (1.03, 1.12)**	***<.001***	1.00 (0.96, 1.05)	*0.836*	1.07 (0.98, 1.17)	*0.149*	0.99 (0.94, 1.04)	*0.642*
Predisposing beliefs										
Resilience	**0.85 (0.79, 0.91)**	***<.001***	**0.87 (0.79, 0.95)**	***0.004***	0.92 (0.83, 1.01)	*0.070*	0.83 (0.67, 1.03)	*0.096*	**0.84 (0.74, 0.95)**	***0.005***
Service Concerns	1.01 (1.00, 1.02)	*0.204*	0.99 (0.97, 1.01)	*0.490*	**1.03 (1.01, 1.04)**	***0.006***	0.99 (0.95, 1.03)	*0.541*	1.01 (0.98, 1.03)	*0.613*
Self-Stigma	**0.98 (0.96, 0.99)**	***0.007***	**0.97 (0.95, 0.99)**	***0.007***	0.99 (0.97, 1.01)	*0.374*	1.02 (0.97, 1.07)	*0.473*	**0.96 (0.93, 0.98)**	***0.002***
Anticipated Stigma	1.01 (1.00, 1.02)	*0.192*	1.00 (0.98, 1.02)	*0.961*	0.99 (0.98, 1.01)	*0.282*	0.97 (0.94, 1.01)	*0.141*	1.02 (0.99, 1.04)	*0.139*
Enabling - Social Support										
Friend +ve	1.02 (0.99, 1.06)	*0.187*	1.02 (0.98, 1.07)	*0.310*	**1.07 (1.03, 1.12)**	***0.002***	1.02 (0.92, 1.13)	*0.693*	**1.06 (1.00, 1.13)**	***0.035***
Friend -ve	**1.06 (1.03, 1.09)**	***<.001***	1.02 (0.98, 1.06)	*0.272*	**1.04 (1.00, 1.08)**	***0.029***	1.05 (0.96, 1.14)	*0.271*	1.02 (0.97, 1.07)	*0.403*
Family +ve	1.00 (0.97, 1.04)	*0.798*	0.98 (0.94, 1.03)	*0.510*	0.96 (0.92, 1.01)	*0.114*	0.95 (0.86, 1.05)	*0.346*	0.94 (0.89, 1.00)	*0.052*
Family -ve	1.02 (1.00, 1.05)	*0.060*	**1.05 (1.02, 1.08)**	***0.003***	**1.03 (1.00, 1.06)**	***0.048***	0.97 (0.91, 1.04)	*0.392*	0.97 (0.93, 1.01)	*0.140*

Table B-0-4 Parameter estimates contrasting professional service use compared to online only, combination and no help-seeking, using pooled multiple imputation datasets

	None	**Online only**	**Both**
	MOR (95%CI)	MOR (95%CI)	MOR (95%CI)
Sex *(Ref. Female)*			
Male	**1.56 (1.35, 1.81)**	1.18 (0.97, 1.44)	0.85 (0.68, 1.05)
Age (*Ref. 58+*)			
18-27	0.85 (0.61, 1.18)	1.43 (0.92, 2.20)	1.17 (0.70, 1.95)
28-37	0.81 (0.61, 1.07)	1.28 (0.88, 1.86)	1.46 (0.94, 2.26)
38-47	0.83 (0.63, 1.09)	1.23 (0.85, 1.78)	1.41 (0.92, 2.17)
48-57	0.92 (0.70, 1.22)	1.03 (0.70, 1.51)	1.04 (0.66, 1.63)
Transition status *(Ref. Transitioned)*			
Permanent	**0.73 (0.64, 0.84)**	**0.63 (0.53, 0.76)**	0.89 (0.72, 1.09)
Service *(Ref. Air Force)*			
Navy	**1.15 (1.00, 1.32)**	**1.51 (1.25, 1.82)**	1.16 (0.94, 1.43)
Army	**1.21 (1.03, 1.42)**	**1.29 (1.03, 1.62)**	1.12 (0.87, 1.43)
Need			
Perceived need	**6.96 (5.63, 8.61)**	**4.68 (3.62, 6.04)**	0.96 (0.44, 2.09)
Posttraumatic stress	**0.97 (0.96, 0.97)**	**0.99 (0.98, 1.00)**	**1.02 (1.01, 1.03)**
Disability - work	**0.85 (0.83, 0.87)**	**0.89 (0.86, 0.92)**	**1.04 (1.01, 1.08)**
Predisposing beliefs			
Resilience	**1.68 (1.53, 1.84)**	**1.46 (1.28, 1.65)**	0.91 (0.8, 1.03)
Services concerns	**1.03 (1.01, 1.05)**	**1.07 (1.05, 1.10)**	1.01 (0.98, 1.03)
Self-Stigma	**1.12 (1.09, 1.14)**	**1.09 (1.06, 1.12)**	1.01 (0.98, 1.04)
Anticipated Stigma	**0.96 (0.95, 0.98)**	**0.96 (0.94, 0.98)**	1.00 (0.98, 1.02)
Enabling Social Support			
Friend +ve support	**0.94 (0.90, 0.98)**	0.99 (0.94, 1.05)	1.04 (0.98, 1.11)

Abbreviations: MOR, Multinomial odds ratio