KING'S College LONDON

Experiences of moral injury in UK military veterans


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Contents

King's Centre for Military Health Research, King's College London

The King's Centre for Military Health Research (KCMHR – formerly the Gulf War Illness Research Unit) was launched in 2004 as a joint initiative between the Institute of Psychiatry, Psychology and Neuroscience (IOPPN) and the Department of War Studies, King's College London. KCMHR draws upon the expertise of a multi-disciplinary team led by Professor Sir Simon Wessely and Professor Nicola T. Fear. KCMHR carries out research investigating military life using both quantitative and qualitative methods. Data from our studies have been used to analyse various military issues, and papers have been published in peer reviewed, scientific journals. Our findings are regularly reported in the press and have also been used to inform military, charity and governmental policies

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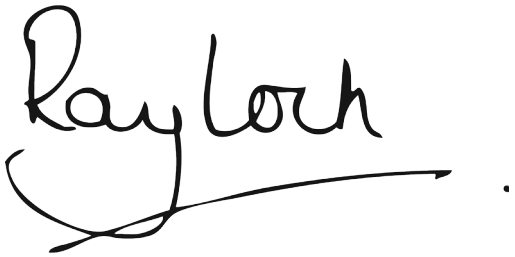
Foreword

Given the long history of human conflict, it is likely that moral injury has been suffered for as long as we have possessed a moral compass. However, as a term, let alone a definition, moral injury is not well known. Indeed, when the Trust first considered funding this project, most of the individuals we consulted confessed ignorance of the topic. Yet given the nature of post-Second World War conflicts in which the United Kingdom's Armed Forces have been engaged, there can be little doubt that moral injuries will have occurred. It is important to recognise too that they are not limited to the foot soldier. Increasingly sophisticated sensors allow distanced combatants, such as bomber crew, or long-range missile or remotely-piloted air system operators, to be viscerally exposed to warfare. What this latter category often lack though is exposure to trauma, where over the last two decades 'war amongst the people' has been the norm.

It is this intersectionality, and in some cases its absence, that provides this study with some interesting and potentially impactful findings. But the research into moral injury reaches far beyond its contribution to post-traumatic stress disorder. Moral injury is not just a faddish term; it is a real condition that can lead to related mental health issues, relationship difficulties and poorer wellbeing for both ex-Service personnel and their families. Given that these are the very people who Forces in Mind Trust was established to help lead fulfilled civilian lives, this stands out as an important piece of research that begins the journey of gaining a deeper understanding which will lead to more effective support and ultimately better outcomes. That we have already decided to fund the next stage, namely a feasibility study of a psychological treatment for morally injured UK veterans, underlines the importance of the issue, and the determination of the Trust to deploy its evidence base to achieve systemic changes.



Air Vice-Marshal Ray Lock CBE
Chief Executive, Forces in Mind Trust

Executive Summary

Background

For many years, researchers have looked at the impact of traumatic events which threaten life and limb and may contribute towards the onset of post-traumatic stress disorder (PTSD). But until recently, feelings of deep shame and guilt, stemming from doing, or not preventing, incidents that one believes are "wrong", and which are often a feature of trauma exposure, have not been studied to any great extent.

Moral injury can be defined as the psychological distress that results from actions, or the lack of them, which violate one's moral or ethical code (1). Unlike PTSD, moral injury is not a mental illness. However, moral injury can lead to negative thoughts about oneself or others (for example, "I am a terrible person" or "my colleagues don't care about me") as well as deep feelings of shame, guilt or disgust. These, in turn, can contribute to the development of mental health difficulties, including depression, PTSD and suicidal ideation (2).

Moral injury is not unique to any particular profession. However, to date the majority of the evidence of moral injury, and its impact on wellbeing, has stemmed from studies conducted with US military personnel and veterans. Research in this population has shown moral injury can be caused by a range of experiences including committing harmful acts, failing to stop the harmful acts of others or bearing witness to human suffering (3). These studies have shown that moral injury can be linked to poor mental health outcomes. Despite this, a formal investigation of military-related moral injury exposure and its impact on wellbeing has yet to be conducted in the UK. There is currently no manualised treatment for moral injury-related mental health difficulties and the experiences of clinicians in providing care to those affected by moral injury remains poorly understood. Given the body of evidence supporting the existence and adverse impact of moral injury on psychological wellbeing in Armed Forces (AF) personnel/veterans in other countries, and given the specific culture of the UK military, an investigation of moral injury in UK AF context is overdue.

Research aims

The aims of this research were to examine from both a veteran and clinician perspective:

1) The types of experiences which may lead to moral injury in UK military veterans;
2) The potential risk and protective factors for mental health difficulties following moral injury;
3) The impact of moral injury on veteran mental health and wellbeing;
4) The perceptions of (need for) support following moral injury; and
5) The development of a scale to assess the exposure to and impact of military moral injury.

Methods

Semi-structured qualitative interviews were carried out with 30 UK AF veterans who self-reported experiences of traumatic events, both potentially morally injurious or not, during military service. An online open response questionnaire was also completed by 204 UK AF veterans. Participants were considered to have exposure to moral injury if the self-reported event was an act of omission or commission which violated their ethical or moral code and where the primary emotion expressed was of guilt/shame. Participants were classified as having experienced a trauma-only incident if the event described was consistent with a well-accepted definition of what a traumatic event is (DSM-5 Criterion A for PTSD) and participants did not describe an act of commission/omission which violated their moral code (4). Participants were classified as 'mixed' if elements of both traumatic and morally injurious experiences were expressed; for example, the event was both potentially life-threatening and morally injurious. Fifteen clinicians who provide psychological treatment to UK AF personnel/veterans with moral injury-related mental health difficulties were also interviewed. Interview and open response questions focused on the experience of morally injurious or traumatic events, the impact of such events on wellbeing and daily functioning, possible risk and protective factors for military moral injury and perceptions of (need for) support following moral injury.

To develop the scale to assess exposure to and impact of military moral injury, we carried out a review of existing measures of moral injury exposure and psychological responses and examined data collected from participating UK AF veterans and clinicians who provide psychological treatment to UK AF personnel/veterans affected by moral injury. The scale development followed an iterative process where a large number of items were repeatedly considered by the research team, with items removed or revised until the final scale was arrived at.

Results

The results of the online open response questionnaire and qualitative interviews yielded several key findings relating to the experience and impact of moral injury for UK AF veterans.

Key study findings

Events experienced by UK AF veterans can simultaneously be morally injurious and traumatic or life threatening.

Morally injurious experiences can lead to a clash between existing sets of values (e.g. military versus civilian) and this dissonance contributes towards negative cognitive and emotional responses.

Veterans reporting exposure to a morally injurious, 'mixed' and non-morally injurious traumatic event were significantly more likely to meet case criteria for probable PTSD, depression, anxiety and suicidal ideation than those who reported no challenging event during military service.

Several factors, including event type, a lack of social support, childhood adversity, unclear rules of engagement, being psychologically or emotionally unprepared, and transitioning to civilian life, were thought to increase vulnerability for experiencing distress following morally injurious events.

Our data suggest that individuals suffering from moral injuries may be highly reticent in speaking about them with friends or family, or indeed with clinicians, possibly because of the associated guilt or shame.

Clinicians thought that identifying moral injury related mental disorders often required taking a detailed trauma history and it would be likely that more cursory assessments would miss moral injuries which could consequently impair effective treatment provision.

Clinicians utilised a variety of standardised treatment approaches to address specific moral injury-related responses and appraisals but there was no clear consensus as to which approach was best.

Providing care for patients with moral injury was found to be distressing for some clinicians and clinical care teams providing treatment to patients affected by moral injury should have access to adequate peer support, clinical supervision and resources to safeguard their own wellbeing.

Moral injury-related mental health difficulties can adversely impact veteran family and occupational functioning.

The development of moral injury and potential risk and protective factors for distress

Veterans who encountered a potentially morally injurious event(s) (PMIE), such as witnessing human suffering or having a role in civilian/enemy combatant deaths, described experiencing moral dissonance, or a clash between concurrently held sets of values (e.g. military values versus civilian values), which provoked considerable psychological distress. Of particular interest is our finding that moral injury can be experienced by UK AF veterans following 'mixed' events that were both morally/ethically challenging as well as life threatening. This is notable as the majority of the moral injury literature thus far has not discussed or examined that moral injury can exist alongside more traditional PTSD. Several risk factors for experiencing distress following a PMIE, including unpreparedness, lack of social support, unclear rules of engagement, and experiences of childhood adversity, were also identified.

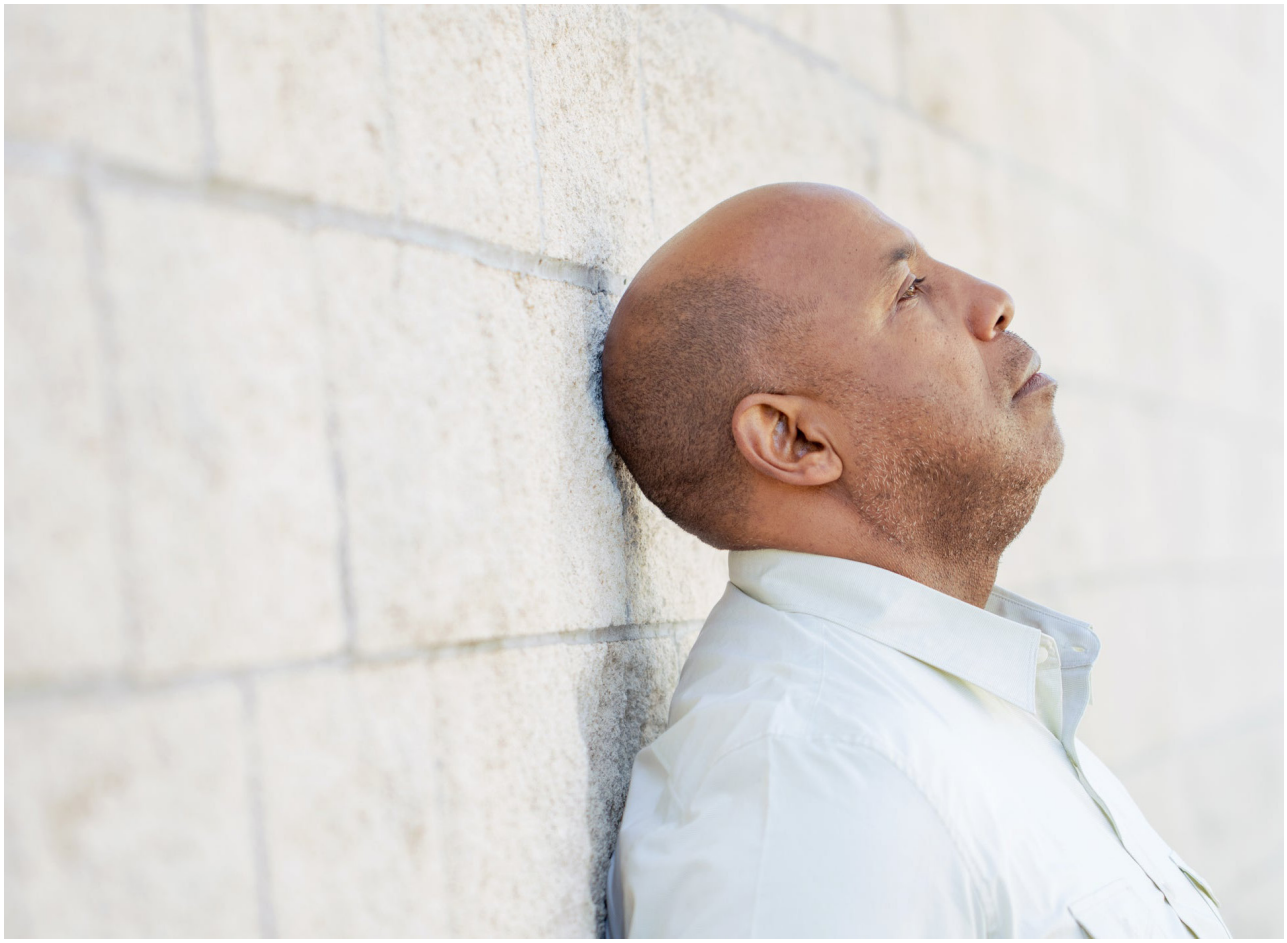
Impact of moral injury on mental health and wellbeing

Data from the online open response study showed that veterans who experienced morally injurious, 'mixed' or traumatic events were significantly more likely to meet case criteria for probable PTSD, depression, anxiety and suicidal ideation compared to veterans who did not report experiencing such challenging events during their military service.

Data from the qualitative interviews found that veterans' cognitions and responses differed following a PMIE compared to a traumatic, but not morally injurious, event which could have negative implications for daily functioning. Following a PMIE, veterans described primary symptoms of guilt, shame and worthlessness as well as secondary maladaptive responses such as poor self-care and risk taking. Conversely, non-morally injured veterans had primary responses more consistent with typical PTSD presentations, including a sense of current threat, low mood and anxiety. Markedly, individuals who had experienced a 'mixed' event (i.e. both morally injurious and threatening) described primary symptoms of anxiety, re-experiencing and hypervigilance alongside reactions more typical of moral injury such as guilt and shame. Morally injurious and 'mixed' experiences were also thought to affect veteran's social and occupational functioning, with many veterans reportedly withdrawing from family members and colleagues due to intense feelings of guilt, worthlessness and shame. Veterans experiencing moral injury-related distress often described difficulties securing and maintaining civilian employment.

Perceptions of support for moral injury-related difficulties

To address moral injury-related distress, the clinicians interviewed utilised a range of treatment approaches, including elements of schema therapy (e.g. integrative therapeutic model designed to address maladaptive schematic beliefs and interpersonal patterns that do not respond to first-line therapeutic approaches), compassion focused therapy and mindfulness. Exposure to potential moral injury was assessed by taking a comprehensive trauma history. Moreover, a number of difficulties in providing care to patients who had experienced a moral injury were described, including the management of challenging symptoms and the impact of providing such treatment on the clinicians own mental health. Taken together, these findings are novel and contribute preliminary evidence of how recovery following moral injury may occur, and - once this process is better understood - could potentially inform the development of future treatment for mental health problems arising from exposure to PMIE.



Implications

The results of this research project have considerable implications for the ways in which ex-military personnel and clinical care teams can be supported to ensure optimal psychological outcomes following exposure to potentially morally injurious events.

First, feeling unprepared for the emotional consequences of ethically challenging decision making may potentially be a risk factor for experiencing military-related moral injury. In the present study, tailored changes to pre-operational training and briefings were considered to have the potential to protect personnel from moral injury-related distress. It is possible that additional pre-deployment preparation about the ethically challenging decisions personnel may face and clarifications of the rules of engagement, as well as a tailored leader-led operational debrief following a PMIE, may help safeguard against moral injury-related distress. Further research is needed to explore the role such tailored briefings and guidance from the chain of command may play in preventing the development of moral injury.

Second, veterans with moral injury-related distress often described difficulties securing and maintaining civilian employment. Securing employment and establishing financial stability is a key part of a successful transition from the military; a useful adjunct to emerging treatments for morally injured veterans may therefore be to address issues surrounding barriers to long-term

employment (e.g. developing coping strategies to facilitate engagement with authority figures or learning new skills to manage workplace triggers). It may also be beneficial for industries with a large veteran population (e.g. those part of the Defence Employer Recognition Scheme) to consider the utility of forming veteran groups as an informal support network for their employees if they have not already done so.

Third, the qualitative results of this study show that experiences of PMIEs had considerable implications for veteran wellbeing which could significantly disrupt family functioning. Additional research is needed to explore how to best support the families of UK AF veterans experiencing moral injury–related mental health problems. As may be the case with post-service employment, moral injuries could lead veterans to consider themselves unworthy or undeserving of love and affection from their families which in turn could lead to detachment and isolation which would consequentially affect family relationships. It is possible that providing targeted advice and support, such as engaging families in treatment, facilitating PMIE disclosure and providing psychoeducation, may improve veteran and familial coping.

Fourth, in order to identify the presence of moral injury, clinicians took a comprehensive trauma history from patients and considered that less comprehensive history-taking would lead to a considerable potential for moral injury to be overlooked. Given the potential for patients to more readily speak about the threatening elements of mixed (PMIE/classic trauma) events over the shameful/guilty elements, our data suggest that taking a trauma history requires a careful and detailed enquiry about the true impact of traumatic events on psychological wellbeing to detect the presence of moral injury. Should moral injury be present, but not detected, this can impair treatment outcomes. A validated measure to assess patient exposure to PMIEs and moral injury-related distress may be helpful in improving the detection of moral injury as well as determining whether current treatment approaches are effectively addressing symptoms. The Moral Injury Scale (MORIS) developed in the present study, once validated, could help to fill this gap and address such uncertainty. The present study also found that clinicians utilised a variety of standardised treatment approaches to address specific maladaptive responses and appraisals. This result suggests that a more standardised protocol to deal with moral injury related distress is needed.

Finally, our findings indicate that providing care for patients with moral injury can be distressing for clinicians themselves. This may be as a result of frustration due to being unable to help patients, or because of the nature of the PMIEs they hear about. Our results also highlight that clinicians would value accessible training and resources on the identification and treatment of moral injury-related mental disorders. The development and distribution of such support may increase the confidence of clinicians working with patients following moral injury. These results have implications for organisations providing mental health support in ensuring that clinical care teams providing treatment to patients affected by moral injury have access to adequate peer support, clinical supervision and resources to safeguard their own wellbeing.

Conclusions

In keeping with the Armed Forces Covenant, understanding the potential implications of exposure to morally injurious experiences during military service on wellbeing is important for ensuring those who have served in the UK AF are at no disadvantage compared to the civilian population who have never served. By exploring the perceptions of the impact of moral injury on UK AF veteran wellbeing and daily functioning, this study represents a valuable first step in improving our knowledge and awareness of veterans' needs. This research study is also novel in that it evidences that events experienced by UK AF veterans can simultaneously be morally injurious and traumatic or life threatening, as well as highlighting the process by which moral injury may occur in UK AF veterans. This report illustrates the effect that morally injurious experiences can have on mental health, potential difficulties in identifying these sorts of injuries, and provides detailed insight into the approaches currently used to identify and treat UK military personnel and veterans affected by moral injury-related psychological problems. As such, the findings have several implications for informing preventative and intervention efforts to support veterans who have experienced a morally injurious event.

Introduction

What is moral injury?

Many professionals have to make challenging ethical or moral decisions in their line of work, including police officers, humanitarian aid workers, media professionals and military personnel. While decision-making is often likely to be in keeping with occupational codes of conduct, substantial psychological distress can be experienced when individuals perpetrate, witness or fail to prevent actions which transgress their core moral or ethical beliefs (1). Significant degrees of such distress have been termed 'moral injury.'

A wide range of events have been found to cause moral injury. Previous studies have found that morally injurious experiences generally cluster into acts of commission/ perpetration, acts of omission, or experiences of betrayal by trusted leaders/ colleagues (5). In a military context, examples of potentially morally injurious events (PMIEs) can include mistreating civilians or enemy combatants, being ordered to break rules of engagement, witnessing or failing to prevent harm or death, and disrespecting dead bodies (5–7).

How moral injury develops has been the focus of growing research attention in recent years. Notably, it is not the exposure to a morally injurious event that is thought to be central in the development of moral injury-related psychological problems. Rather, it is the way in which a person thinks about the event as they attempt to find meaning in what has happened that is key. Moral injury is theorised to result from the dissonance or incongruence which exists when a perceived transgression is profoundly inconsistent with one's ethical or moral beliefs (1). In the short term, this may lead to psychological distress (sometimes termed 'moral pain'(8)) which is characterised by strong feelings of shame and guilt. Individuals can experience associated negative thoughts about themselves or others and, behaviourally, they may withdraw from other people or act out of character (e.g. risk taking, self-harm, poor self-care).
The experience of such maladaptive responses following a PMIE can lead to the development of mental health difficulties, including posttraumatic stress disorder (PTSD), suicidality, anger, and depression (1,2,7). It should be stressed that 'moral injury' itself is not a mental health problem or diagnosis; rather, those who are adversely affected by PMIEs and experience a moral injury are at increased risk of developing psychological problems.

Emerging evidence indicates that the responses and symptom profiles following morally injurious events may be distinctive from those caused by other trauma types. For example, research (9,10) recently found military personnel who had faced life-threating trauma and developed PTSD had a symptom profile which primarily featured memory loss, nightmares, flashbacks and an exaggerated startle response. In contrast, the symptom profile of those affected by a PMIE has been found to include higher levels of guilt, anger, shame, depression and social isolation (3). Moreover,

different types of PMIEs (e.g. commission/perpetration, omission, betrayal by trusted others) may provoke distinct psychological responses. For example, Litz et al. (10) recently found that perpetration-based PMIEs were associated with greater levels of guilt, re-experiencing, and self-blame compared to life-threat traumas. This could suggest that individuals with mental health problems related to a moral injury may have distinct psychological responses and potentially have different treatment needs as a result.

To date, only one exploratory pilot study has examined the experiences and impact of moral injury in help-seeking UK military veterans (6). In this study, moral injury was found to have negative implications for veteran psychological wellbeing. Moral injury was found to adversely affect daily functioning, with several difficulties relating to employment described, including increased trouble coping with occupational stress and authority figures. Interpersonal difficulties were also found, with withdrawal from others often leading to relationship breakdown with spouses and children (11). However, this research was based on a small sample of treatment seeking military veterans (n=6) and did not examine how the experiences of veterans affected by moral injury compared to those of trauma-exposed but not morally injured veterans. Thus, the range of implications that moral injury may have for veteran wellbeing and how the cognitions, emotions and responses experienced following PMIEs compare to those encountered after a traumatic but not morally injurious event remain poorly understood.

How moral injury-related mental health problems are addressed in treatment

Accessing support for moral injury-related mental health difficulties may be challenging for a number of reasons. Given the nature of PMIEs, individuals with moral injury-related psychological problems may be particularly reluctant to seek formal support for their difficulties due to concerns about the potential social or legal consequences of disclosure (3). Additionally, feelings of shame and guilt are likely to deter help seeking as such feelings are often difficult to talk about, even in clinical settings. Moreover, standard psychological treatments may not work well for mental disorders caused by moral injury. For instance, some treatments for PTSD, such as prolonged exposure, which focus on exposing an individual to the emotions associated with a traumatic event without helping the individual make sense of these complex thoughts and emotions can potentially worsen symptoms in cases where moral injury has occurred (12).

The approaches clinicians use to treat moral injury-related mental health problems in a UK context has received limited research attention to date. Recent research found that clinicians describe using an amalgamation of several manualised PTSD treatments when caring for UK military veterans affected by moral injury (6). Although, as this study only included the views of four clinicians, all of whom worked at a centre specialising in veteran PTSD treatment, the generalisability of these findings may be limited. Promising early evidence for interventions for the treatment of moral injury-related mental health problems in US personnel and veterans has been reported (e.g. Acceptance

and Commitment therapy (8) Adaptive Disclosure (13)); though whether such approaches are indeed effective and whether they would be considered appropriate for use in UK personnel and veterans has not yet been explored. One challenge to simply taking US based therapeutic approaches for moral injury is that there are understood to be distinct differences in the way that US and UK troops engage with potential enemy forces on deployment. This is meaningful because such differences in the rules of engagement may have great relevance as to whether service personnel consider their actions, or the actions of others, to be morally wrong or not and hence potentially affect the development of moral injuries. Furthermore, US and UK troops also have access to markedly different health systems (e.g. Veteran Affairs Service vs National Health Service) which may have implications for the care those experiencing moral injury related mental health difficulties are offered.

Providing treatment to very distressed patients following traumatic and upsetting incidents can also be challenging for clinicians themselves. As moral injuries often involve strong negative emotions, a loss of trust in the world, and disillusionment with humanity generally (7), it is possible that clinicians may experience a greater degree of vicarious distress when treating veterans exposed to PMIEs (3). Moreover, some clinicians may not feel adequately prepared to manage the range of concerns some patients may present with following PMIEs (14). Taken together, how clinicians experience delivering care to veterans with moral injury-related mental health problems in a UK context remains unclear.

Need for research

As most of the existing moral injury research has been carried out with US (ex-) military personnel (15–17), extremely little is known about how moral injury may be experienced in a UK military context. An in-depth understanding of UK veteran experiences of, and responses to, moral injury compared to other trauma types will help inform clinical practice to ensure that appropriate support, guidance and treatment is available in future.

Research objectives

The aims of this study were to examine:

1) The types of experiences which may lead to moral injury in UK military veterans;
2) The potential risk and protective factors for mental health difficulties following moral injury;
3) The impact of moral injury on veteran mental health and wellbeing;
4) The perceptions of (need for) support following moral injury; and
5) The development of a scale to assess the exposure to and impact of moral injury.

Methods

Ethical approval

This study received ethical approval from King's College London Research Ethics Committee (RESCM-17/18-4002).

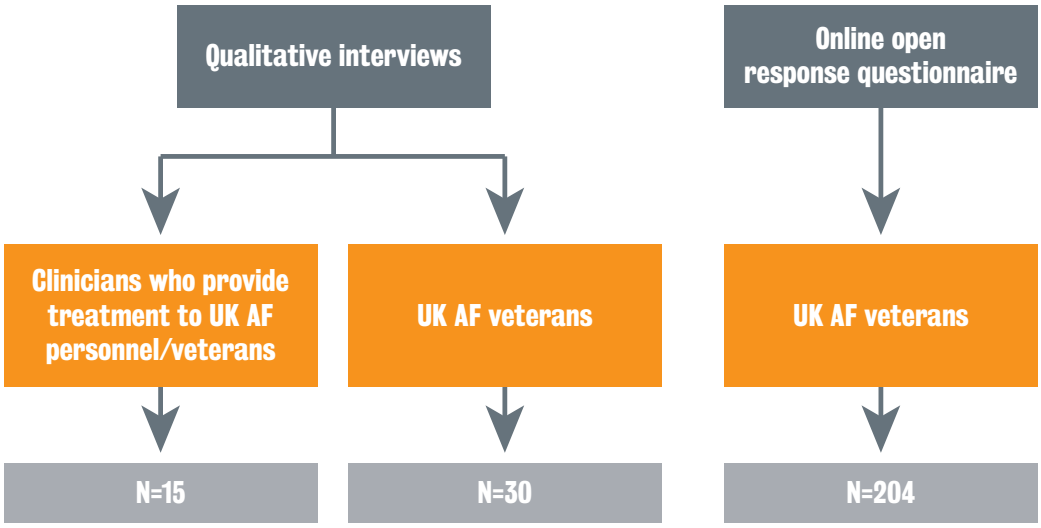
Study design

To meet the research aims, a mixed-methods approach was used. Qualitative interviews were carried out with UK AF veterans as well as with clinicians who have provided psychological treatment to UK personnel/veterans experiencing moral injury-related distress. An online open response questionnaire and psychological assessment measures were also completed by UK AF veterans.

Study materials

Qualitative interviews

The interview schedules for both military veterans and clinicians were developed based on the research questions and the existing literature on moral injury and post-trauma responses (1,7). Both interview schedules were piloted with UK AF veterans and clinicians prior to data collection to make sure the questions were sensitive and appropriate with adjustments to probes made accordingly. Pilot interviews were not included in the final sample. Veteran interview questions focused on the experiences of traumatic or morally injurious events, the impact of such events on wellbeing and daily functioning (including family



and occupational functioning), and possible risk and protective factors for military moral injury (Appendix 1). Clinician interview questions explored perceptions of military-related moral injury experienced by UK personnel and veterans, the impact of PMIEs on patient wellbeing and daily functioning (including family and occupational functioning), challenging symptom presentations in patients adversely affected by moral injury, potential risk and protective factors for experiencing military-related moral injury, and views regarding necessary changes to broader clinical practice or policy to address moral injury and improve outcomes (Appendix 2).

Online questionnaire

The online, open-ended questionnaire was distributed via the internet using a secure server. Prior to distribution, the questionnaire was piloted with several UK AF veterans (n=4) (not included in the final sample) with questions and formatting adjusted accordingly. The open-ended questions focused on perceptions of exposure to different types of challenging military experiences and the event's impact on their wellbeing. Basic demographic information (e.g. gender, socio-economic status, time in military service, years since leaving military service, etc.) were also collected from all veteran participants.

Psychological assessment measures

Validated measures to assess mental health outcomes were completed by veterans who took part in the online questionnaire. Probable PTSD was assessed via the PCL-5 (18), depression via the PHQ-9 (19), anxiety via the GAD-7 (20), alcohol misuse via the AUDIT (21), and suicidal ideation via the SBQ-R (22). All measures have been widely used in military samples and found to have good reliability and validity (5,23–25). To determine case criteria, a cut off score of 33 was used for the PCL-5; 15 for the PHQ-9, 8 for the GAD-7 (26); 16 for the AUDIT, and 7 for the SBQ-R. These cut off scores are consistent with those used in previous research studies with civilian as well as UK military personnel and veterans.

Participant recruitment

Veteran participants:

We used opportunity sampling and participants were recruited to the online questionnaire and qualitative interviews by circulation of the study information via social media, online platforms, veteran affiliated charities, veteran specific newsletters, and military-affiliated magazines. Participants were also asked to share study information with other potentially eligible individuals.

Clinician participants:

Participants were sampled from a range of clinicians who had worked, or were working, with the NHS, Ministry of Defence (MoD), and voluntary sector organisations. Emails were sent to therapists responsible for providing trauma therapy across collaborating organisations (e.g. Combat Stress, Walking with the Wounded) as well as circulating study advertisements via mailing lists, social media and in veteran-affiliated newsletters. Participating clinicians were also asked to share the study with potentially eligible colleagues.

Participants

Veteran participants

Qualitative interviews: Of the 31 veteran participants who contacted the research team to take part in the qualitative interview, 30 consented to participate. No participants were excluded from the study, rather it was not possible to contact the remaining one participant. All interviews were carried out by an experienced qualitative researcher with several years' experience of carrying out assessments with trauma-exposed samples. A risk matrix was created, with an on call clinician available should risk issues arise. No adverse events occurred. To determine whether a participant had experienced a moral injury, all participants were asked whether they had experienced an event(s) during military service that challenged their view of who they are, the world they live in or their sense of right and wrong, and to provide a brief summary of the event. If participants described exposure to several events, they were asked to state which event bothered them the most and this event was the focus of the qualitative interview. Participants were considered to have exposure to moral injury if the self-reported event was an act of omission or commission which violated their ethical or moral code and where the primary emotion expressed was of guilt/shame (1). Participants were classified as having experienced a trauma-only incident if the event described was consistent with a well-accepted definition of what a traumatic event is (DSM-5 Criterion A for PTSD) and participants did not describe an act of commission/omission which violated their moral code (4). Participants were classified as 'mixed' if elements of both traumatic and morally injurious experiences were expressed; for example, the event was both potentially life-threatening and morally injurious (27). Two researchers independently determined whether participants were classified as morally injured, 'mixed', or trauma exposed. Disagreements between authors were rare but when they did occur, were resolved following a re-examination of the data to reach a consensus.

Online open response questionnaire: To participate in the online open response questionnaire, similar self-report questions were issued to examine whether UK AF veterans had experienced military-related moral injury (i.e. "during your military service, did you ever experience an event that was a serious challenge to your sense of who you are, your sense of the world, or your sense of right and wrong?"). Veterans were asked to write a brief description of the event which was later classified by two independent researchers as a moral injury, a non-morally injurious trauma, or a 'mixed' event, as per the criteria given in the previous section. Any UK AF veterans who self-reported having not experienced a challenging military event (e.g. negative self-report response to questions regarding exposure to military-related experiences/events that challenged one's ethical or moral code) were classified as 'no event' and invited to complete measures of mental health outcomes only. The inclusion of veterans who did and did not self-report having exposure to events which challenged their ethical or moral code allowed for descriptive comparisons to be made between groups.

Clinician participants

Of the 21 clinicians approached to take part in the qualitative interview, 15 (71%) consented. Five clinicians were uncontactable, and one was not eligible to participate having not practiced as a clinician for several years.

Inclusion criteria

Veterans inclusion criteria: Veterans were eligible for participation in the online open response questionnaire and qualitative interview if they were aged 18 years and above, were no longer serving in the UK AF, and were willing to self-report their experiences during military service.

Clinicians inclusion criteria: Clinicians were eligible for participation if they had experience of providing clinical treatment to a UK AF service personnel or veterans who they believed had experienced a moral injury within the last six months. The criteria of treating a patient for moral injury within the last six months was to allow for clinicians to comment on more recent cases. The definition of 'clinician' was inclusive and participants of any staff grade (e.g. consultant, registrar, etc.) or qualification (e.g. clinical psychologist, psychiatrist, mental health nurse) were eligible. All clinicians were aged 18 years or above and were willing to provide informed consent.

Exclusion criteria

Veterans exclusion criteria: For all veteran participants, no limitations on eligibility according to demographic characteristics (e.g. gender, age, rank, years of service) were imposed. Further, we did not restrict participation by deployment location or AF service branch. Veteran participants who were not aged 18 years or more, had speech or hearing difficulties (interview component only), were unwilling to provide informed consent, or were still serving in the AF were not eligible.

Clinicians exclusion criteria: No limitation on eligibility according to demographic characteristics (e.g. gender, age, etc.), staff grade or qualification (e.g. clinical psychologist, psychiatrist, etc.) were imposed. This approach was used to ensure we collected rich data from a range of clinicians with diverse experiences in treating UK AF personnel and veterans.

	Clinicians	Veternas with moral injury (open-response questionnaire)	Veterans without moral injury (open-response questionnaire)	Veterans with moral injury (interview)	Veterans without moral injury (interview)
Inclusion criteria					
Any gender	●	●	●	●	●
Any rank		●	●	●	●
Any AF branch		●	●	●	●
Any local deployment location (still eligible if did not deploy) and length		●	●	●	●
Any reason for leaving the AF	●	●	●	●	●
Any clinical staff grade					
Exclusion criteria					
<18 years	●	●	●	●	●
Unwilling to provide informed consent	●	●	●	●	●
Speech or hearing difficulties	●			●	●
No experience providing treatment to a UK AF service personnel or veteran	●				

Qualitative data analysis

All qualitative interviews were audio-recorded with participant consent and transcribed verbatim. Participation in the interviews was anonymous, with no personally identifying information collected from participants. Any potentially identifying information was removed from interview transcripts and all participant contact details were destroyed following the interview as stated on the participant information sheets. Interview data were analysed using thematic analysis using the steps proposed by Braun & Clarke (28). Two researchers independently reviewed the transcripts and themes for agreement and accuracy. Feedback was regularly sought from the study research team about the emerging qualitative findings. Anonymised excerpts have been provided in the Results section to illustrate the findings, with pseudonyms assigned by the researcher to the excerpts.

Quantitative data analysis

Data from the online open response portion of the study were analysed using the statistical analysis software package STATA. Where more than 50% of data was missing, this participant was excluded from the analysis. This resulted in three participants being excluded from the analysis. Chi2 and Fishers' Exact tests were used to determine statistically significant differences between groups existed, with p values <0.05 used to indicate statistical significance. Where appropriate, odds ratios (OR) or adjusted odds ratios (AOR) and 95% confidence intervals (CI) were calculated. The reference category was reporting no exposure to a challenging event during military service. Effect sizes were considered statistically significant at $p=0.05$ if the 95% CI did not include 1.

Results

Veteran experiences of military moral injury

Demographic information.

The 30 veteran participants who took part in the qualitative interviews were all male with an average age of 46.3 years (SD 12.4; range 27-68 years). The majority (93.3%) had served in the British Army (see Table 1). All reported having been deployed during their military service an average of five times, with deployment locations including Iraq (Operation Telic), Afghanistan (Operation Herrick), Sierra Leone, Bosnia, Kosovo and the Falklands (Operation Corporate). Fifteen participants experienced exposure to a PMIE, nine had experienced a 'mixed' event where the event was both potentially morally injurious and traumatic/life threatening, and six experienced a traumatic or life threatening (non-morally injurious) event (Table 1).

Table 1
Participant demographic information

Index	Total sample (n=30)	Moral injury veterans (n=15)	Mixed event veterans (n=9)	Trauma exposed veterans (n=6)
Mean age, M(SD)	46.3 (12.4)	43.6 (10.6)	51.6 (16.1)	45.3 (9.2)
Marital status, n (%)				
Single	5 (16.7%)	3 (20.0%)	1 (11.1%)	1 (16.7%)
Married/living with partner	18 (60.0%)	9 (60.0%)	6 (66.7%)	3 (50.0%)
Separated/divorced/widowed	7 (23.3%)	3 (20.0%)	2 (22.2%)	2 (33.3%)
Branch, n (%)				
British Army	28 (93.3%)	15 (100.0%)	8 (88.9%)	5 (83.3%)
Service branch, n (%)				
Regular	26 (86.7%)	13 (86.7%)	7 (77.7%)	6 (100.0%)
Rank, n (%)				
Officer/non-commissioned officer	15 (50.0%)	6 (40.0%)	7 (66.7%)	2 (33.3%)
Junior rank	15 (50.0%)	9 (60.0%)	2 (22.2%)	4 (66.7%)

Note. Moral injury veterans = veterans who self-reported exposure to a PMIE. Mixed veterans = veterans who self-reported experiencing a 'mixed' event where the event was both potentially morally injurious and traumatic/life threatening. Trauma exposed veterans = veterans who self-reported experiencing a traumatic or life threatening (non-morally injurious) event. All participating veterans were males.

Qualitative findings

Four overarching themes and five subthemes emerged from the qualitative interview data reflecting veteran experiences of morally injurious and non-morally injurious events, the impact of such events on wellbeing, and potential risk and protective factors for distress following PMIEs. Anonymised excerpts are provided in Table 2.

Experiences of morally injurious and non-morally injurious events

Morally injurious experiences related to transgressive acts of commission or omission by either the veteran themselves or by others (n=15). Event types included witnessing human suffering (e.g. aftermath of ethnic cleansing in Bosnia or Rwanda), having a role in civilian/enemy combatant deaths, or within ranks betrayal (e.g. bullying, perceived negligent orders by command). Similarly, 'mixed' events were experienced by nine veterans and were both potentially life-threatening and morally injurious; for example, mistreating civilians/enemy combatants after being threatened. Conversely, traumatic, yet non-morally injurious, events were described by six veterans and included frightening experiences such as being under enemy fire, exposure to an explosion, witnessing the death of colleagues, providing care to wounded civilians, and experiencing serious physical injury.

Impact of morally injurious and traumatic events on thoughts or cognitive appraisals

Crises of moral dissonance. Both morally injured and 'mixed' veterans described that key to the distress caused by PMIEs was the experience of moral dissonance or conflict between their multifaceted value systems. Conflicts between sets of values (e.g. military values versus civilian), as well as conflict within a set of values (e.g. conflict between military moral obligations such as respecting the lives of civilians and enemy combatants, protecting colleagues, successfully completing the mission) were most commonly described by both groups. For example, after killing an enemy combatant, some veterans experienced deep distress where there was a moral conflict between their civilian values (e.g. 'intentional killing is murder') and military values (e.g. 'action is justified within rules of engagement').
For several veterans in both the morally injured and 'mixed' samples, exposure to such PMIEs and experiencing a clash of values or moral conflict caused them to question their beliefs about the justness and necessity of armed conflict as well as their role on the deployment. These veterans often reported that prior to the PMIE, they considered their tour to be serving a noble cause and that they themselves were a force for good. For many, this view disintegrated either during the deployment or upon their return home and was replaced with substantial doubts about the purpose of the mission and what their voluntary involvement said about them as a person. This distress was particularly noticeable in those veterans in both morally injured and 'mixed' samples who had experienced combat exposure in the Falklands and the recent Iraq/Afghanistan conflicts.

Preventing moral conflict. A number of veterans across the moral injury, 'mixed' and trauma samples described exposure to other challenging events during their military service (e.g. killing enemy combatants) and reported that these incidents did not cause them moral conflict or lead to themselves questioning their ethical code. In these cases, veterans described being able to justify the event or accommodate what happened within their moral framework, with justifications including that while their actions may have been wrong, they had acted for the greater good. Veterans also felt able to prevent the experience of moral conflict by holding beliefs that the right or wrongs of an event are a matter of perspective or that they were soldiers paid to do a job.

Resolving moral conflict. Notably, several veterans in the PMIE sample, who had struggled initially with an internal moral conflict, described being able to resolve this dissonance. Some veterans did so by identifying a different source to blame for the event(s) rather than themselves (e.g. Ministry of Defence (MoD), chain of command). Others described coming to the decision that, while they could not change what had occurred, they must accept what had happened or it would have negative implications for their own mental health. Morally injured veterans reported feeling particularly able to make this change through thinking about the event over a number of years and some seemed to draw on their experience of successfully coping with challenging events in childhood. For several veterans, this resolution in moral conflict was reached independently, although in some cases this was facilitated by formal psychological support which helped them to reframe the event or their involvement.

Of particular note was that social support was not considered a facilitator of resolution. While discussion of the PMIE with friends, colleagues or family members was considered cathartic, veterans did not report that it helped to resolve their moral conflict. Being able to resolve moral conflict was described by many veterans as a key turning point and led to a reduction in their emotional distress and improvements in daily functioning. This resolution of moral conflict was not reported by veterans in the 'mixed' sample.

Impact of event exposure on negative appraisals.

Across all three samples, the experience of morally injurious and traumatic events had an impact on veterans' views or appraisals of themselves, others, and the world more generally, consistent with PTSD symptomology (4). The majority of veterans who had experienced a traumatic, non-morally injurious event described experiencing an ongoing sense of threat, where they themselves were vulnerable or expendable. Many described ongoing difficulties, with concerns that the world they live in is extremely dangerous and reported struggling with relationships or trusting others due to concerns that other people could be a potential threat.

Veterans who experienced 'mixed' PMIEs and threat to life, described similar fear-based thoughts and anxieties relating to themselves and their surroundings. However, distinct from the trauma-exposed sample, veterans in this group often also perceived that the world is an evil and corrupt place. Particularly following PMIEs related to witnessing human suffering, these veterans described reactions of despair and loss of faith in humanity. Following PMIEs involving acts of omission or commission, veterans in both the 'mixed' and moral injury samples often held an enduring belief that they were a bad, weak, or cowardly person.

Implications for psychological wellbeing

Across both the moral injury and 'mixed' samples, veterans' experiences of moral conflict often caused feelings of shame, disgust and guilt. Particularly in cases of betrayal-related PMIEs (e.g. severe bullying, perceived negligent orders by command), veterans reported feeling extremely angry and described strong feelings of irritability, which often negatively impacted their relationships with family members and colleagues.

In both the 'mixed' and moral injury samples, veterans who experienced PMIEs reported that their feelings of shame and self-loathing contributed to poor self-care as well as risk-taking behaviours (e.g. driving while intoxicated, speeding). Substance misuse to distract from or to temporarily suppress these feelings was also common. Another coping strategy described by both the 'mixed' and moral injury samples was to make efforts to atone or make amends for the PMIE. This included

activities such as being involved in organisations to support fellow veterans, visiting the grave of enemy combatants they had killed, and actively campaigning against bullying. By contrast, the most common emotions described by trauma exposed but not morally injured veterans were feelings of intense anxiety and low mood. Many trauma exposed veterans described 'classic' PTSD symptoms such as re-experiencing symptoms (e.g. nightmares, intrusive thoughts, flashbacks) and being hypervigilant to potential threat which led to their withdraw from many social activities. Poor self-care and risk-taking behaviours were less common in this group compared to the 'mixed' and moral injury samples; although, substance misuse to manage distress was a frequently described coping strategy in the trauma sample.

Effect on posttraumatic growth. Experiences of posttraumatic growth, such as a greater appreciation for the value of life, perceived improvements in one's ability to empathise with others and deeper gratitude for relationships with family members, were reported across all three samples. A small number of veterans with exposure to PMIE also described a growth in their spirituality or religious beliefs, which was a source of great comfort. Spiritual growth was not described in trauma-exposed (non-morally injured) veterans. Nonetheless, several veterans in both the 'mixed' and moral injury samples described having spiritual/religious beliefs prior to the PMIE and subsequently losing their faith or trust in a just God following their experience. Similarly, many veterans who reported having no spiritual/religious beliefs prior to the PMIE described how they came to view organised religion more negatively as a result of their morally injurious experience. For a number of these veterans, their morally injurious experience contributed to perceptions that there cannot be a God - because what God would allow an event like this to occur? - or views that organised religion is the root cause of violent conflict. This loss of spiritual/religious beliefs was not described in trauma exposed, non-morally injured veterans.

Risk and protective factors for experiencing a moral injury

All veterans who took part in the qualitative interview were asked for their views on what could be potential risk and/or protective factors to experiencing distress following an event that challenges one's moral code. Factors relating to the event's context, other people's reactions, and individual circumstances, were considered to be possible contributing features. In terms of context, the majority of veterans across the three samples reported that distress may be highly likely if the PMIE involved victims that were considered to be especially vulnerable (e.g. children, women, civilians, or more junior colleagues). The reactions of other people at the time, including a perceived lack of support from commanders in response to the event or inadequate social support from friends/family members, was thought to compound this distress. Conversely, empathetic support after the event, particularly from fellow personnel/veterans who had experienced similar incidents, and experiences of leaders taking responsibility for events, was considered by veterans to be helpful. Finally, individual factors, such as perceived unawareness or unpreparedness of the potential emotional/psychological consequences of one's decisions (a level of insight that was often thought to develop with older age or maturity), low education attainment, and concurrent exposure to other stressors (e.g. serious illness, death of a family member) were also considered as possible risk factors for greater distress following PMIEs.

Table 2
Themes and subthemes following thematic analysis of veteran qualitative interviews

Experiences of morally injurious and non-morally injurious trauma
"[During] my first two tours things happened, one or two things I did. I often have questioned myself about it whether I took the right decisions or not... occasionally you are in the middle of a riot when you've got 12 [soldiers] and you are trying to deal with 250 [people] who are all throwing bottles, bricks and everything else at you – men and women. Again, you sometimes... do things that perhaps are quite heavy handed which retrospectively you think should I have done that? Or should I have approached it in a different way?" **(Male, mixed)**
Impact of morally injurious and traumatic events on cognitive appraisals:
Crises of moral dissonance - "If I was to go into a town and shoot five people, I would be a mass murderer. Yet if I was to shoot five people in uniform overseas you are legally entitled to do that because you have rules of engagement and all the rest of the stuff. But murder is murder at the end of the day. Killing is killing." **(Male, moral injury)**
Prevention of moral dissonance - "It came over the radio, 'oh we've got a bravo down here, he's injured. We'll need the med in to get him out.'...Someone decided that no, hang on a fucking minute, we're not having a [helicopter] come out into hostile territory to recover somebody who is trying to kill us...And from people at the site, they've basically come back and said he just .... stopped breathing.... But in terms of right or wrong, it was right to do that...we were risking a helicopter full of people to come in to extract somebody who had been trying to kill us, which could result in more of us being injured or killed." **(Male, moral injury)**
Resolving moral dissonance - "Eventually I came to this conclusion of where do I go with this? Do I keep feeling bad about it?...I was like, I've read about how this ends with other people and you hear about people taking their lives and stuff...and I've got no interest in doing that so I need to decide what I'm going to do with this. I decided to move past it... I don't want to sound flippant because that kid died, it was a bad thing, a terrible thing, but it's done. I can't help myself by thinking about it all the time and being sad about it all the time...If I choose to mourn that kid for the rest of my life everyday it's not going to help me in any way. You know? And that was the realisation I think that changed things." **(Male, moral injury)**

Effect on negative appraisals -
"When we were walking around and supposedly protecting and serving...you didn't know who or what to trust or who was watching you, who wasn't watching you. You were hiding in plain sight. So, then your world view becomes a distrust."
(Male, trauma)

Implications for psychological wellbeing:

Effect on posttraumatic growth -
"I'll be honest, I'll sometimes ask God for a favour and as they say there's no such thing as an atheist in the trenches. There is something there that I can't explain...so spiritually I think it may have actually made me a better Christian."
(Male, mixed)

Risk and protective factors for experiencing a moral injury

"You know right from wrong... [but] it's the consequences of your actions, that's what you don't know. You don't know how it's going to impact you and I think the Army should really drill that into you in the career's office... I think it's your age. I think it's how mature you are as a person...I wasn't a very mature 19-year-old. Whereas somebody [who] probably is very mature and then they could deal with it differently."
(Male, moral injury)

Online open response questionnaire

Demographic information

Participant demographic information can be found in Table 3. Overall, the 204 veterans included who participated in the online open response questionnaire had served between 18 months to 42 years in the Armed Forces (mean =17.3 years, SD 9.61). The majority were White British (n=218, 98.2%) and 88.6% were male (n=194). In terms of event exposure, 66 (33.4%) veterans self-reported exposure to an event that was classified as morally injurious, 57 (27.9%) veterans reported exposure to non-morally injurious trauma, 31 (15.2%) veterans reported a 'mixed' event and 50 (24.5%) veterans did not report exposure to a challenging event during military service.

No statistically significant differences were found between exposure groups in terms of socio-demographic or military-related characteristics (see Tables 3 & 4). Although, it should be noted that many participating veterans across the sample reported a high level of education attainment and a considerable proportion were officers or non-commissioned officers (n=123, 57.7%). No significant differences were found between deployment location, extent of combat exposure or number of deployments and exposure to morally injurious, traumatic or mixed events (Table 4).

Table 3
Participant demographic characteristics

	Moral injury	Trauma	Mixed	No event	P
N	66	57	31	50	
Age, M (SD)	50.0 (10.3)	50.4 (11.4)	51.3 (10.4)	52.1 (12.9)	0.36
Male, n(%)	58 (87.8)	51 (92.7)	27 (90.0)	41 (82.0)	0.39
Marital status, n(%)					0.41
Single, never married	5 (7.6)	3 (5.3)	4 (12.9)	8 (16.0)	
In a relationship	50 (75.7)	42 (73.7)	21 (67.7)	37 (74.0)	
Divorced/separated/widowed	11 (16.7)	12 (21.1)	6 (19.4)	5 (10.0)	
Education attainment, n(%)					0.38
School until ≤18 years	15 (23.1)	16 (28.1)	8 (25.8)	15 (30.0)	
Further education	21 (32.3)	12 (21.1)	8 (25.8)	12 (24.0)	
Higher education BSc	14 (21.5)	23 (40.4)	11 (35.5)	13 (26.0)	
Masters/Doctoral degree	15 (23.1)	6 (10.5)	4 (12.9)	10 (20.0)	
Suicidal ideation	37 (56.1)	36 (63.2)	20 (64.5)	16 (32.0)	0.004
Met case criteria, n(%)					
PTSD	36 (54.6)	38 (66.7)	19 (61.3)	12 (24.0)	<0.001
Alcohol misuse	19 (28.8)	14 (24.6)	7 (22.6)	9 (18.0)	0.60
Depression	21 (31.8)	28 (49.1)	15 (48.4)	11 (22.0)	0.01
Anxiety	34 (51.5)	36 (63.2)	20 (64.5)	11 (22.0)	<0.001
CMD	43 (65.2)	41 (71.9)	22 (71.0)	14 (28.0)	<0.001

Note. No event = did not report experiencing a challenging event during military service. PTSD= meets diagnostic criteria for likely PTSD on the PTSD Checklist for DSM-5 (PCL-5). Depression = meets diagnostic criteria for likely depression on the Patient Health Questionnaire (PHQ-9). Anxiety= meets diagnostic criteria for anxiety on the Generalised Anxiety Disorder Checklist (GAD-7). Suicidal ideation= meets criteria for suicidal ideation on the Suicide Behaviours Questionnaire Revised (SBQ-R). CMD = common mental disorders, includes participants meeting case criteria on the GAD, PHQ-9 and/or PCL-5. P= refers to whether differences between veterans exposed to an event type were statistically significant (p<0.05), examined via chi2 or fishers' exact tests.

Table 4
Participant military-related demographic characteristics

	Moral injury	Trauma	Mixed	No event	P
N	66	57	31	50	
Branch, n(%)					**0.98**
Royal Navy/ Royal Marines	10 (15.15)	7 (12.5)	6 (19.4)	7 (14.0)	
Army	46 (69.7)	42 (75.0)	21 (67.7)	35 (70.0)	
Royal Air Force	10 (15.2)	7 (12.5)	4 (12.9)	8 (16.0)	
Rank, n(%)[a]					**0.62**
Officer	18 (29.0)	8 (14.6)	8 (27.6)	14 (28.6)	
Non-commissioned officer	20 (32.3)	21 (38.2)	9 (31.0)	17 (34.7)	
Junior rank	24 (38.7)	26 (47.3)	12 (41.4)	18 (36.7)	
Length of service (years), M (SD)	17.6 (9.6)	17.2 (9.1)	16.0 (8.5)	18.5 (10.5)	0.50
Deployed, n(%)	57 (86.4)	51 (89.5)	29 (96.7)	41 (83.7)	0.35
Number of deployments, M (SD)	5.0 (3.8)	7.9 (14.0)	5.1 (4.5)	4.5 (3.6)	0.29
Moderate-heavy combat exposure	32 (48.5)	31 (54.4)	16 (51.6)	18 (36.0)	0.27
Deployment theatre, n(%)[b]					
Iraq	29 (43.9)	28 (49.1)	18 (58.1)	21 (42.9)	0.53
Afghanistan	31 (47.0)	20 (35.1)	13 (41.9)	19 (38.0)	0.58
Bosnia/Kosovo	27 (40.9)	20 (35.1)	12 (38.7)	10 (20.0)	0.10
Other location	51 (79.7)	44 (78.6)	20 (64.5)	30 (62.5)	0.11
Deployment type, n(%)b					
Disaster assistance	13 (20.3)	7 (12.5)	4 (12.9)	4 (9.1)	0.42
Peacekeeping	29 (45.3)	21 (37.5)	13 (41.9)	19 (43.2)	0.86
Peace enforcement	26 (40.6)	24 (42.9)	12 (38.7)	16 (36.4)	0.93
Warfighting	41 (64.1)	38 (67.9)	19 (61.3)	24 (54.6)	0.58
Other duty	9 (14.1)	8 (14.3)	7 (22.6)	8 (18.2)	0.69

Note. No event = did not report experiencing a challenging event during military service. Deployed = reported having been on a deployment. A = data missing for 10 veterans. B = individuals could report deployment to multiple deployment types and theatres. Moderate – heavy combat exposure = Combat Exposure Scale (CES) score between 17-41. P = refers to whether differences between veterans exposed to an event type were statistically significant ($p<0.05$), examined via chi2 or fisher's exact tests.

Relationship between type of event exposure and mental health

As detailed previously, veterans who completed the online survey were grouped into one of four groups based on their report of whether they had experienced a challenging event in military service: morally injurious, non-morally injurious trauma, a 'mixed' event, or 'no event' where veterans did not report exposure to a challenging event during military service. As seen in Table 3, a substantial proportion of veterans across the sample met case criteria for probable PTSD, alcohol misuse, depression and anxiety disorders. High rates of suicidal ideation were also found.

Exposure to specific types of events was found to be associated with a range of adverse mental health outcomes. Compared to veterans who did not report exposure to a challenging event during military service, veterans who experienced a morally injurious event (AOR 3.98; 95% CI 1.75-9.05) were significantly more likely to meet case criteria for probable PTSD (see Table 5 & Figure 1).Veterans who had experienced a moral injury were also more likely to meet case criteria for anxiety (AOR 3.91; 95% CI 1.69-9.04) and suicidal ideation (AOR 2.60; 95% CI 1.20-5.66) compared to those who did not report a challenging event during military service. Veterans who experienced moral injury were not more likely to report likely alcohol misuse (AOR 1.89; 95% CI 0.77-4.66) or depression (AOR 1.71; 95% CI 0.72-3.99) compared to those who did not report exposure to a challenging event in AF service.

Compared to those who reported no challenging event during military service, veterans who were classified as having experienced a 'mixed' event were also more likely to meet criteria for likely PTSD (AOR 5.21; 95% CI 1.93-14.06; Table 5), depression (AOR 3.36; 95% CI 1.25-9.01), anxiety (AOR 6.75; 95% CI 2.44-18.72), and suicidal ideation (AOR 3.89; 95% CI 1.48-10.21). Veterans who experienced a 'mixed' event were not more likely to report alcohol misuse compared to those who reported no event exposure (AOR 1.55; 95% CI 0.52-4.60).

Veterans who experienced a traumatic, non-morally injurious event were more likely to meet case criteria for probable PTSD (AOR 6.67; 95% CI 2.77-16.07), depression (AOR 3.38; 95% CI 1.41-8.05), anxiety (AOR 6.29; 95% CI 2.59-15.25) and suicidal ideation (AOR 3.33; 95% CI 1.47-7.58) compared to those who did not report a challenging event during military service. Veterans who experienced a traumatic, non-morally injurious event were also no more likely to report alcohol misuse compared to those who reported no event exposure (AOR 1.35; 95% CI 0.52-3.54).

Notably, the likelihood of meeting case criteria for probable anxiety and suicidal ideation was greatest in the 'mixed' group, compared to those who reported morally injurious or non-morally injurious traumatic events (Table 5). The likelihood of meeting case criteria for probable PTSD and depression was greatest in those who had experienced a non-morally injurious trauma. Nonetheless, overlapping confidence intervals indicate these differences between exposure groups are not statistically significant. That veterans exposed to morally injurious, traumatic and 'mixed' events were not more likely to report alcohol misuse compared to veterans who were not exposed to a challenging event is also noteworthy. Nonetheless, greater alcohol misuse was significantly positively associated with PTSD (r= 0.20; p=.004; data not shown in table) and depression symptoms (r=0.23; p=0.0006; data not shown) across the sample, indicating that alcohol misuse was experienced alongside other forms of distress.

Table 5

Likely mental disorders in veterans exposed to morally injurious, traumatic and mixed events (reference category = no event)

		Moral injury	Trauma	Mixed
PTSD	OR (95%CI)	3.61 (1.63-7.97)	5.85 (2.54-13.50)	4.87 (1.88-12.64)
	AOR (95%CI)	3.98 (1.75-9.05)	6.67 (2.77-16.07)	5.21 (1.93-14.06
Alcohol misuse	OR (95%CI)	1.74 (0.73-4.15)	1.33 (0.53-3.34)	1.37 (0.47-3.93)
	AOR (95%CI)	1.89 (0.77-4.66)	1.35 (0.52-3.54)	1.55 (0.52-4.60)
Depression	OR (95%CI)	1.59 (0.70-3.62)	3.14 (1.37-7.19)	3.24 (1.26-8.39)
	AOR (95%CI)	1.71 (0.72-3.99)	3.38 (1.41-8.05)	3.36 (1.25-9.01)
Anxiety	OR (95%CI)	3.55 (1.58-7.95)	5.57 (2.40-12.92)	6.20 (2.34-16.45)
	AOR (95%CI)	3.91 (1.69-9.04)	6.29 (2.59-15.25)	6.75 (2.44-18.72)
Suicidal ideation	OR (95%CI)	2.47 (1.16-5.25)	3.43 (1.55-7.58)	3.82 (1.50-9.71)
	AOR (95%CI)	2.60 (1.20-5.66)	3.33 (1.47-7.58)	3.89 (1.48-10.21)

Note. OR = odds ratios. AOR = adjusted odds ratio for sex and age. For OR and AOR the reference category was 'no event'. Suicidal ideation = scored above SBQR-R cut off score of 7 used to identify individuals at risk of suicide. SE = standard error.

Figure 1

Event exposure and mean score on measures of PTSD, depression, anxiety, alcohol misuse and suicidal ideation

Note AUDIT = The Alcohol Use Disorders Identification Test (AUDIT). PHQ-9 = Patient Health Questionnaire (PHQ-9). SBQ-R = Suicide Behaviours Questionnaire Revised (SBQ-R). PCL-5 = PTSD Checklist for DSM-5 (PCL-5). GAD-7 = Generalised Anxiety Disorder Checklist (GAD-7).

Relationship between event exposure and post-trauma responses

Reporting exposure to morally injurious and 'mixed' events was significantly associated with experiencing specific PTSD symptoms and responses as measured by the PCL-5. Endorsement of PCL-5 item 9 ("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]) was significantly more likely to be endorsed by veterans who had experienced a morally injurious (AOR 2.66; 95% CI 1.64-4.31; data not shown in table), traumatic (AOR 2.89; 95% CI 1.74-4.81) and 'mixed' (AOR 2.44; 95% CI 1.37-4.35) event compared to those who reported exposure to no challenging event(s) during service, after controlling for gender and age.

Relationship between the nature of event exposure and mental health

The nature of the events veterans faced during military service was found to differ across groups. Veterans who experienced a morally injurious event were significantly more likely to report experiencing a betrayal (i.e. friendly fire; colleague abandoned watch post and perceived negligent command decisions; n=18; 27.3%; p<0.001; see Table 6 & Figure 2; Appendix 3) or experiences of within ranks violence (i.e. bullying; n=9; 13.6%, p<0.001). Veterans who experienced a morally injurious event were also significantly more likely to report perpetrating violence (n=6; 9.1%; p=0.03), although this experience type was infrequently described. Those classified as having experienced a non-morally injurious traumatic event were significantly more likely to report the death of a colleague or other frightening experience (e.g. being shot at, death of colleague in IED, serious accident; n=43; 75.4%, p<0.001).

When asked what the single worst feature of their reported military experience was, veterans who experienced a morally injurious or 'mixed' event were significantly more likely to report that the worst feature of the event was that they or someone else had failed to do the right thing (see Table 7 & Figure 3; Appendix 3). Veterans who experienced a traumatic but not morally injurious event were significantly more likely to report concerns that they could have been seriously injured or killed (n=19; 33.3%; p<0.001). Veterans who experienced non-morally injurious trauma were also significantly more likely to report distress related to the sights, sounds or smells of the event (n=15; 26.3%; p<0.001); however, this was also a feature that was distressing to veterans exposed to moral injury (n=13; 19.7%) and 'mixed' events (n=7; 22.6%).

Across the sample as a whole, associations were found between what veterans perceived to be the worst feature of the morally injurious, traumatic or 'mixed' event and mental health outcomes. Veterans who held concerns that they could have been seriously injured or killed were significantly more likely to meet case criteria for probable PTSD (p=0.01; see Table 8; Appendix 3). Those who found the sights, sounds and smells of the event to be the most distressing feature were significantly more likely to meet case criteria for probable PTSD (p=0.03), depression (p=0.006), anxiety (p<0.001) and suicidal ideation (p=0.002). Distress relating to perceived acts of omission or commission (e.g. 'you felt you failed to do the right thing or behaved in a way you feel ashamed/guilty about') was not significantly related to the probability of meeting case criteria for any mental disorder (Table 8), although this non-significant difference may reflect the relatively small sample size. This distribution is graphically represented in Figure 4 (Appendix 3).

Clinician experiences of treating UK service personnel and veterans affected by moral injury

Demographic information

Of the 15 clinicians who participated in the qualitative interviews, 10 (66.7%) were male. The mean age of clinicians was 47.1 years (9.4 SD). Three (20.0%) participants were psychiatrists, five (33.3%) were psychologists, and seven (46.7%) were mental health nurses. Clinicians were all currently practicing and had worked in clinical practice for an average of 16.5 years (1 - 32 range in years). Eight participants had also previously served in the AF. Of the seven clinicians without prior military service, three (42.9%) had received specific training (e.g. seminar, workshop, etc.) in military ethos, military organisation and roles, or other aspects of military culture.

Qualitative findings.

Four themes and nine sub-themes emerged from the data, reflecting clinicians' experiences of providing treatment to (ex-)serving UK military patients following moral injury.

Presentation of moral injury

Clinicians considered that experiences of moral injury arose after events that compromised someone's moral code or core beliefs about themselves, others or the world. Clinicians thought that PMIEs caused distress because the incident jarred with strongly held beliefs about what a serviceperson should (or should not) do. Moral injury-related distress was thought to differ from that evoked by threat-based traumas, as PMIEs had the potential to produce strong feelings of guilt, worthlessness or shame rather than feelings of fear or vulnerability. The concept of 'moral injury' was considered by clinicians to be a helpful addition to the mental health vocabulary by offering a further way to consider the distress caused by events that may not be 'classically' traumatic but nonetheless lead to emotional conflict.

Clinicians reported that personnel/veterans affected by moral injury often experienced symptoms of PTSD, including intrusive symptoms

(e.g. flashbacks) and avoidance. Emotional numbness, excessive rumination, low mood and pervasive negative thoughts about themselves (e.g. I am a dreadful person) and others (e.g. other people are untrustworthy, the world is an awful place) were also commonly reported. These negative thoughts were described as markedly different from those experienced after fear-based traumas where maladaptive thoughts were threat-related (e.g. I am vulnerable, the world is dangerous). Feelings of guilt, shame and worthlessness following PMIEs reportedly contributed towards poor self-care, risk taking and self-harming behaviours. Notably, moral injury-related distress was considered by clinicians to be increasingly common in personnel/veterans presenting for treatment.

> "I'm seeing an awful lot more patients whose distress is caused not by things such as fear... now it's more along the lines of guilt and shame....it's not the old classic 'I'm scared, and I haven't really come to terms with the threat is no longer there'.... we're spending an awful lot more time talking to soldiers about beliefs about themselves and judgements, am I good, am I bad, did I do wrong, was I wronged?"

Treatment of moral injury-related distress

Identifying moral injury. To identify whether patients had been adversely affected by a PMIE, all clinicians reported taking a comprehensive trauma history. Typically, experiences of moral injury were thought to only become apparent once the clinician had asked detailed questions about the nature of the event, how the person felt about what happened, and what the event said about them as a person or the world more generally. Moral injury-related psychological problems were also perceived to be an issue that could easily go unrecognised, leading to the wrong treatments being recommended and poorer patient outcomes.

> "[In] moral injury we're talking about what is the cognition maintaining it and that's where your trauma assessment, where I would sit down with you... and I start asking you, 'so what does this mean? What does it say about you?' That's when you'll start to get the real thing behind the trauma...the thing I'm after is... what does that say about you? 'I could have done more.'"

Treatment approaches. To effectively address moral injury-related distress, clinicians described the need for a holistic approach, taking into account the patient's particular needs and difficulties. No consensus was found in terms of the best treatment approach and a number of methods were reportedly used in cases of moral injury-related distress, including eye movement desensitisation and reprocessing (EMDR), compassion focused therapy, adaptive disclosure, elements of schema therapy, trauma-focused cognitive behavioural therapy (TF-CBT) and mindfulness. The rational for using each approach differed. For example, clinicians using EMDR considered this method to be particularly effective following PMIEs as EMDR helps the processing of the trauma memory and associated distress, yet the patient does not need to share the event with the therapist, thus preventing re-traumatisation. Clinicians described that patients affected by moral injury often required a larger number of treatment sessions (range: 12 to 16 or more), an amount that was thought to be consistent with more complex trauma cases.

> "We deliver EMDR therapy and we don't ask them for the narrative ... I don't believe in re-traumatising people because the amount of times patients will say, yes, I've got to tell my story over and over and over again... Secondly, if I was to spend my entire day listening to everybody's trauma what mental health state would I have?"

Challenges in providing treatment for moral injury-related psychological problems. Clinicians described that many personnel/veteran patients did not seek formal help for several years following a PMIE, often due to mental health stigma concerns. Many only accessed psychological treatment once a crisis point had been reached or at the insistence of family members. Once treatment had been accessed, difficulties including maladaptive coping strategies, re-traumatisation, issues of confidentiality and the need to build a trusting therapeutic relationship were reported.

Clinicians stated that some patients continued to feel ongoing guilt or shame following treatment and were reluctant to change the way they interpreted the event as this was thought to be disrespectful. It was ultimately considered the patient's decision whether they were ready to re-evaluate the event, though discussing this dilemma with patients was reported as helpful.

> *"They don't actually want to remember something differently... to feel shame about what's happened is a way of remembering and honouring that memory.... Because [in treatment] you are wanting to update the cognitions and their belief about what happened...sometimes there will be a barrier to that and they won't want to be cognitively restructured...I'm very blunt with them and that I will basically share that formulation with them."*

Another key issue was the potential to re-traumatise patients during treatment. Clinicians thought that some trauma-focused approaches, such as reliving or imaginal exposure, should be avoided for this reason. This decision was reportedly informed by clinicians' experience of working with trauma-exposed patients and concerns were expressed that less experienced therapists may not recognise the need for a different approach in cases of PMIE-related distress. Given the sensitive nature of many of the PMIEs, a strong therapeutic relationship with patients was considered essential to achieve good treatment outcomes. However, building a trusting relationship with patients affected by moral injury could be challenging and several treatment sessions were often required to establish patient confidence and trust. At the same time, where PMIEs involved disclosure of a crime or an incident outside the rules of engagement, this could present clinicians with ethical dilemmas. However, little consensus was found regarding when breaches of confidentiality to relevant authorities may be necessary.

Potential improvements to the future treatment of moral injury-related distress. The majority of clinicians described a need for greater awareness of the experience and impact of moral injury in clinical practice. Several clinicians reported that improved awareness could be achieved by clearer guidance on identifying moral injury and how moral injury-related ill-health should be treated. Additional training on delivering moral injury-specific care was also considered to be potentially beneficial in helping to improve clinician confidence in managing cases of moral injury; however, there was also a concern that training could prove prohibitively expensive for some.

> *"There could be more openness in people sharing therapy session content and what they are doing.... the profession could do with being a little more open about what skills are used and how it benefits and when we might do things [like] adaptive disclosure or when we might use compassion focused therapy without it having to cost us hundreds of pounds to attend [a course]."*

The impact of providing treatment on clinicians

Providing care to personnel/veterans affected by moral injury was described as very rewarding by many clinicians. At the same time, it could also have a negative impact as repeatedly hearing about PMIEs was often upsetting and emotionally draining. Furthermore, clinicians who had served in the AF found that treating patients with moral injury-related psychological problems could

also evoke their own memories of challenges faced during military service. To manage this, all clinicians reported receiving regular clinical supervision, together with less formal conversations with peer colleagues. Nonetheless, several clinicians felt that they would find more supervision or support from their organisation helpful in fostering their own wellbeing.

"To have one patient after another where you are listening to guilt and shame wears you down a bit.... This is where the supervision comes in quite handy... but supervision needs to improve in military... We [clinicians] deploy with the [troops]...so a lot of the traumas they were coming to us with were ones we'd been involved with... [and] it's something that worries us, so I'd be very, very cautious about the trauma I allow my junior [clinician colleagues] to be exposed to."

Perceptions of potential risk and protective factors for moral injury

Certain features of events in military service were considered by clinicians to be more commonly associated with experiencing moral injury-related distress, including incidents in which civilians were injured/killed, excessive violence was used, or the rules of engagement were unclear. Individual factors such as lower educational attainment, experiences of childhood adversity and feeling unprepared or unaware of the emotional/psychological consequences of making ethically challenging decisions were also considered risk factors for experiencing distress following PMIEs. Furthermore, transitioning from the military to civilian life was thought to play a role in experiencing moral injury-related distress. Clinicians observed that re-joining a civilian environment with societal values that differed considerably to the values present in a military context could cause some veterans to question their previous beliefs about themselves as a person, their role in operational tours, and the world in which they live.

"I've often wondered with moral injury does it develop straight after an event or is it when people transition out? When those social and supportive networks are gone and where you are back in a values-based society which is very different to the values of military life. Is it then that you start to look back and say, 'oh that doesn't fit with what I now know?'"

In terms of potentially protective steps against distress, some clinicians thought that encouraging individuals to view a PMIE as an opportunity for psychological growth could be adaptive, leading to greater self-awareness, empathy and resilience. Improvements to pre-deployment briefings, including better preparation for the potential moral or ethical conflicts that may be experienced, as well as a more thorough operational debriefing following incidents which includes reassurance from leaders that personnel acted correctly (where appropriate), were considered by several clinicians to potentially be a protective measure to lessen distress following PMIEs. Additionally, clinicians considered that chaplaincy services were thought to have a role by providing veterans with the opportunity to confidentially discuss the PMIE, the thoughts or feelings this experience may have evoked and how to reconcile or forgive oneself.

"I think there needs to be more [of a focus] in the decompression ...on the individual's responsibility and more reassurance given closer to the time that they did as much as they could do...I think [if] those 'what if' questions were answered by a position in authority, they would listen to it...I find that our job as therapists working with this is we often end up working on that permission giving and that reassurance that comes from us... and maybe if that came earlier...it might have prevented something."

Perceived impact of event exposure on families

Data collected via veteran and clinician interviews was examined to explore the perceived impact of veteran experiences of morally injurious, 'mixed' and non-morally injurious traumatic events on spouses, families and colleagues. The aim of this analysis was to improve our understanding of the difficulties that veterans can face at home and at work following PMIEs, highlighting areas where they, their families and colleagues may need support and avenues for further research to effectively address these support needs.

Perceived impact of event exposure on families

Three superordinate themes and eight sub-themes emerged from the data regarding the perceived impact of veteran experiences of morally injurious, 'mixed' and non-morally injurious traumatic events on their loved ones, including spouses and children.

Non-disclosure of the event as a (maladaptive) coping mechanism

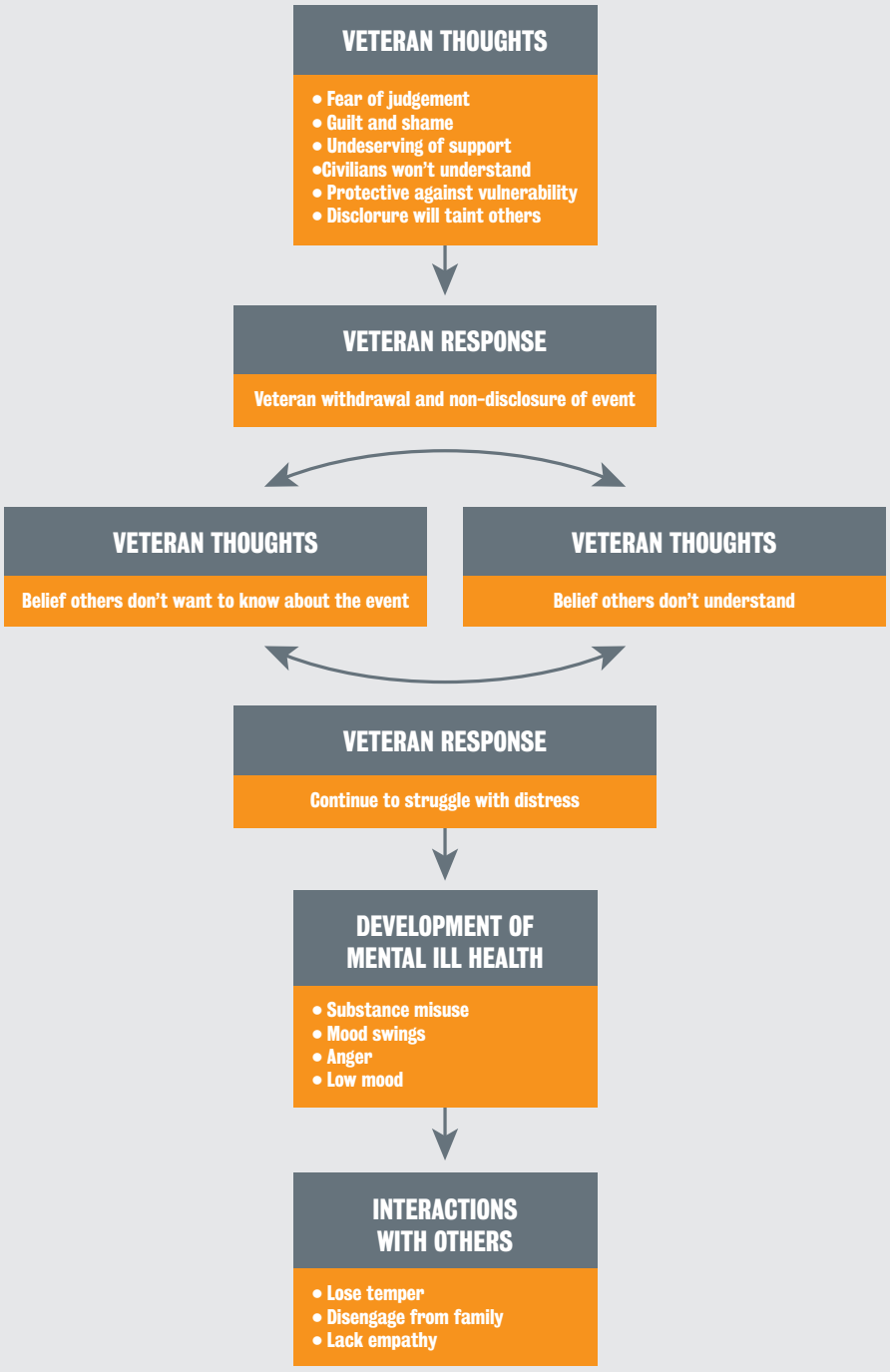
Veterans across the sample who had experienced morally injurious, 'mixed' and non-morally injurious trauma often described not disclosing the event to their families or friends because, as civilians, they may not be able to understand their experience. Many veterans believed that their civilian friends/families only wanted to hear entertaining, light-hearted accounts of their military service and their loved ones lacked the prerequisite jargon or knowledge required to fully understand an account of a military operation.

> *"Nobody wants to hear about it. People like to hear about when you went on the piss and you got arrested by the German police or when you mate married his girlfriend and you went round and you shrank wrap the house so they couldn't get in. Stuff like that." (Male, mixed)*

> *"[I] was angry with them for not really understanding… it's affected relationships quite a lot and, also, I don't come from a military family, so nobody understands. It's very hard because military jargon and, let's face it, military stories are quite boring if you've not been in the military… So, you don't talk to people. I haven't really talked to my wife about what happened because you spend half your time trying to explain what things are and it just loses the point of you trying to get your story across really." (Male, moral injury)*

<u>Moral injury-related distress and non-disclosure.</u> However, there were a number of distinct reasons for non-disclosure described by veterans who experienced a morally injurious or 'mixed' event. Both clinicians and veterans described that they

Figure 5
Exposure to a morally injurious event and perceived impact on social functioning



felt unable to disclose to others what they had experienced due to the profound shame, guilt or disgust they felt relating to the PMIE. Veterans were reportedly concerned that disclosure of the PMIE would cause their families or friends to view them negatively and see that they were not a heroic soldier but in fact a 'monster' or a coward. Several veterans reported reluctance to disclose the PMIE and how they felt about their experience as doing so would be making themselves vulnerable and show weakness. Feelings of shame and worthlessness also contributed towards non-disclosure of the PMIE as veterans reportedly felt undeserving of receiving care and support from others.

"I think [my family] are as supportive as possible. But also, I don't really want to talk about it when I see them… I don't really want to give them the details…I just don't really want to talk about, I just think it's, I don't know, I just don't want them to really view me in a different light because of my experiences…I don't want that associated with me to be honest." (Male, mixed)

"[With moral injury], the physiology and the emotion tend to be more around the low mood I would say. The sadness, the really, really strong self-critic, self-criticism, maybe indulging in self-harm and punishing behaviours, withdrawing from family. Whereas in all the fear-based stuff you might cling on to your friends and family and become very dependent on them to help you create a sense of safety. I think with moral injury you really distance yourself from people because you have such shame about your own self-worth… I don't deserve to have friends, I don't deserve my family to be around me, I don't want to taint them with my wrongness or my badness." (Clinician)

Facilitating disclosure of PMIEs. Clinicians often reported that non-disclosure of PMIEs by veterans to their families/friends was common for the reasons described above; although clinicians also described the potential for vicarious trauma in cases of PMIE, where some family members – especially wives – could be shocked, distressed or even become unwell on disclosure. Clinicians described that they often were asked by veterans if they would tell their spouses about the event on their behalf and a central part of treatment was facilitating the veteran's disclosure of the event and associated distress themselves to their partners.

"No…in my experience it's too shameful to talk about, because if I tell them how will they see me?… .I think it's particularly helpful with moral injury if people can share it with their nearest and dearest because it's just in itself de-shaming and it's just in itself allowing some repair on that belief that I'm a horrible person. Well, now actually, I've told my wife and she hasn't left me, so actually maybe I'm not a terrible person. It's just this big secret that's been there for years and everybody knows that something is wrong and anytime something comes up on the TV Dad or husband or wife gets really irritable, and we all know something is wrong, but we've not spoken about it. I think it can be really helpful." (Clinician)

Social withdrawal following morally injurious experiences

Withdrawal from loved ones was a very commonly reported response, described by both clinicians and veterans. Withdrawal was particularly prevalent in veterans who reported exposure to moral injury and 'mixed' events. Withdrawal from others following non-morally injurious trauma was less commonly expressed; although, when this response was reported it often reflected a coping strategy to avoid intimacy with others having experienced the death of (several) close friends or colleagues during deployment.

As outlined in the previous section, concerns about the response they might receive from others if they disclosed the morally injurious or 'mixed' event were described by both veterans and clinicians as one key reason for withdrawing from friends and family members. Moral injury-related psychological distress, including feelings of shame, disgust and worthlessness, also contributed towards withdrawal as many veterans felt unworthy

or undeserving of a loving family given what they had witnessed and/or carried out during military service. Veterans exposed to moral injurious or 'mixed' events described experiencing emotional numbness which caused them to struggle to relate to or empathise with friends and family members following the PMIE. This lack of emotion also reportedly contributed towards their withdrawal from others, which often exacerbated veterans' negative self-perceptions and feelings of being undeserving of caring friends/family members. This emotional numbness was not reported to the same degree by trauma exposed veterans. Notably, clinicians and veterans described that some familial interactions could trigger the PMIE memory and also contribute towards withdrawal. For example, a veteran who shot a child may struggle to interact with his own children as they act as a trigger for memories of the event, amplifying feelings of guilt, shame and worthlessness.

"We carried on searching and then I saw a baby's crib. That had an impact on me because obviously my wife was pregnant...I couldn't find [the baby] anywhere [and then we found the baby dead]. So that had a huge impact and I couldn't, well, I got home about a month later my wife gave birth, I couldn't hold my child because every time I was anywhere near him, I could see this face. Yes, I mean, thinking about it, it still does have an effect." (Male, moral injury)

"There's also dissociation so I think that plays a part, that they feel guilty that their child is healthy and standing in front of them and they have this memory of what they have done, and they struggle to enjoy it I suppose. The guilt takes over and they struggle to embrace it and enjoy it and they think they're not worthy and they don't deserve this... They don't deserve this happiness, this happy family. Which then just makes them irritable and then they end up not being able to cope with the child." (Clinician)

Withdrawal and pre-event family functioning. Familial withdrawal was not a universal response, however. A small number of veterans who had experienced morally injurious, 'mixed,' and non-morally injurious traumatic events did not describe withdrawal from family members post-trauma because their relationships with family members had often broken down prior to the event. This was most commonly due to reported experiences of childhood adversity (e.g. physical/sexual abuse, authoritarian parenting). This meant that several veterans described having a lack of accessible social support from family members post-trauma. Clinicians considered that patients' experiences of childhood adversity were particularly pernicious in cases of exposure to PMIEs as such adversity could predispose or increase the vulnerability of veterans to experiencing guilt and shame as they may already hold several negative schemas about themselves, the world and others (e.g. 'I am a bad person').

"One veteran I worked with... [we] actually ended up working together for a year... what you saw was that there was a lot in his childhood as well...he'd grown up maybe with a sense of lack of nurturance and neglect. So, you are already predisposed to feel about himself. But this it was just really hard to shake off any sense of the cognitions, 'I am bad, I am a horrible person.' I described him as he just seemed soaked in shame when he came into the session, couldn't really make eye contact, very almost childlike and very apologetic. He'd engaged in loads of reckless behaviours, pushing his wife away, he'd had an affair for a while. All in the way of trying to push people close to him away and reinforced the sense that he was a bad person." (Clinician)

Withdrawal compounds distress. Withdrawal and isolation from friends and family members was thought by both clinicians and veterans to progressively worsen veterans' moral injury-related

psychological distress and associated symptoms. This process was considered to be cyclical, and interactive, with moral injury-related distress contributing towards withdrawal from others; withdrawal contributing to feelings of isolation and that friends/family members do not care or understand; feeling uncared for exacerbates psychological distress, including feelings of anger and worthlessness; friends/family members are then exposed to increasingly elevated levels of psychological distress and secondary responses (e.g. substance misuse, risk taking behaviour, aggression, etc.).

"As a sort of rule, the guilt and shame-based presentations will manifest in more depressive symptoms… they will start to withdraw… Why? Because their feelings of shame and guilt will be reflecting internally, so they will think worse of themselves, so their motivations will go down, they won't believe they are worth this, that and the other, so they will withdraw themselves. But often there are angles about what do other people think and all the rest of it. So that's another reason to withdraw. So, I'll withdraw [if] A) I think I'm not good enough but B) I don't think you like me. So, you often see it from all angles. And these guys will be the ones that shrink away and disappear." (Clinician)

"[One patient] with his wife…he'd push her away, he wouldn't let her in, almost I'm not deserving of this lovely wife and then did have an affair with someone else… For him I think it was more he wants his wife to find out, he wanted to be caught and he wanted to be rejected because that would just be self-fulfilling. Actually, she found out and she didn't reject him, but it left him almost feeling worse, like 'oh God that's another element of my personality that's despicable that she's now having to live with'." (Clinician)

This cyclical and progressively deteriorating impact of post-trauma related distress on veteran functioning and interpersonal relationships was not often described by veterans who experienced non-morally injurious trauma. Rather, many of these veterans described feeling that their family members were aware of their distress and were concerned for them. Feeling unsupported by friends/family members was not found to the same extent in this group compared to veterans who experienced moral injurious or 'mixed' events.

"I talked to [my wife] about it and told her in absolute detail with diagrams what had happened. So, she's aware of it now… She was very supportive." (Male, trauma):

Perceived impact of veteran's post-trauma psychological distress on family members

Veterans across the sample often described that their families often saw them as profoundly changed following their experience. Many veterans who experienced moral injury, 'mixed' and non-morally injurious trauma events felt that their exposure and subsequent distress had an impact on their family members. Similarly, clinicians considered that exposure to a veteran with moral injury or trauma-related mental health difficulties could have a vicarious impact on family members.

Both veterans exposed to moral injury and 'mixed' events and clinicians reported that veteran withdrawal and emotional numbness could be very distressing for their family. Family members reportedly could internalise the reasons for this withdrawal, that they were somehow to blame, which was often very upsetting. A number of veterans also considered that their emotional numbness meant they did not adequately support or empathise with family members, and that this 'inadequate response' was felt by veterans to be a key reason for the breakdown of relationships.

"So, immediately, so when my condition became very prevalent, sexual relationships were difficult because of the way that the condition makes you, so it makes you very numb and for me it was quite emotional, it was quite difficult and that was very difficult for my wife to understand because I love her dearly but she couldn't understand why I wasn't interested, I wouldn't talk to her and I think that you close down and you don't immediately notice that in yourself that you are being quiet and withdrawn but others realise...and people naturally will blame themselves thinking that they've done something wrong and that's not the case at all. So, it causes problems." (Male, moral injury)

"[At my centre] the wife and the husband could both get treatment because they are linked. To treat one without the other it's not so useful. So... this is the scenario, husband has got a guilt-based presentation and he's going home every night. He doesn't want to sleep with his wife, he doesn't want to do any of this. So, there's the wife, what sense is she making of it? As we all do, 'what have I done?'... we used to talk about this fundamental attribution error" (Clinician)

Impact of post-event substance misuse on family functioning. While substance misuse was reported by veterans across the sample, those who experienced PMIEs in particular described the secondary effects this could have on their family members. Veterans exposed to moral injury or 'mixed' events described that their substance misuse often involved alcohol or illegal class A drugs and was utilised as a way of coping with their moral injury-related distress (as described in the previous sections). As a consequence of their substance misuse, veterans described that they became highly unreliable, untrustworthy (e.g. stole from or manipulated loved ones), easily irritated and aggressive towards family members. Effectively a veteran's substance misuse appeared to act as an additional stressor upon relationships which were already fragile.

"You feel like death when you are doing it, but you can't stop because you are addicted and your addiction will come before your children, before your mum, before you dad, before anybody that you love. It comes before everybody. You lie, you manipulate, you steal. You know it's wrong, but you can't stop it because your addiction is so overwhelming it controls your whole life and then when you are mentally ill as well as your addition there is no way anybody can get through to you. It's a dangerous, dangerous road you are on." (Male, moral injury)

Aggression. An increase in aggressive behaviours at home following the challenging military event, including verbal abuse and physical assault, was a response reported by veterans across the sample. Veterans described not only losing their temper with their spouses but also their children, with clinicians reporting that the family often felt that they were 'walking on eggshells' around the veteran post-trauma. Particularly in cases of PMIE exposure, clinicians considered that veteran increased irritability at home was common following incidents involving civilians - especially children – and stemmed from frustration that their own relatives did not realise how fortunate they were in comparison. Such irritability could worsen moral injury-related distress and clinicians reported that veterans would often feel further shame and guilt for being a 'bad' partner or parent.

"[One patient], he's having a really hard time with his children. So I think they were mid-primary school age both of them and he really struggled... in his view they are very privileged, so any time they were just to argue, being children, and going

'why can't I have more pocket money or why can't I watch TV and stay up' he would just feel so angry. Whittling it down it was like you don't know how lucky you are and of course he was always, his reference point was always those [other civilian] children that died. So, I think he would feel very irritated at them, but then get the sense of guilt afterwards. So, if he'd shouted at them, he'd later be like 'I'm a bad father as well on top of all of this.' So, yes, I think that was difficult." (Clinician)

The line between overprotection and post-traumatic growth. Overprotective behaviours, such as excessive concerns about their child or spouse's safety, were reported by veterans across the sample. Veterans often framed this concern as a positive, caring behaviour or a manifestation of post-traumatic growth – following their challenging military experience, their family was considered more precious. Interestingly, in cases of PMIEs, clinicians reported such overprotective behaviours were possibly maladaptive and potentially reflected veterans' efforts to overcompensate for feelings of shame/guilt by intensely focusing on the needs of others.

"It changes family dynamics…if you believe you are shameful…you are afraid to make decisions, you become very worried over your kids, you will challenge anybody who threatens your kids in any way shape or form and the majority of times, the individual is misinterpreting the situation… there was [one patient] that was out and somebody started to talk to his kids in the shop. They were in a very, very open shop and he immediately targeted this individual. It was only when the guy's wife came along and he realised that he knew the wife but didn't know the husband he then apologised. But his whole mindset was just hypervigilance the whole time. He has to protect his kids." (Clinician)

Perceptions of familial support needs. Taken together, many of these veteran behaviours and responses could significantly disrupt familial functioning, creating a chaotic family environment and often a breakdown of relationships. The majority of clinicians reported the pressing need for further support to be given to families of veterans who experienced challenging events during military service. Family members were described as not usually receiving access to treatment alongside their veteran counterparts. Particularly for those who have had a PMIEs, clinicians considered that support to help veterans disclose the event to families, therapy for spouses themselves, and accessible guidance to help children to better understand how their military parent may be feeling would be beneficial and destigmatising, yet clinicians described that limited funding meant such support was often unavailable.

"There's a big lack of support for veteran families. A lot of times we hear veterans say that sometimes it shouldn't be them sitting there listening to all this stuff about PTSD, it should be their wives and their children because they have no clue. What I always say to veterans is they don't have to know about, they don't have to know every detail of the trauma but it might be nice to just open up and say "there was an incident that happened in Afghanistan that involved children so that's why I can't do X, Y and Z or why I get angry. You don't have to sit them down and go through". (Clinician)

Perceived impact of event exposure on occupation

Four superordinate themes emerged from the data regarding the perceived impact of veteran experiences of moral injury and non-morally injurious trauma on their career. The themes reflect data collected via veteran and clinician qualitative interviews.

Mental health difficulties and employment

Clinicians described that veterans presenting for treatment who had experienced a morally injurious or traumatic event often had high rates of unemployment. Similarly, most veterans across the sample reported experiencing a range of career-related difficulties, with many having had several jobs in a short period of time or being dismissed due to misconduct (e.g. substance misuse, lack of punctuality). While the reasons for employment difficulties varied, the experience of performing poorly at work or being disciplined/dismissed often had negative secondary implications for veteran's self-esteem and confidence.

I had an horrendous childhood. I joined the Army which was great... and then I come out and I've got no education per se. The only thing that I've been qualified or trained in is killing, weapons training. When I went to the Job Centre there were no jobs on the Job Centre board looking for snipers...In order to cope with all the difficulties, I turned to drugs, I turned to alcohol.... You can maintain it for a certain length of time, but your addiction always took over. You spent all your money on drugs or alcohol, and you couldn't get up in the morning or you didn't want to get up in the morning because you still had drugs and drink left. (Veteran, moral injury)

Psychological distress impacts career performance. Veterans across the sample described that the mental health difficulties they experienced following their challenging military event could affect their working lives. Particularly found in the veterans reporting non-morally injurious trauma was the impact of depressive symptoms on their job performance and satisfaction. Veterans described their low mood and anhedonia caused them to have little interest in career progression and that their civilian job was only a means to financially provide for their family or fund their substance misuse. This loss of motivation did not appear to be as salient for veterans reporting PMIE or 'mixed' events. Rather, veterans exposed to PMIEs or 'mixed' events often reported high levels of anxiety relating to their job, including concerns that they might perform poorly or make substandard decisions. Such concerns could be very debilitating, causing a great deal of distress and leading to avoidance of going into work or leadership roles. This anxiety was particularly pronounced for veterans who perceived that their PMIE was an event during military service where they failed to fulfil an important role or duty.

Interviewer: With what happened in Helmand and your colleague getting badly hurt, has it affected how you get on with maybe your boss or your colleagues at all?

Veteran (moral injury): I think it's more around the anxiety level. So, I do struggle. I've always got this nagging doubt that someone doesn't believe me, or someone doesn't think I'm good enough. And my... instinctive response was always to try and hide errors. Or to avoid decisions so I don't have to make errors or risk running error or running the risk of judgement or criticism or what have you.

Occupation and anger management. Veterans and clinicians also reported the pervasive impact that difficulties managing anger could have on veterans' functioning at work. As described in the previous sections, veterans across the sample reported challenges with anger management, often having a 'short fuse.' In a workplace setting, veterans described losing their temper with colleagues or clients, being verbally or, at times, physically aggressive. Veterans across the sample reported many difficulties working with civilian colleagues - who were considered to lack the work ethic, skills and experience compared to (ex-)military personnel - which could be frustrating.

Unique to the veterans with exposure to morally injurious or 'mixed' events were experiences of challenging interactions with authority figures. Both veterans and clinicians described that morally injurious experiences, especially those that involved a within-ranks betrayal, contributed towards feelings of deep distrust of those in positions of authority, with veterans often challenging or refusing orders/instructions which could cause conflict and their resignation/dismissal. Clinicians reported that interpersonal difficulties with civilians and authority figures often meant that veterans with moral injury-related psychological difficulties sought out more solitary occupations, such as security or HGV driving, where they would not have to directly interact with others. This desire for isolation and withdrawal was also thought by clinicians to be potentially fuelled by moral injury-related feelings of guilt, shame and worthlessness, similar to the withdrawal from family members as described in the previous section.

> *'I guess it's learnt behaviour isn't it? If you touched a fire and it's hot it burns your hand, you are more wary of the fire next time. That's quite a simplistic narrative but I think it's true.... Further down the line when you come out into civilian street... they thrive quite well in jobs that are under their own autonomy and they are not answering to anybody's commands in such a direct way. I guess that's a factor in it. But ultimately it would be this disappointment in themselves for following, going against what they believe and following the, toeing the line.' (Clinician)*

'Some would say I was anti-authority; I've got a problem with authority.... I really struggle with if someone was to raise their voice in frustration or something like that. I can't take that in, it encourages me to lose my temper myself and just one remark can end in a blazing row.' (Veteran, mixed)

Occupation as a (maladaptive) coping strategy

Reported by veterans across the sample, particularly those exposed to morally injurious or 'mixed' events, was utilising their employment as a cognitive avoidance strategy to attempt to prevent thoughts about the event and their associated distress. Clinicians also reported this as a frequently utilised maladaptive coping strategy and that many veterans exposed to morally injurious events in employment often worked incredibly long hours. Furthermore, clinicians and veterans who experienced morally injurious and 'mixed' events described that employment could be a means for veterans to compensate or atone for perceived transgressive acts. Interviewees reported that veterans often held themselves to extremely high standards at work which, when not met, could worsen distress (i.e. heightening feelings of shame, worthlessness) and contribute towards self-harming behaviours. Working extremely hard for long hours was also felt by veterans who experienced a morally injurious or 'mixed' event to be a way to atone for the transgressive act by providing an income and good quality of life for their family, although they acknowledged that this often came at a high personal cost.

'So [my client] used to punish himself...I've had a few guys like this in the military who have such exacting standards that if at the end of the working day he didn't feel that he'd contributed, so it would be silly things like have a freezing cold shower and you are thinking well that's, but it's all the same picture isn't it, the idea that he was finding a way to punish himself.' (Clinician)

Silent distress

Consistently reported by clinicians and veterans was a range of occupation-related barriers to support for their psychological difficulties. Particularly amongst those who had experienced a morally injurious or 'mixed' event was the perceived inability to raise concerns about the ethical/moral ramifications of the event as this would cause friction within their AF unit. Across the sample, when veterans felt that they were struggling with event-related psychological distress, there was a consensus that this distress could not be discussed or disclosed during their military service given the 'masculine' culture of the AF and concerns that they may be seen as a 'liability' by members of their unit or commanders. Challenges to disclosure continued on leaving the AF as many veterans reported that they had a family to provide for and disclosing mental health problems to a civilian employer may jeopardise their employment.

You are kind of brought up with a sense of values and then all of a sudden you are put into a role where if you are not on board with the other lads being a bully, you are either with the lads bullying or you're not. And you've got to live with these lads, you've got to travel the world with them and you've got to go into combat zones etc. so if you are running back to your Sergeant Major and saying 'I don't agree with what [he] just did with that lad and I don't agree with what we did with that lad and I don't agree with that situation'. You are a fly in the ointment. You are a potential whistle blower, you are going to end up ostracised, abandoned and rejected yourself. So, you almost become complicit with it... And in an infantry regiment you've got to be in, or you are definitely out. You are living with these men 24/7, 365 practically so if you are not out on tour in combat you are living with them in base on camp. (Veteran, moral injury)

Assessment of moral injury in the UK Armed Forces

The development of the MORIS (Moral Injury Scale) followed an iterative process. The initial set of instructions, response format and potential items were created by reviewing the following sources: i) moral injury-related literature and existing theoretical models of moral injury (e.g. (1,8,29)); ii) empirical and clinical studies of the psychological responses of military and non-military personnel that have experienced PMIEs; iii) guilt, shame and PTSD literature; iv) measures which assess trauma exposure, PTSD, anger, guilt or shame; v) existing measures of moral injury exposure and psychological responses; and vi) data collected from participating UK AF veterans and clinicians who provide psychological treatment to UK AF personnel/veterans affected by moral injury.

Review of existing measures of moral injury:
To determine the measures of moral injury currently utilised internationally, we carried out a literature search of the following online databases: Web of Science, PILOTS, PsychNet and PubMed. The search terms moral injury AND scale OR measure* OR tool OR screen* were used. This search yielded 180 publications. To be considered eligible, studies had to include a direct measure of exposure to a PMIE or the psychological impact following moral injury exposure. Measures of exposure to PMIEs were included in the current review if they asked about exposure to perceived transgressions committed by the respondent and/or other individuals or perceived betrayal by others, such as leaders/colleagues (1,2). Articles were excluded on the following grounds: a) the article was a review or qualitative study that did not utilise a standardised measure of PMIE exposure or moral injury-related psychological responses, (b) single case studies, (c) study was not written in English, (d) article was not accessible or (e) study was not peer reviewed. Of these studies, 96 studies were excluded on these grounds and a further 28 duplicates were then removed. The full text of 56 articles were screened to determine the measures of moral injury or PMIEs they utilised in their studies. The final sample consisted of 43 articles that met inclusion criteria.

Across the 43 included articles, the most commonly utilised measures of moral injury or PMIE exposure were the Moral Injury Event Scale (MIES; (16), n=20), the Moral Injury Questionnaire-Military

version (MIQ-M; (17); n=5) and the Expressions of Moral Injury Scale–Military version (EMIS M; (30); n=4). Eight studies utilised measures of moral injury which their research team had modified from existing scales (e.g. (31)) or created their own measures (e.g. (32)). No included articles had examined moral injury in a UK context.

Development of initial items:

On the basis of the existing moral injury measures and literature, an initial 111 items were generated for the MORIS which were reviewed by a panel of experts in the field of moral injury (n=4). Items were written to be comprehensible at a year four reading level, according to the Flesch-Kincaid Grade Level Formula. Revisions based on expert review resulted in 62 items.

Exposure to PMIEs:

Part 1 of the MORIS (Appendix 4) aims to assess exposure to a range of PMIEs. Notably, the research team identified a dearth of questions in existing measures of PMIEs relating to experiences of physical and/or sexual assault, the experiences of leaders in making decisions that had adverse consequences, the experience of acts of commission under duress (e.g. made to follow orders one believes were wrong), witnessing human suffering, and the improper handling of human remains. Items to this effect were included in the MORIS as such experiences were found to be experienced by UK AF veterans as reported by veterans (via qualitative interviews and online open response questionnaire) and clinicians in this study.

Perceptions of 'wrongness' and time since event:

Part 2 of the MORIS asks questions about perceptions of moral wrongness which is useful in providing a general index of 'wrongness' irrespective of the number of PMIEs reported. Such an index is useful as an individual's moral appraisals of the event are thought to significantly increase the likelihood of negative psychological consequences following PMIEs (1,8) and previous studies have found moral appraisals of specific combat experiences to predict additional distress (e.g. PTSD, depression, anger) beyond having been exposed to combat (31).

Part 2 of the scale also assesses time since the PMIE event occurred, a factor which is not currently assessed by existing measures of PMIE or moral injury-related distress. Time since trauma has been found to be a significant factor in recovery following threat-based trauma and PTSD, with the majority of individuals no longer meeting criteria for PTSD six months post-trauma (33). As existing moral injury measures do not routinely measure this, we do not presently know how time since event relates to adjustment following PMIEs. Psychological responses following PMIEs: Part 3 of the MORIS aims to provide an assessment of a range of psychological responses following the PMIE including feelings of anger, betrayal, shame, guilt and perceived permanent change (e.g. loss of faith in humanity, emotional numbness, loss of religious or spiritual beliefs).

Potential risk factors for distress following PMIEs:

Part 4 of the MORIS incorporates an assessment of potential risk factors for moral injury-related distress that were identified during veteran/clinician qualitative interviews. Such risk factors include feeling unprepared or unaware of the emotional/psychological consequences of making ethically challenging decisions, perceived support from leaders in response to the event, subsequent exposure to life stressors, and social support following the event.

The scale development followed an iterative process where the large number of items were repeatedly considered by the research team until the final MORIS scale was arrived at. Whilst comparison to the published literature, and the results of the current study, suggest the scale has face validity, the scale will need to be formally validated in due course. Validation would include the administration of the measure to a large representative sample of respondents.

Discussion

Overview

This research is the first comprehensive examination of the experiences and impact of moral injury on UK AF veteran wellbeing. This study's primary objective was to explore the experiences that may lead to, and the impact of experiencing moral injury, in UK military veterans. In doing so, this study aimed to investigate potential risk and protective factors for the development of moral injury related mental health problems and perceptions of (need for) support.

The results of this investigation provide some of the first evidence that events experienced by UK AF veterans can simultaneously be morally injurious and traumatic or life threatening, as well as highlighting the process by which moral injury may occur in UK veterans. The current study illustrates the significant impact that morally injurious, as well as non-morally injurious, traumatic experiences during military service can have on veteran mental health and daily functioning. Finally, our findings provide detailed insight into the approaches currently used to identify and treat UK military personnel and veterans affected by moral injury-related psychological problems.

Key study findings

Events experienced by UK AF veterans can be 'mixed' in that they are simultaneously morally injurious and traumatic or life threatening, rather than dichotomously morally injurious or traumatic.

Morally injurious experiences can lead to a clash between existing sets of values (e.g. military versus civilian) and this dissonance contributes towards negative cognitive and emotional responses.

Veterans reporting exposure to a morally injurious, 'mixed' and non-morally injurious traumatic event were significantly more likely to meet case criteria for probable PTSD, depression, anxiety and suicidal ideation than those who reported no challenging event during military service. No statistically significant differences were found between morally injured, 'mixed' and trauma exposed veterans in terms of likelihood of meeting case criteria for any psychological disorder.

Several factors, including event type, a lack of social support, childhood adversity, unclear rules of engagement, being psychologically or emotionally unprepared, and transitioning to civilian life, were thought to increase vulnerability for experiencing distress following morally injurious events.

The study data suggest that individuals suffering from moral injuries, rather than non-morally injurious traumatic events, may be highly reticent in speaking about them with friends or family, or indeed with clinicians, possibly because of the associated guilt or shame.

Clinicians considered that identifying moral injury related mental disorders often required taking a detailed trauma history and it would be likely that more cursory assessments would miss moral injuries which could consequently impair effective treatment provision.

Clinicians utilised a variety of standardised treatment approaches to address specific moral injury-related responses and appraisals but there was no clear consensus as to which approach was best.

Moral injury-related mental health difficulties can adversely impact veteran family and occupational functioning.

A scale to assess exposure to and impact of morally injurious events on UK AF veterans was developed (MORIS), which – following validation - may be helpful in identifying those who may benefit from additional support.

The impact of moral injury on UK AF veteran mental health and wellbeing

Exposure to a range of PMIEs. Veterans were found to experience moral injury after a range of events, including witnessing human suffering and experiences of betrayal by leaders and/or colleagues. This presentation and index of events is consistent with previous studies of moral injury in both US and UK military samples (e.g. (6,15,34)). This diverse range of PMIEs reported by UK AF veterans was considered when designing Part 1 of the MORIS that measures event exposure, which will allow for a variety of experiences to be captured in future studies once the measure is validated.

Experience of 'mixed' events. The present project also illustrates that moral injury can be experienced by veterans following events that were both ethically challenging as well as life threatening or otherwise consistent with PTSD criterion A in DSM-5 (32).This is notable as the majority of the moral injury literature thus far has not made this distinction; for example, one of the most commonly cited definitions of moral injury (1) does not include a reference to the fact that the PMIE may simultaneously be threatening. It is possible that the combined impact of both a traumatic and PMIE may act as a 'double stressor' and could complicate treatment as therapists may focus more on the traumatic aspects of the event (rather than the morally injurious features) which are well addressed by conventional models of PTSD care. Therefore, these findings contribute towards the conceptual clarification of moral injury in a UK context as well as having practical application in that it is clear that clinicians taking a trauma history from veterans should specifically ask about potentially morally injurious aspects related to traumatic incidents.

The development of moral injury. This research illustrated veterans' lived experiences of moral dissonance following morally injurious events. Evidence suggested that morally injurious experiences could lead to a clash between existing sets of values (e.g. military versus civilian) and that in turn, this clash can contribute towards several negative cognitive and emotional responses (e.g. altered world view, shame, worthlessness) – all of which are characteristic of moral injury (1,7,35). This value clash was not experienced by non-morally injured participants nor following all potentially morally injurious events. These findings highlight the cognitive process by which moral injury can develop and suggest that moral injury in veterans does not always involve a straightforward violation of one's moral code; rather, the moral conflict experienced can be complex, with multiple value sets in disagreement (36,37).

Resolution of moral dissonance. A number of veterans in this study felt they were able to resolve their experience of moral conflict, either independently or following support from a mental health practitioner. Veterans who reported feelings of moral distress or moral injury recognised the potential negative long-term impacts of these feelings and appeared to make an active decision to either end their moral conflict or seek professional help for their difficulties. This was more likely to happen where the causative event was solely potentially moral injurious and did not include classically traumatic elements (e.g. threat of death). More notably, resolution of moral distress did not appear to be dependent on speaking with trusted others, such as friends or family, which is somewhat in contrast to the substantial evidence base showing that, in general, social support is

protective of mental health. This may be because the consequences of exposure to PMIEs are particularly difficult to talk about to non-healthcare professionals because of the shame and guilt associated with them.

Taken together, these findings are novel and contribute preliminary evidence of how recovery following moral injury may occur, and - once this process is better understood - could potentially inform the development of future treatment for mental health problems arising from exposure to PMIE.

Moral injury-related mental health difficulties.
The impact of PMIEs on mental health was described by clinicians as being different to that typically caused by a threat-based trauma. Following PMIEs, many veterans participating in the qualitative interviews described primary symptoms of guilt, shame and worthlessness as well as secondary maladaptive responses such as poor self-care and risk taking. Such risk taking may potentially reflect a form of self-punishment stemming from feelings of shame and worthlessness, and while veterans may not actively want to take their own life, at the same time, they often do not take as much care of themselves as they know they should and accept the consequences of doing so.

It seems likely like that these symptoms would both prevent morally injured individuals from accessing social support, which ordinarily is known to protective of people's mental health and lead them to be less concerned about adverse outcomes of reckless behaviour possibly because affected individuals believe that they should be punished in some way. Conversely, non-morally injured veterans described primary responses more consistent with typical PTSD presentations, including a sense of current threat, low mood and anxiety. Markedly, veterans who had experienced an event which was both morally injurious and threatening described primary symptoms of anxiety, re-experiencing and hypervigilance, alongside reactions more typical of moral injury such as guilt and shame . These findings are consistent with previous studies of moral injury in both military and non-military samples, with the most common symptoms present in cases of moral injury being intense negative appraisals, intrusive thoughts and self-deprecating emotions (1,3,38).

The results of the online questionnaire showed that a considerable proportion of veterans across the sample met case criteria for probable PTSD, alcohol misuse, depression and anxiety disorders and had high rates of suicidal ideation. These rates are somewhat higher than those found in previous large-scale studies of UK military veterans (e.g. 53.2% of the present study sample met likely PTSD criteria and 59.9% met CMD criteria versus recent prevalence estimates of PTSD and CMD in veterans who served in Iraq/Afghanistan combat roles which are 17% and 21.9% respectively; (39)). This is likely to be due to the opportunity sampling strategy employed, as it may have led to the recruitment of a particularly unwell or highly motivated veteran sample. As such, the quantitative data presented in this study is not reflective of all the population of UK AF who have experienced moral injury or trauma.

Veterans who reported exposure to a morally injurious, 'mixed' and non-morally injurious traumatic event in the online open response questionnaire were significantly more likely to meet case criteria for probable PTSD, depression, anxiety and suicidal ideation than those who

reported no challenging event during military service. These findings suggest that, as with incidents meeting the DSM-5 definition of a traumatic event, experiences of moral injury and mixed events are associated with poor mental health outcomes in the UK AF. The results are consistent with previous studies in the US and Canadian militaries that experiences of morally injurious events are significantly associated with adverse mental health outcomes, including PTSD and suicidal ideation (3,5,17,40)

Notably, the likelihood of meeting case criteria for probable anxiety and suicidal ideation was greatest in the 'mixed' group compared to those who reported moral injurious or non-morally injurious traumatic events. While this difference was not statistically significant (potentially due to small sample sizes), these findings are consistent with our qualitative results and indicate that those who experience an event that was simultaneously traumatic and morally injurious may be more vulnerable to certain types of distress. This may be particularly relevant for clinical practice in highlighting the range of symptoms that can be experienced by veterans (41) and is consistent with recent suggestions that standard exposure-based treatments for PTSD alone (e.g. prolonged exposure) may not adequately address all negative sequelae present in those with moral injury (42). Additionally, as highlighted above, should moral injury related distress not be identified during an initial assessment or during therapy, this research suggests that a poor outcome to treatment might be expected.

More positively, veterans across all three groups who participated in the qualitative interviews described some experiences of posttraumatic growth, including a greater appreciation for life (43). This experience of psychological growth is in line with previous research in morally injured Norwegian military personnel (32). Some veterans exposed to morally injurious or 'mixed' events also described a growth in their spirituality or faith following the event; however, this was not consistently observed, and other PMIE exposed veterans also described a loss of spiritual beliefs. Such spiritual or existential concerns are consistent with US studies of veteran moral injury (35,44) but contradict a recent UK study which found that clinicians did not consider spirituality to be a prominent issue for morally injured UK veterans (6). While additional research exploring the impact of moral injury on spirituality in UK personnel/veterans is undoubtedly needed, the present findings suggest that it could be beneficial for clinicians to discuss and address the potential impact of moral injury on spirituality and faith. These findings also indicate there may be a role for chaplains in supporting the wellbeing of morally injured personnel and veterans, which fall in line with previous studies that found collaborative, informal support from military chaplains was linked to better mental health in service personnel (45).

Perceptions of potential risk and protective factors for experiencing mental health difficulties following a PMIE

Several factors were thought to increase service personnel and veterans' vulnerability for experiencing distress following PMIEs, including event type, a lack of social support, childhood adversity, unclear rules of engagement, being unprepared, and transitioning to civilian life. That childhood adversity may be a risk factor for adverse outcomes following moral injury is consistent with prior research showing that earlier experiences of childhood adversity were significantly associated with poorer UK AF adjustment following other types of military trauma (e.g. (46)). A further recent study found childhood adversity to be significantly related to poor mental health in cases of moral injury exposure in Canadian military veterans (47). Taken together, these findings suggest that this risk factor warrants further investigation in a UK context, especially in the context of exposure to PMIEs.

Assessing moral injury

Our recent systematic review highlighted the need for the design and validation of assessments that measure the impact of PMIE exposure as well as the outcomes of moral injury. As it stands, some existing measures (e.g. MIES; MIQ-M) do not include exposure to a variety of potentially morally injurious events, or they confound PMIE exposure with the psychological effects of exposure ,(2,7). Similarly, several measures of PTSD (e.g. PCL-5) assess emotional outcomes theoretically associated with exposure to morally injurious events (e.g. shame, guilt) as well as threat-based trauma (e.g. fear, horror) in the same items (i.e. in the past month, how much have you been bothered by 'having strong negative feelings such as fear, horror, anger, guilt, or shame?' (18)). Thus, measures such as the PCL-5 may not be especially useful in distinguishing moral injury from non-moral injury related PTSD.

The measure developed by the research team, which has been informed by existing tools, theoretical models and data collected in the present study, aims to address these limitations. The MORIS incorporates the assessment of PMIE exposure (e.g. acts of commission, commission under duress, witnessing, betrayal), potential risk/protective factors for distress (e.g. social support, preparedness), perceived wrongness of event, time since event, and psychological responses (e.g. shame, guilt, anger). Once validated, it is hoped that the MORIS will provide clinicians and researchers with a comprehensive understanding of the range and nature of patient difficulties following morally injurious experiences that is currently not possible using existing measures.

The development and validation of measurement tools, such as the MORIS (not yet validated), would allow for reliable investigations into the existence and prevalence of moral injury in both military and non-military environments. This line of research could also aid in exploring whether there are particular experiences that are more likely to cause moral injury, as well as the precursors and the factors associated with vulnerability or resilience following moral injury. As not all individuals who experience trauma necessarily develop PTSD, exposure to PMIEs may similarly not always result in moral injury-related distress; additional research is therefore needed to better understand PMIE outcomes.

Evaluation of research

As with any research project, this study has several strengths and limitations.

Strengths & limitations

Strengths

- Thematic saturation reached
- Anonymous data collection

Limitations

- Potential exclusion of less experienced clinicians
- Majority of male veteran participants
- Assignment of participants to moral injury, 'mixed' or trauma groups determined by independent researcher ratings
- Possibility of sampling bias

Strengths

Thematic saturation reached. The collection of data from this diverse sample (n=45 qualitative interviews) ensures we can be confident that thematic saturation was sufficient to address our research questions.

Data collection methods. Participation in the present study was anonymous and confidential, with interviews carried out by telephone or online open response questions, which may have facilitated disclosure of veteran experiences and associated distress.

Limitations

Clinical experience. As study inclusion criteria required clinicians to have provided treatment to service personnel or a veteran who has experienced a PMIE within the last six months, a possible limitation is the exclusion of the views of clinicians with less experience in the identification and treatment of moral injury-related mental health problems.

Mostly males. The study is limited in that the vast majority of participating veterans were male. All veterans participating in the qualitative interviews were male, and no gender differences were found where female veterans participated in the online questionnaire. Nonetheless, this sample is broadly consistent with the gender profile of the AF. Future studies could include the perspectives of a wider demographic diversity.

Lack of screening measure. The assignment of participants to moral injury, 'mixed' or trauma groups was also determined by independent researcher ratings and future studies should utilise a screening measure once a validated tool for assessing moral injury is developed for use in the UK Armed Forces.

Response bias. This research is based only on those veterans and clinicians who chose to participate in response to study advertisements. This may mean that participants had particularly salient moral injury-related issues they wished to discuss. This could explain why veterans participating in the online open response questionnaire had relatively high rates of likely mental health problems compared to previous studies (e.g. (39)). Although study advertisements were widely circulated (e.g. social media, mailing lists, magazines, support groups, etc.) and a diverse recruitment strategy was used, there is no way to know to what degree, if any, this may have potentially skewed the results.

Possibility of bias. Although the combined sample of veterans who completed the online questionnaire was fairly large (n=204), the division of veterans into smaller morally injured, mixed, trauma exposed, and no event groups and carrying out multiple comparisons between groups may have increased the likelihood of type 1 error (e.g. false positives).

Path forward

The results of this research project have considerable implications for the ways in which (ex-)military personnel can be supported to ensure optimal wellbeing following exposure to PMIEs. We explore the key clinical and policy/practice implications of our findings below.

Implications

Need for a validated measure to assess patient exposure to morally injurious events and moral injury-related distress. Once validated, the MORIS may address this gap.
Need for an evaluation of whether using existing interventions leads to long-term improvements in moral injury related mental health difficulties, or if a validated treatment manual for treating moral injury-related psychological problems is required.
Need for more accessible clinician training and resources on the identification and treatment of moral injury-related mental disorders.
Need for organisations to ensure clinical care teams providing treatment to patients affected by moral injury have access to adequate peer support and clinical supervision to safeguard their own wellbeing.
Need to explore what role providing specific briefings, training and additional guidance for military personnel may play in protecting against military moral injury.
Need to explore strategies to support and address barriers to long-term employment for veterans with moral injury-related difficulties (i.e. coping strategies to facilitate engagement with authority figures, skills to manage workplace triggers).
Need to investigate how to best support the families of UK AF veterans experiencing moral injury–related mental health problems.

Clinical implications

Need for validated measure to assess PMIE exposure. To identify moral injury, clinicians reported gathering a comprehensive trauma history from patients. Clinicians expressed the view that less comprehensive history-taking would lead to a considerable potential for moral injury to be overlooked. The present study also found that clinicians utilised a variety of standardised treatment approaches to address specific maladaptive responses and appraisals. This suggests that a validated measure to assess patient exposure to PMIEs and moral injury-related distress may helpful in improving the detection of moral injury as well as determining whether current treatment approaches are effectively addressing psychological symptoms caused by PMIE exposure. The measure (MORIS) developed in the present study (Appendix 4), once validated, could help to fill this gap and address such uncertainty.

Need for treatment evaluation and/or manual. Whilst several treatment approaches have been found to be effective for PTSD in military populations (48,49), issues concerning relatively high non-response rates, patient drop out and poor conceptualisation of the fit between proposed therapeutic mechanisms and moral injury have raised concerns around whether these approaches are appropriate for all trauma types (50,51). An evaluation of whether using existing interventions (e.g. EMDR; TF-CBT etc.) leads to long-term improvements in morally injured patients' maladaptive responses and appraisals, or if a validated manual for treating moral injury-related psychological problems is needed, remains outstanding. Future research to clarify the most clinically and cost-effective approach for addressing moral injury-related mental ill health is required.

Need for accessible clinician training. Treating cases of moral injury also appeared to be challenging for clinicians due to their concerns about re-traumatisation, ineffective coping strategies, and issues relating to confidentiality and rapport. This study's findings indicate that clinicians would value more accessible training and resources on the identification and treatment of moral injury-related mental disorders. Such training may increase the confidence of clinicians working with morally injured samples. Although clinicians did report that access to such training could be prohibitively expensive, meaning they would be unable to access the most up to date guidance on moral injury-related care - a factor that should be considered in future research and trials developing treatments for moral injury-related distress. Also, given that these issues were identified by experienced clinicians, additional work should be done to ensure that less experienced clinicians, especially those working in assessment roles, know enough about moral injury to be able to effectively ask about its presence.

Impact on clinicians themselves. On a personal level, providing care for this group of patients was also found to be potentially distressing for clinicians, particularly if a patient's PMIE was similar to their own experience which was more likely if the clinician had served in the military themselves. Several factors, including personal trauma history, professional trauma exposure (e.g. deployment to combat zones to provide treatment), inadequate training, and a lack of accessible peer consultation, have all been found to impact the severity of vicarious trauma when working with military referrals (52). While assessing the effects of vicarious trauma was beyond the scope of this study, the present findings have implications for

mental health service providers in ensuring that clinical care teams who provide treatment to patients affected by moral injury have access to adequate peer support, clinical supervision, and training resources to safeguard their own wellbeing.

Policy & practice

Potential for protective briefings. Feeling unprepared for the emotional consequences of ethically challenging decision making and exposure to incidents where the rules of engagement are unclear may potentially be unique risk factors for experiencing military-related moral injury. In the present study, tailored changes to pre-operational briefings or training packages were thought to have the potential to protect personnel from moral injury-related distress. Some previous research has found that pre-deployment briefings can have protective effects against later psychological distress during deployment (53). It is possible that additional pre-deployment preparation about the ethically challenging decisions personnel may face and clarification on the rules of engagement, as well as a tailored debrief following a PMIE, may safeguard against moral injury-related distress. Research in civilian medic samples suggests that supportive discussions with senior colleagues who share their own workplace difficulties can help juniors to reflect on their own challenges and mitigate feelings of shame (54). This may suggest that properly trained direct line managers may be able to ensure that post-incident operational debriefings include the aim to help service personnel find meaning in what they have experienced, especially if the incident was potentially morally injurious. However, further research is needed to explore the role personnel briefings, training and guidance, possibly from the chain of command, may play in moral injury.

Employer support. Many veterans found employment in a traditionally male dominated post-service role, ideally with other veterans, was a very positive experience for their wellbeing. It may be beneficial for industries with a large veteran population (e.g. those part of Defence Employer Recognition Scheme) to consider the utility of forming veteran groups as an informal support network for their employees if they have not done so already. Such groups are likely to benefit from being facilitated or supervised to some degree. Clinicians described that veterans who experienced moral injury often, unhelpfully, sought employment in roles which put them at high-risk of trauma re-exposure or physical injury (e.g. prison officer, police officer, manual labour) or jobs where they were isolated from others (e.g. HGV driver, security). As receiving social support in the workplace has been found to be protective against poor psychological outcomes in high-risk occupations (e.g. first responders) (55), the present findings potentially suggest the need for employers to be aware of the employees working in isolated or at-risk roles and ensure that appropriate, accessible support is available. Nonetheless, veterans with moral injury-related distress reported difficulties securing and maintaining civilian employment. Securing employment and establishing financial stability is a key part of a successful transition from the military; a useful adjunct to emerging treatments for morally injured veterans (e.g. Adaptive Disclosure; (13)) may thus be to address issues surrounding barriers to long-term employment (i.e. coping strategies to facilitate engagement with authority figures, skills to manage workplace triggers).

Of relevance to the above point that may aid more secure employment is the finding that veterans who were able to resolve their moral

distress were likely to have either done so by themselves or through the assistance of a mental health professional. As such, it is suggested that more work is needed to properly understand the benefits of support on moral injury. It may be that strong feelings of guilt and/or shame could prevent veterans from properly accessing support.

Support for families. This research found that experiences of PMIEs could have considerable implications for veteran wellbeing, which in turn, was thought to significantly disrupt family functioning. This study highlights the pressing need for further support to be made available to families of (ex-)serving personnel who have experienced challenging events during military service. Particularly in cases of moral injury, clinicians considered that support to help veterans disclose the event to families could be helpful and destigmatising, therapy for spouses themselves, together with accessible guidance to help children to better understand how their military parent may be feeling, would be beneficial. Additional research is needed to explore how to best support the families of UK AF veterans experiencing psychological difficulties, such as moral injury–related mental health problems. It is possible that providing targeted advice and support, such as engaging the family in treatment and providing psychoeducation, may improve veteran and familial coping. It may be cost effective to consider offering remote or online treatments to facilitate access to support for the families of those with moral injury-related mental ill health. Cost effective online treatments have been developed to provide support and guidance to the families and carers of patients with a range of mental health problems, including alcohol misuse, depression and anxiety (56,57).

The development of a similar frontline approach for individuals affected by moral injury-related mental health problems may be especially beneficial given the pervasive impact such experiences can potentially have on family functioning.

Feedback from stakeholders

On the 7th February 2020, a dissemination event was held for invited stakeholders. Attendees included chaplains, clinicians, academics, FiMT staff and members of the Ministry of Defence. The results of this study were shared, followed by a question and answer session as well as break-out discussion groups. The key messages from the event are summarised below.

First, veterans who experience moral injury were thought to potentially face several barriers to help-seeking, causing delays to care which may have negative implications for not only their own wellbeing, but also that of their families. Further research to investigate familial needs in cases of veteran moral injury, including the possible development of appropriate and acceptable psychoeducation for families about moral injury, were considered a possibly beneficial next step.

Second, the need for preventative action to safeguard against moral injury was highlighted. Altering existing pre-deployment briefings to service personnel to ensure they emphasize personnel's individual moral agency, and also explaining both the rationale behind the respective deployment to theatre and the importance of following the rules of engagement, was thought to be potentially protective. However, as the nature of military service is that personnel need to be able to undertake challenging duties and make difficult decisions, within what may be a limited timeframe and with limited information at their disposal, any

alterations to pre-deployment briefings must equip, rather than hinder, personnel's ability to carry out their role. Following deployment, stakeholders considered that normalising experiences of distress by peers or leaders could be very beneficial, as well as incorporating an open discussion of the decisions made during deployment as part of personnel debriefings. Such structured, reflective discussions appear to have worked well for the prevention of moral distress in nursing staff who also operate within a high-stakes, hierarchical organisation framework (e.g. (58)), and is thus a possible avenue that should be further investigated in the military personnel and veteran context.

Third, certain critical periods were discussed as having the potential to increase veterans' vulnerability to experiencing moral injury, such as transitioning to civilian life and during older age and retirement from the workforce. It is possible that transitioning to civilian life may contribute towards the development of moral injury as clashes between existing sets of values (e.g. military versus civilian values) may become more stark - although this has yet to be formally investigated. Regarding retirement, while no studies have examined the potential relationship between older age and the risk of moral injury, previous studies have found worsening trauma-related symptoms in older veterans which is thought to reflect cognitive aging where symptoms emerge in old age due to age-related decreases in attention and memory function (59). It is also possible that in retirement from the workforce, this transition may provide an opportunity to evaluate one's past actions and whether the decisions made fit still with one's ethical or moral code. As it stands, the trajectory of moral injury-related mental ill health remains poorly understood and robust longitudinal studies are needed to elucidate the course of moral injury.

Finally, the needed developments to the treatment and support available to those who suffer with moral injury-related mental health problems were explored. The need for a validated screening tool to identify moral injury was stressed by stakeholders given the potential for moral injury-related distress to be overlooked during treatment. Delivering treatment in the form of group therapy, which has worked well for those who have experienced other types of shame/guilt based trauma (e.g. sexual assault survivors, (60)) or using Adaptive Disclosure, which has had promising results with US veterans, were considered potentially beneficial treatment possibilities (13). Military affiliated chaplains or padres were also considered to be a trustworthy and established source of support for personnel and veterans. Little research has been done to date in terms of exploring the role that chaplains/padres play in supporting those who have experienced a moral injury (35), especially in a UK context. Additional research is needed to evaluate and understand the support they currently provide to personnel/veterans and, if effective, explore ways to best incorporate chaplain/padre support into psychological treatment pathways.

Whilst the research team was highly appreciative of the feedback provided by stakeholders, as some feedback was based on stakeholder personal perspectives, the team had to be cautious about using recommendations without further investigation. It was noted that all interventions have the potential to do harm as well as good; due to this, any recommended intervention from the stakeholder event (e.g. briefing families about moral injury) needs to be carefully evaluated before any recommendation for wider roll out can be made.

Conclusion

This study's research strongly suggests that understanding the potential implications of exposure to morally injurious events during military service on mental health and wellbeing is essential for ensuring those who serve in the UK military are at no disadvantage compared to their non-veteran peers, in keeping with the Armed Forces Covenant. This line of research is also critical as only by understanding UK AF veteran experiences of, and responses to, military-related moral injury can we ensure that adequate provisions are made to support them through recommending effective changes to clinical practice and policy. A better understanding of moral injury, and how to prevent it, would also have implications for the Ministry of Defence in order to maintain an operationally effective workforce from a health and wellbeing perspective.

This study is one of the first to illustrate that moral injury is experienced by UK AF veterans and to examine the processes by which moral injury may occur. The results provide an in-depth understanding of the impact moral injury can have on UK veteran's psychological, occupational, social and day-to-day functioning. This research also delineates the approaches currently used to identify and treat UK military personnel and veterans affected by moral injury-related psychological problems and the challenges experienced (and support needs indicated) by clinicians in delivering this care. By investigating the experience and impact of military moral injury, this study provides insight into the unique difficulties experienced by veterans following events which transgress their moral or ethical code and highlight the gaps to be addressed in future research. These findings have several implications for informing preventative and intervention efforts to support veterans who have experienced a morally injurious event, and to support their families. These results also have implications for the mental health of the clinical workforce which seeks to help morally injured veterans.


PELTOR

References

1 Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. Clin Psychol Rev [Internet]. 2009 Dec 1 [cited 2017 Oct 25];29(8):695–706. Available from: http://www.sciencedirect.com/science/article/pii/S0272735809000920

2 Williamson V, Stevelink SAM, Greenberg N. Occupational moral injury and mental health: systematic review and meta-analysis. Br J Psychiatry [Internet]. 2018 Jun 22 [cited 2018 Jul 24];212(06):339–46. Available from: https://www.cambridge.org/core/product/identifier/S0007125018000557/type/journal_article

3 Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral Injury: An Integrative Review. J Trauma Stress [Internet]. 2019 Jan 28 [cited 2019 Jun 18]; Available from: http://doi.wiley.com/10.1002/jts.22362

4 American Psychiatric Association. American Psychiatric Association, 2013. Diagnostic and statistical manual of mental disorders (5th ed.) [Internet]. American Journal of Psychiatry. 2013. 991 p. Available from: http://ajp.psychiatryonline.org/article.aspx?articleID=158714%5Cnhttp://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:DSM-5#0

5 Bryan CJ, Bryan AO, Anestis MD, Anestis JC, Green BA, Etienne N, et al. Measuring Moral Injury: Psychometric Properties of the Moral Injury Events Scale in Two Military Samples. Assessment [Internet]. 2016 Oct 27 [cited 2017 Oct 25];23(5):557–70. Available from: http://journals.sagepub.com/doi/10.1177/1073191115590855

6 Williamson V, Greenberg N, Murphy D. Moral injury in UK armed forces veterans: a qualitative study. Eur J Psychotraumatol [Internet]. 2019 Jan 14 [cited 2019 Jun 18];10(1):1562842. Available from: https://www.tandfonline.com/doi/full/10.1080/20008198.2018.1562842

7 Frankfurt S, Frazier P. A review of research on moral injury in combat veterans. Mil Psychol [Internet]. 2016 [cited 2017 Oct 25];28(5):318–30. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1037/mil0000132

8 Farnsworth JK, Drescher KD, Evans W, Walser RD. A functional approach to understanding and treating military-related moral injury. Vol. 6, Journal of Contextual Behavioral Science. Elsevier Inc.; 2017. p. 391–7.

9 Nickerson A, Hoffman J, Schick M, Schnyder U, Bryant RA, Morina N. A Longitudinal Investigation of Moral Injury Appraisals Amongst Treatment-Seeking Refugees. Front Psychiatry [Internet]. 2018 Dec 18 [cited 2020 Apr 28];9:667. Available from: https://www.frontiersin.org/article/10.3389/fpsyt.2018.00667/full

10 Litz BT, Contractor AA, Rhodes C, Dondanville KA, Jordan AH, Resick PA, et al. Distinct Trauma Types in Military Service Members Seeking Treatment for Posttraumatic Stress Disorder. J Trauma Stress [Internet]. 2018 Apr 1 [cited 2019 Jun 18];31(2):286–95. Available from: http://doi.wiley.com/10.1002/jts.22276

11 Williamson V, Greenberg N, Murphy D. Impact of moral injury on the lives of UK military veterans: A pilot study. J R Army Med Corps. 2019;

12 Maguen S, Burkman K. Combat-Related Killing: Expanding Evidence-Based Treatments for PTSD. Cogn Behav Pract [Internet]. 2013 Nov 1 [cited 2018 Jul 24];20(4):476–9. Available from: https://www.sciencedirect.com/science/article/pii/S1077722913000540

13 Litz BT, Lebowitz L, Gray MJ, Nash WP. Adaptive disclosure : a new treatment for military trauma, loss, and moral injury [Internet]. New York: The Guildford Press; 2017. Available from: https://books.google.co.uk/books?hl=en&lr=&id=w20sDwAAQBAJ&oi=fnd&pg=PP1&dq=Adaptive+Disclosure%3B+Litz+et+al.,+2017&ots=PuKBQC8yBg&sig=Pm54_VyKSnadr80KdsrIhvgEiK4#v=onepage&q=Adaptive Disclosure%3B Litz et al.%2C 2017&f=false

14 McCormick WH, Carroll TD, Slagel BA, Drescher KD, Nieuwsma JA, Currier JM. Professional Quality of Life and Changes in Spirituality Among VHA Chaplains: A Mixed Methods Investigation. J Health Care Chaplain [Internet]. 2017 Jul 3 [cited 2019 Sep 4];23(3):113–29. Available from: https://www.tandfonline.com/doi/full/10.1080/08854726.2017.1295675

15 Bryan AO, Bryan CJ, Morrow CE, Etienne N, Ray-Sannerud B. Moral injury, suicidal ideation, and suicide attempts in a military sample. Traumatology (Tallahass Fla) [Internet]. 2014 [cited 2017 Oct 25];20(3):154–60. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1037/h0099852

16 Nash WP, Marino Carper TL, Mills MA, Au T, Goldsmith A, Litz BT. Psychometric Evaluation of the Moral Injury Events Scale. Mil Med [Internet]. 2013 Jun 14 [cited 2017 Oct 25];178(6):646–52. Available from: http://publications.amsus.org/doi/abs/10.7205/MILMED-D-13-00017

17 Currier JM, Holland JM, Drescher K, Foy D. Initial Psychometric Evaluation of the Moral Injury Questionnaire-Military Version. Clin Psychol Psychother [Internet]. 2015 Jan 1 [cited 2017 Oct 25];22(1):54–63. Available from: http://doi.wiley.com/10.1002/cpp.1866

18 Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL. The Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5): Development and Initial Psychometric Evaluation. J Trauma Stress [Internet]. 2015 Dec 1 [cited 2019 Jun 21];28(6):489–98. Available from: http://doi.wiley.com/10.1002/jts.22059

19 Kroenke K, Spitzer RL, Williams JBW. The PHQ-9. J Gen Intern Med [Internet]. 2001 Sep 1 [cited 2017 Oct 9];16(9):606–13. Available from: http://link.springer.com/10.1046/j.1525-1497.2001.016009606.x

20 Spitzer, Kroenke, Williams L. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med. 2006;

21 Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG. The Alcohol Use Disorders Identification Test Guidelines for Use in Primary Care. In: World Health Organization. 2001.

22 Osman A, Bagge CL, Gutierrez PM, Konick LC, Kopper BA, Barrios FX. The suicidal behaviors questionnaire-revised (SBQ-R): Validation with clinical and nonclinical samples. Assessment [Internet]. 2001 Dec 26 [cited 2020 Jul 1];8(4):443–54. Available from: http://journals.sagepub.com/doi/10.1177/107319110100800409

23 Fear NT, Jones M, Murphy D, Hull L, Iversen AC, Coker B, et al. What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study. Lancet [Internet]. 2010 [cited 2017 May 10];375(9728):1783–97. Available from: http://www.sciencedirect.com/science/article/pii/S0140673610606721

24 Hotopf M, Hull L, Fear NT, Browne T, Horn O, Iversen A, et al. The health of UK military personnel who deployed to the 2003 Iraq war: a cohort study. Lancet [Internet]. 2006 [cited 2017 May 17];367(9524):1731–41. Available from: http://www.sciencedirect.com/science/article/pii/S0140673606686625

25 Iversen AC, Fear NT, Simonoff E, Hull L, Horn O, Greenberg N, et al. Influence of childhood adversity on health among male UK military personnel. Br J Psychiatry. 2007;

26 Plummer F, Manea L, Trepel D, McMillan D. Screening for anxiety disorders with the GAD-7 and GAD-2: A systematic review and diagnostic metaanalysis. Gen Hosp Psychiatry. 2016 Mar 1;39:24–31.

27 Stein N, R T, Mills MA, Arditte K, Mendoza C, Borah AM, et al. A Scheme for Categorizing Traumatic Military Events. Behav Modif [Internet]. 2012 [cited 2019 Jun 18];36(6):787–807. Available from: http://bmo.sagepub.com

28 Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006 Jul 21;3(2):77–101.

29 Shay J. Moral injury. Psychoanal Psychol. 2014;31(2):182–91.

30 Currier JM, Farnsworth JK, Drescher KD, McDermott RC, Sims BM, Albright DL. Development and evaluation of the Expressions of Moral Injury Scale-Military Version. Clin Psychol Psychother [Internet]. 2018 May [cited 2019 Sep 20];25(3):474–88. Available from: http://www.ncbi.nlm.nih.gov/pubmed/29282787

31 Lancaster SL, Miller M. Moral Decision Making, Religious Strain, and the Experience of Moral Injury. Psychol Trauma Theory, Res Pract Policy. 2019;

32 Nordstrand AE, Bøe HJ, Holen A, Reichelt JG, Gjerstad CL, Hjemdal O. Danger- and non-danger-based stressors and their relations to posttraumatic deprecation or growth in Norwegian veterans deployed to Afghanistan. Eur J Psychotraumatol [Internet]. 2019 Jan 29 [cited 2019 Oct 9];10(1):1601989. Available from: https://www.tandfonline.com/doi/full/10.1080/20008198.2019.1601989

33 Hiller RM, Meiser-Stedman R, Fearon P, Lobo S, McKinnon A, Fraser A, et al. Research Review: Changes in the prevalence and symptom severity of child posttraumatic stress disorder in the year following trauma - a meta-analytic study. J Child Psychol Psychiatry [Internet]. 2016 May [cited 2016 Jul 22];57(8):884–98. Available from: http://doi.wiley.com/10.1111/jcpp.12566

34 Jones E. Moral injury in time of war. Lancet [Internet]. 2018 May 5 [cited 2019 Jun 18];391(10132):1766–7. Available from: https://www.sciencedirect.com/science/article/pii/S0140673618309462

35 Drescher KD, Foy DW, Kelly C, Leshner A, Schutz K, Litz B. An exploration of the viability and usefulness of the construct of moral injury in war veterans. Traumatology (Tallahass Fla) [Internet]. 2011 [cited 2017 Oct 25];17(1):8–13. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1177/1534765610395615

36 Molendijk T, Kramer E-H, Verweij D. Moral Aspects of "Moral Injury": Analyzing Conceptualizations on the Role of Morality in Military Trauma. J Mil Ethics [Internet]. 2018 [cited 2019 Jun 18];17(1):36–53. Available from: https://www.tandfonline.com/action/journalInformation?journalCode=smil20

37 Lifton R. Home from the war: Learning from Vietnam veterans. New York: Other Press; 2005.

38 Feinstein A, Pavisian B, Storm H. Journalists covering the refugee and migration crisis are affected by moral injury not PTSD. JRSM open [Internet]. 2018 Mar [cited 2019 Sep 4];9(3):2054270418759010. Available from: http://www.ncbi.nlm.nih.gov/pubmed/29552347

39 Stevelink SAM, Jones N, Jones M, Dyball D, Khera CK, Pernet D, et al. Do serving and ex-serving personnel of the UK armed forces seek help for perceived stress, emotional or mental health problems? Eur J Psychotraumatol [Internet]. 2019;10(1). Available from: https://www.tandfonline.com/action/showCitFormats?doi=10.1080%2F20008198.2018.1556552

40 Nazarov A, Fikretoglu D, Liu A, Thompson M, Zamorski M. Greater prevalence of post-traumatic stress disorder and depression in deployed Canadian Armed Forces personnel at risk for moral injury. Acta Psychiatr Scand [Internet]. 2018 [cited 2019 Sep 4];2018:1–13. Available from: http://cradpdf.drdc-rddc.gc.ca/PDFS/unc298/p806260_A1b.pdf

41 Jinkerson JD. Defining and Assessing Moral Injury: A Syndrome Perspective. Traumatology (Tallahass Fla). 22(2):122–30.

42 Maguen S, Lucenko BA, Reger MA, Gahm GA, Litz BT, Seal KH, et al. The impact of reported direct and indirect killing on mental health symptoms in Iraq war veterans. J Trauma Stress [Internet]. 2010 [cited 2018 Jul 24];23(1):n/a-n/a. Available from: http://doi.wiley.com/10.1002/jts.20434

43 Tedeschi RG, Calhoun LG. TARGET ARTICLE: "Posttraumatic Growth: Conceptual Foundations and Empirical Evidence." Psychol Inq [Internet]. 2004 Jan 19 [cited 2016 Feb 15];15(1):1–18. Available from: http://www.tandfonline.com/doi/abs/10.1207/s15327965pli1501_01

44 Purcell N, Burkman K, Keyser J, Fucella P, Maguen S. Healing from Moral Injury: A Qualitative Evaluation of the Impact of Killing Treatment for Combat Veterans. J Aggress Maltreat Trauma [Internet]. 2018 Jul 3 [cited 2019 Jan 10];27(6):645–73. Available from: https://www.tandfonline.com/doi/full/10.1080/10926771.2018.1463582

45 Seddon RL, Jones E, Greenberg N. The Role of Chaplains in Maintaining the Psychological Health of Military Personnel: An Historical and Contemporary Perspective. Mil Med [Internet]. 2011 Dec 1 [cited 2019 Jan 10];176(12):1357–61. Available from: https://academic.oup.com/milmed/article/176/12/1357-1361/4318840

46 Iversen AC, van Staden L, Hughes JH, Greenberg N, Hotopf M, Rona RJ, et al. The stigma of mental health problems and other barriers to care in the UK Armed Forces. BMC Health Serv Res [Internet]. 2011 Dec 10 [cited 2019 Jul 25];11(1):31. Available from: https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-11-31

47 Battaglia AM, Protopopescu A, Boyd JE, Lloyd C, Jetly R, O'Connor C, et al. The relation between adverse childhood experiences and moral injury in the Canadian Armed Forces. Eur J Psychotraumatol. 2019 Jan 1;10(1).

48 Eftekhari A, Ruzek JI, Crowley JJ, Rosen CS, Greenbaum MA, Karlin BE. Effectiveness of National Implementation of Prolonged Exposure Therapy in Veterans Affairs Care. JAMA Psychiatry [Internet]. 2013 Sep 1 [cited 2019 Sep 4];70(9):949. Available from: http://archpsyc.jamanetwork.com/article.aspx?doi=10.1001/jamapsychiatry.2013.36

49 Monson CM, Schnurr PP, Resick PA, Friedman MJ, Young-Xu Y, Stevens SP. Cognitive Processing Therapy for Veterans With Military-Related Posttraumatic Stress Disorder. [cited 2019 Sep 4]; Available from: https://pdfs.semanticscholar.org/ea32/861e933b459189167aa1b45b99d203c3c66c.pdf

50 Phelps AJ, Steel Z, Metcalf O, Alkemade N, Kerr K, O'Donnell M, et al. Key patterns and predictors of response to treatment for military veterans with post-traumatic stress disorder: a growth mixture modelling approach. Psychol Med [Internet]. 2018 Jan 15 [cited 2019 Sep 4];48(1):95–103. Available from: https://www.cambridge.org/core/product/identifier/S0033291717001404/type/journal_article

51 Farnsworth JK, Drescher KD, Nieuwsma JA, Walser RB, Currier JM. The Role of Moral Emotions in Military Trauma: Implications for the Study and Treatment of Moral Injury. [cited 2019 Sep 4]; Available from: http://dx.doi.org/10.1037/gpr0000018

52 Jordan K. Vicarious Trauma: Proposed Factors That Impact Clinicians. J Fam Psychother [Internet]. 2010 Dec 6 [cited 2019 Sep 4];21(4):225–37. Available from: http://www.tandfonline.com/doi/abs/10.1080/08975353.2010.529003

53 Mulligan K, Jones N, Woodhead C, Davies M, Wessely S, Greenberg N. Mental health of UK military personnel while on deployment in Iraq. Br J Psychiatry [Internet]. 2010 [cited 2019 Jun 18];197(5):405–10. Available from: http://openaccess.city.ac.uk/14923/Linktopublishedversion:http://dx.doi.org/10.1192/bjp.bp.110.077263http://openaccess.city.ac.uk/

54 Miles S. Addressing shame: what role does shame play in the formation of a modern medical professional identity? BJPsych Bull [Internet]. 2019 Jul 29 [cited 2019 Sep 4];1–5. Available from: https://www.cambridge.org/core/product/identifier/S2056469419000494/type/journal_article

55 Shakespeare-Finch J, Rees A, Armstrong D. Social Support, Self-efficacy, Trauma and Well-Being in Emergency Medical Dispatchers. Soc Indic Res [Internet]. 2015 Sep 21 [cited 2020 Jul 1];123(2):549–65. Available from: https://link.springer.com/article/10.1007/s11205-014-0749-9

56 Nagel T, Robinson G, Condon J, Trauer T. Approach to treatment of mental illness and substance dependence in remote Indigenous communities: Results of a mixed methods study. Aust J Rural Health [Internet]. 2009 Aug 1 [cited 2020 Jun 8];17(4):174–82. Available from: http://doi.wiley.com/10.1111/j.1440-1584.2009.01060.x

57 Gleeson J, Lederman R, Herrman H, Koval P, Eleftheriadis D, Bendall S, et al. Moderated online social therapy for carers of young people recovering from first-episode psychosis: Study protocol for a randomised controlled trial. Trials [Internet]. 2017 Jan 17 [cited 2020 Jun 8];18(1):27. Available from: http://trialsjournal.biomedcentral.com/articles/10.1186/s13063-016-1775-5

58 Browning ED, Cruz JS. Reflective Debriefing: A Social Work Intervention Addressing Moral Distress among ICU Nurses. J Soc Work End Life Palliat Care [Internet]. 2018 Jan 2 [cited 2020 Jul 1];14(1):44–72. Available from: https://www.tandfonline.com/doi/full/10.1080/15524256.2018.1437588

59 Williamson V, Harwood H, Greenberg K, Stevelink SAM, Greenberg N. The impact of military service on the mental health of older UK veterans: A qualitative study. Int J Geriatr Psychiatry [Internet]. 2019 May 15 [cited 2019 Jun 21];gps.5131. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/gps.5131

60 Katz LS. Efficacy of warrior renew group therapy for female veterans who have experienced military sexual trauma. Psychol Serv [Internet]. 2016 Nov 1 [cited 2020 Jul 1];13(4):364–72. Available from: /record/2016-40101-001

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Appendices

Appendix 1- Veteran interview schedule

Topic guide for semi-structured interviews with veterans (Q = Question; P = Probe)

Q: During your military service, did you ever experience an event(s) that challenged your belief of who you are, of the world we live in, or your sense of right and wrong?
P: If no, did you ever have another kind of upsetting, threatening or frightening experience during your military service?
P: If multiple events, which experience did you find most distressing?

Q: Can you briefly describe this experience?
P: What happened?
P: What were your reactions at the time?

Q: How often do you think about the event now?
P: When you think about it, what sort of thoughts do you have?
P: Are there any thoughts or feelings you have found difficult to cope with?

Q: Has this event changed the way you see yourself as a person?
Q: Has the event had any impact on your mental health or how you feel emotionally?
P: If no effects on mental health, why do you think some veterans might have mental health difficulties after challenging events?

Q: Have you had formal mental health treatment for these difficulties?
P: What was the treatment like for you?
P: Looking back, is there any advice, care or support that would've been helpful?

Q: Has the event impacted how you make sense of life and its meaning?
P: Has it affected your spirituality or religious beliefs?
P: Has it affected your understanding of right and wrong?

Q: Has the event had any impact on your plans for your future?
P: Are your plans the same or have you felt the need to change them?
P: Has the event had any impact on how you see the future of the world in general?

Q: What impact has the event had on your relationships with others?
P: Has the event impacted how close you feel to family members/friends?

Q: Have you had any support from family members or friends since the event?
P: Was there any other support from friends/family that you would have liked to have had?

Q: Has the event had any impact on your work?
P: Are you currently employed?
P: If not, has the event contributed towards this?
P: Has the event impacted how you do your job?
P: How has the event impacted your relationship with your boss or colleagues?

Q: Has the event impacted how you get along with authority figures? Why or why not?
P: Which authority figures in particular?

Q: Has the event impacted your trust in other people?
P: Is it easy/difficult to trust others?
P: Do you see yourself as trustworthy?

Q: Has the event changed how you care for yourself?
P: Have you changed or stopped doing any self-care activities?
P: Why do you think that is?
P: What is your physical health like?

Q: Sometimes some individuals experience events which go against their moral or ethical beliefs during the course of their military service which can cause distress. Are there any factors that might make some veterans more likely to feel distress after these sorts of experiences?
P: Are there any factors that might make someone less likely to be affected?

Note: Participants were asked open-ended questions and subsequent probing questions depending on their response.

Appendix 2- Clinician interview schedule

Topic guide for semi-structured interviews with clinicians (Q = Question; P = Probe)

Q: What do you know about the concept of 'moral injury'?
P: How would you define it?
P: How do you think MI might be different to other traumas involving threats to self or others?
P: Do you think the term 'moral injury' is a good descriptor or would you prefer a different term/expression?

Q: Have you provided ongoing care with service personnel or veterans who were exposed to morally injurious events?
P: What types of experiences do morally injured veterans present with?
P: Is there a particular type of morally injurious experience that is especially distressing for personnel/veterans?

Q: When personnel/veterans recollect the morally injurious event, what cognitions do they report?
P: What emotions do they report?
P: What physical symptoms do they report?
P: How does this compare to a personnel/veteran exposed to other types of trauma?

Q: Has their morally injurious experience changed how they view themselves as a person?
P: Why or why not?
P: How do you think this is the same/different to those exposed to other kinds of trauma?

Q: Has the event impacted how personnel/veterans make sense of life and its meaning?

Q: Has it affected their spirituality or religious beliefs?

Q: Has the event changed how they think about the future?
P: How do they see the future now?
P: Has the event had any impact on their ability to make plans for the future?

Q: Has the event affected their relationships with others?
P: Has the event effected how they care for other people?
P: Has the event impacted their trust in other people?

Q: Has the event had any impact on their work?
P: Are personnel/veterans who have these experiences typically employed?
P: Has the experience impacted how they perform in their job?
P: How has the event impacted their relationships with their boss/colleagues?

Q: How do their moral injury related difficulties affect their daily life?
P: Has their experience changed how they care for themselves?
P: What is their physical health like?

Q: Are there any factors that might make some personnel/veterans more/less likely to feel distressed on exposure to morally injurious events?
P: Are there any pre-event risk factors? During event itself? After the event?
P: Are there any protective factors before/during/after the event that might make someone less likely to be affected?

Q: What might lead you to consider that a patient might have experienced a moral injury?

Q: How have you approached working with service members/veterans to address their moral injury-related issues?
P: How does this approach compare to treatment for individuals with other trauma types?
P: How do you feel about using this approach?
P: What are some of the challenges of working with service members/veterans to address symptoms following experiences of moral injury?
P: Typically, how many treatment sessions do they need? How does this compare to non-morally injured populations?

Q: How do you manage the ethical implications of disclosures of morally injurious experiences by veterans?

Q: Is anything needed to better promote recovery among service members/veterans following moral injury?
P: At a service level?
P: At a policy or government level?
P: In terms of clinician training?

Q: What is it like for you personally to provide treatment in cases for moral injury?
P: Is it the same/different to working with individuals exposed to other trauma types?
P: What supervision or support do you currently receive in relation to your clinical work?
P: Is there any other support or training you would find helpful?

Note: Participants were asked open-ended questions and subsequent probing questions depending on their response.

Appendix 3– Online Open Response findings

Table 6

Proportion of veterans exposed to adverse events

Nature of event	Moral injury n(%)	Trauma n(%)	Mixed n(%)
Experienced a betrayal	18 (27.3)	2 (3.5)	5 (16.1)
Witness violence	3 (4.6)	1 (1.8)	0 (0.0)
Perpetrating violence	6 (9.1)	1 (1.8)	0 (0.0)
Experience of within rank violence	9 (13.6)	0 (0.0)	4 (12.9)
Witnessing human suffering	15 (22.)	10 (17.5)	7 (22.6)
Death of colleague or other frightening experience	6 (9.1)	43 (75.4)	13 (41.9)
Other act of omission	9 (13.6)	0 (0.0)	2 (6.5)

Table 7

Proportion of veterans who report the single worst feature of the described event

Nature of event	Moral injury n(%)	Trauma n(%)	Mixed n(%)
You thought you could be seriously injured/killed	3 (4.6)	19 (33.3)	4 (12.9)
You thought someone else could be seriously injured/killed	3 (4.6)	3 (5.3)	2 (6.5)
Sights/sounds/smells of event	13 (19.7)	15 (26.3)	7 (22.6)
Friend or unit member killed	4 (6.1)	10 (17.5)	0 (0.0)
You felt you failed to do the right thing or behaved in a way you feel ashamed/guilty about	26 (39.4)	7 (12.3)	11 (35.5)
Someone else failed to do the right thing or fulfil an important duty	16 (24.6)	3 (5.3)	7 (22.6)

Note. Reported values reflect n(%) participants who responded what was the worst feature of the event they described.

Figure 2

Proportion of veterans exposed to morally injurious, trauma and mixed event types

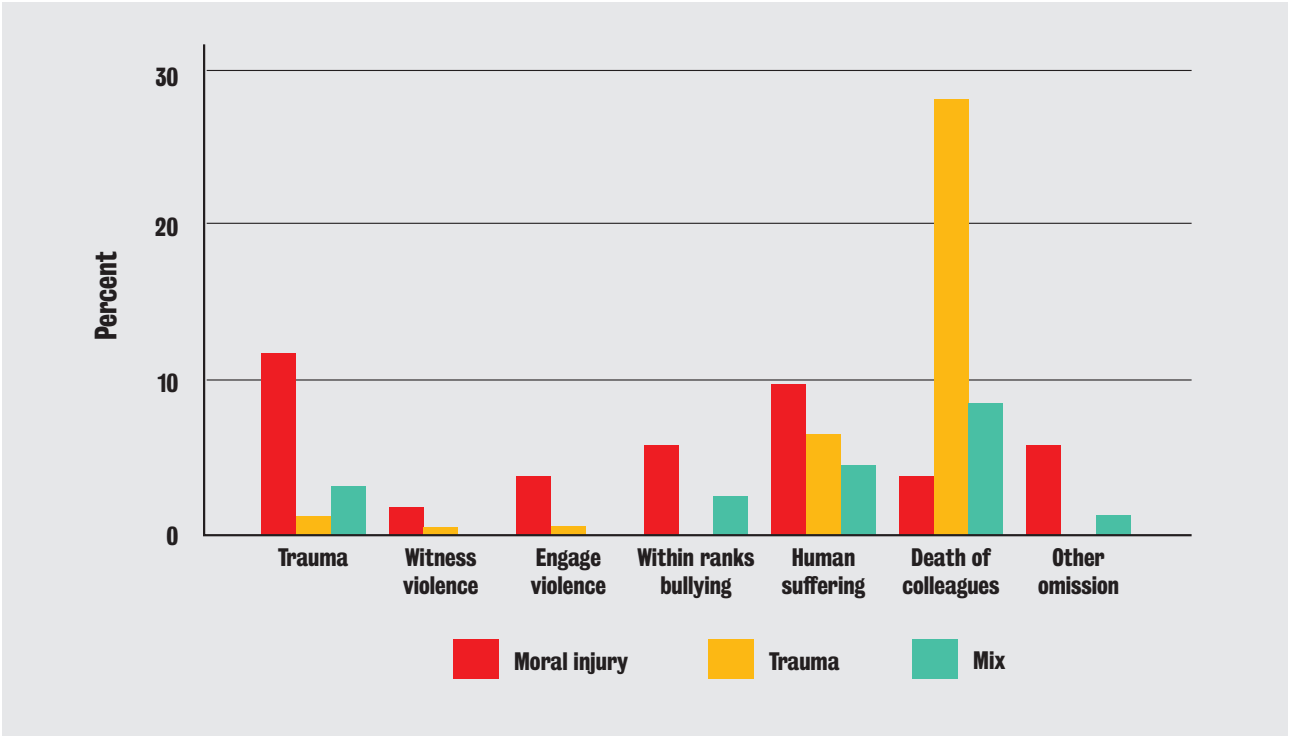
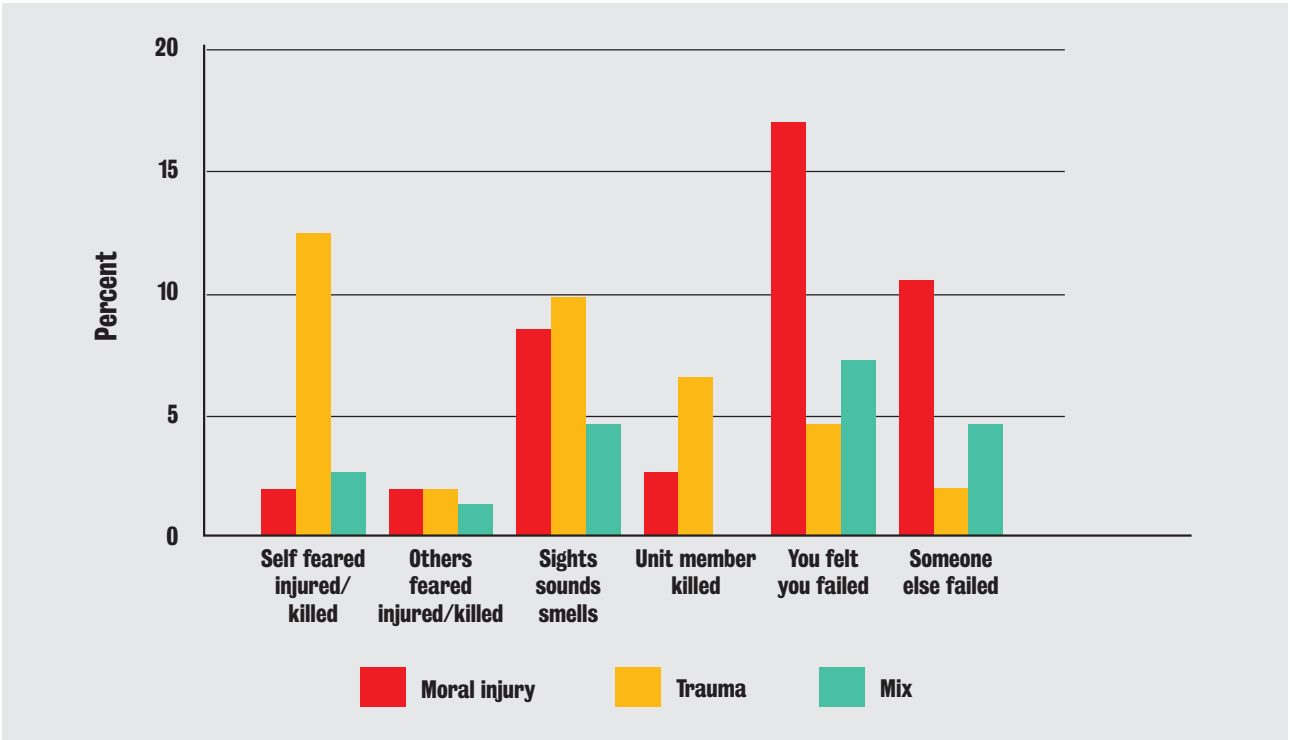


Figure 3

Graphical representation of the single worst feature of the described event



Note. Reflects veteran report of the single worst feature of the event experienced during military service.

Table 8

Proportion of veterans meeting case criteria by the single worst feature of the described event reported

	PTSD			Alcohol misuse			Depression		
	Non-case n(%)	Case n(%)	P	Non-case n(%)	Case n(%)	P	Non-case n(%)	Case n(%)	P
1. You thought you could be seriously injured/killed	8 (25.8)	23 (74.2)	**0.01**	24 (77.4)	7 (22.6)	1.0	16 (51.6)	15 (48.4)	0.24
2. You thought someone else could be seriously injured/ killed	7 (63.6)	4 (36.4)	0.36	9 (81.8)	2 (18.2)	1.0	10 (90.9)	1 (90.1)	0.05
3. Friend or unit member killed	7 (38.9)	11 (61.1)	0.62	14 (77.8)	4 (22.2)	1.0	9 (50.0)	9 (50.0)	0.32
Items 1, 2 & 3	22 (36.7)	38 (63.3)	**0.07**	47 (78.3)	13 (21.7)	0.86	35 (58.3)	25 (41.7)	0.54
4. Sights/sounds/ smells of event	12 (30.8)	27 (69.2)	**0.03**	28 (71.8)	11 (28.2)	0.41	16 (41.0)	23 (59.0)	**0.006**
5. You felt you failed to do the right thing or behaved in a way you feel ashamed/ guilty about	21 (46.7)	24 (53.3)	1.0	36 (80.0)	9 (20.0)	0.69	30 (66.7)	15 (33.3)	0.50
6. Someone else failed to do the right thing or fulfil an important duty	11 (40.7)	16 (59.3)	0.82	18 (66.7)	9 (33.3)	0.33	16 (59.3)	11 (40.7)	0.84
Items 5 & 6	32 (44.4)	40 (55.6)	0.21	54 (75.0)	18 (25.0)	1.0	46 (63.9)	26 (36.1)	0.12

Note. PTSD = meets case criteria for likely PTSD on PCL-5. Depression = meets case criteria for likely depression on PHQ-9. Anxiety = meets case criteria for anxiety on GAD-7. Suicidal ideation = meets criteria for suicidal ideation on SBQ-R. Caseness = meets case criteria on the PCL-5, PHQ-9 or GAD-7. P values = refers to whether differences between veterans reporting worst feature of event were statistically significant ($p<0.05$), examined via fisher's exact tests.

	Anxiety			Suicidal ideation			Caseness		
	Non-case n(%)	Case n(%)	P	Non-case n(%)	Case n(%)	P	Non-case n(%)	Case n(%)	P
1. You thought you could be seriously injured/killed	13 (41.9)	18 (58.1)	0.44	12 (38.7)	19 (61.3)	0.44	7 (22.6)	24 (77.4)	**0.05**
2. You thought someone else could be seriously injured/ killed	8 (72.7)	3 (27.3)	0.13	6 (54.5)	5 (45.5)	0.55	6 (54.5)	5 (45.5)	0.36
3. Friend or unit member killed	6 (33.3)	12 (66.7)	0.22	10 (55.6)	8 (44.4)	0.46	5 (27.8)	13 (72.2)	0.32
Items 1, 2 & 3	27 (45.0)	33 (55.0)	0.55	28 (46.7)	32 (53.3)	0.88	18 (30.0)	42 (70.0)	**0.07**
4. Sights/sounds/ smells of event	8 (20.5)	31 (39.5)	**<0.001**	9 (23.1)	30 (76.9)	**0.002**	8 (20.5)	31 (79.5)	**0.007**
5. You felt you failed to do the right thing or behaved in a way you feel ashamed/ guilty about	20 (44.4)	25 (55.6)	0.51	18 (40.0)	27 (60.0)	0.50	17 (37.8)	28 (62.2)	0.87
6. Someone else failed to do the right thing or fulfil an important duty	15 (55.6)	12 (44.4)	0.13	11 (40.7)	16 (59.3)	0.83	10 (37.0)	17 (63.0)	0.50
Items 5 & 6	35 (48.6)	37 (51.4)	0.09	29 (40.3)	43 (59.7)	0.75	27 (37.5)	45 (62.5)	0.13

Figure 4

Graphical representation of the worst feature of the event and mental health outcomes

Note. AUDIT = The Alcohol Use Disorders Identification Test (AUDIT). PHQ-9= Patient Health Questionnaire (PHQ-9). SBQ-R= Suicide Behaviours Questionnaire Revised (SBQ-R). PCL-5= PTSD Checklist for DSM-5 (PCL-5). GAD-7= Generalised Anxiety Disorder Checklist (GAD-7).

Appendix 4- Moral Injury Scale (MORIS)

Instructions: Many people have experienced one, or more, challenging event(s) at some point in their lives. Below is a list of examples of such events and people's reactions to them. Please read through the list and identify which apply to you. Please note that there are no right or wrong answers to the questions, so please try to answer them as honestly as you can. Only identify incidents that were significant or serious (rather than trivial).

Section 1. Please tick the box next to ALL of the challenging events that you have experienced in the left column ('this has happened to me') and tick the box in the right column if the event still bothers you a lot now.

	This has happened to me	This event still bothers me a lot now
Acts under my control		
The decisions I made, or did not make, led to other people being killed or seriously injured	☐	☐
I was involved in the serious injury or death(s) of children	☐	☐
Sometimes I behaved inappropriately in order to take revenge	☐	☐
I treated vulnerable or helpless people (*e.g. children, elderly, prisoners, animals)* in a way I now think was wrong or disrespectful *(e.g. using excessive violence or I behaved inappropriately)*	☐	☐
I treated dead bodies in a way I now think was wrong or disrespectful	☐	☐
I did other things that I know I should not have done	☐	☐
Acts under pressure		
I was ordered to behave in a way that I believed was wrong	☐	☐
I was forced to do things to other people that I thought were wrong or disrespectful	☐	☐
I was ordered to do something that resulted in someone else being killed or seriously injured	☐	☐
Acts that should have been done	☐	☐
I did not do something important which led to something bad happening	☐	☐
I failed to do something important or make a decision and someone was harmed or killed as a result	☐	☐
There are times when I have just stood by and let a bad thing happen	☐	☐
I failed to stop someone cause harm to another person *(e.g. physical, emotional, sexual behaviour)*	☐	☐
Acts I witnessed		
I have seen other people do things which break my own personal values about what is right and wrong	☐	☐
I saw severe human suffering or witnessed brutality towards the helpless *(e.g. children, prisoners, elderly, animals)*	☐	☐
Betrayal		
I did not have the supplies/equipment needed to get my job done safely	☐	☐
I was not able to ask those in authority/leaders for help if I had a problem/concern	☐	☐
I was not valued by the leaders of my organisation	☐	☐
I was touched sexually by a colleague/authority figure against my will	☐	☐
I was physically assaulted or threatened by a colleague/authority figure	☐	☐
I have been betrayed or let down by colleagues/authority figure I once trusted	☐	☐
Another person acted (or failed to act) and myself and/or other people were harmed as a consequence	☐	☐
Other challenging or upsetting event not listed above		
If you marked 'other' please specify:		

Section 2 – Please think the event(s) that continues to bother you the most and fill in the boxes below. Please tick ONE option.

How wrong do you think the event was?
A little wrong ☐ Somewhat wrong ☐ Really wrong ☐ Completely wrong ☐

When did you first begin to feel that this event was wrong?
As it was happening ☐ In the hours afterwards ☐ Over the first few days or weeks ☐ Months or more afterwards ☐

When did this event occur?
Less than 1 year ago ☐ 2-5 years ago ☐ 5-10 years ago ☐ More than 10 years ☐

Section 3 – Below is a list of difficulties that people sometimes experience after a challenging incident. When you think about all the event(s) you noted above in the shaded column (those events that that continues to bother you a lot), how often have you been affected by the following problems:

	Not at all	A little	Somewhat	A lot	Very much
Personal change					
What happened has caused me to lose faith in human beings	☐	☐	☐	☐	☐
What happened has made me feel emotionally numb or dead inside	☐	☐	☐	☐	☐
What happened has made me question my faith in my spiritual beliefs	☐	☐	☐	☐	☐
Because of what happened, I don't know who I am anymore	☐	☐	☐	☐	☐
Because of what happened, I no longer think life has any meaning	☐	☐	☐	☐	☐
Guilt					
I feel guilt for surviving when others did not	☐	☐	☐	☐	☐
I can never forgive myself for what happened	☐	☐	☐	☐	☐
People will never forgive me for what happened	☐	☐	☐	☐	☐
I am still troubled having acted in ways that violated my personal values	☐	☐	☐	☐	☐
I am still troubled by having witnessed others act in a way that I consider to be wrong	☐	☐	☐	☐	☐
Because of what happened, I doubt my ability to make right decisions again	☐	☐	☐	☐	☐
I often think about how the event(s) could or should have happened differently	☐	☐	☐	☐	☐
Anger					
I lash out at other people because I feel bad about what happened	☐	☐	☐	☐	☐
I feel angry when I think about what happened	☐	☐	☐	☐	☐
I sometimes think about taking revenge on the people who wronged me	☐	☐	☐	☐	☐
I am angry at myself	☐	☐	☐	☐	☐
I get angry with others more easily since the event	☐	☐	☐	☐	☐

Shame					
I feel like I am a bad person because of what happened	☐	☐	☐	☐	☐
Because of what happened, I take risks that might put me in harm's way *(e.g. driving under the influence, starting fights)*	☐	☐	☐	☐	☐
When I think about what happened, I want to harm or punish myself	☐	☐	☐	☐	☐
When I think about what happened, I feel like I have no right to be part of society	☐	☐	☐	☐	☐
There is nothing I can do to make up for what happened	☐	☐	☐	☐	☐
Because of what happened, I am no longer worthy of being loved	☐	☐	☐	☐	☐
Because of what happened, I do not deserve to feel happy	☐	☐	☐	☐	☐
When I think about what happened, I feel disgusted	☐	☐	☐	☐	☐
I feel so bad about what happened that sometimes I hide or withdraw from others	☐	☐	☐	☐	☐
I feel I can never tell anyone what happened	☐	☐	☐	☐	☐
If people find out what happened, they will never see me the same way again	☐	☐	☐	☐	☐
Betrayal					
My experience has taught me that it is only a matter of time before people will betray my trust	☐	☐	☐	☐	☐
My experience has caused me to not to ever trust people in authority	☐	☐	☐	☐	☐

Section 4 – When you think about all the event(s) you noted above in the shaded column (those events that that continues to bother you a lot), how much do you agree with the following statements

	N/A	Not at all	A little	Somewhat	A lot	Very much
I received appropriate training for the role(s) I was expected to carry out	☐	☐	☐	☐	☐	☐
I was accurately informed about the role(s) I was expected to carry out	☐	☐	☐	☐	☐	☐
I felt able to talk to someone about how I felt following this experience(s)	☐	☐	☐	☐	☐	☐
I felt adequately prepared for how certain experiences in my role may make me feel	☐	☐	☐	☐	☐	☐
Experiences in my childhood (e.g. abuse, neglect) made the event harder to cope with	☐	☐	☐	☐	☐	☐
I have had an additional stressful experiences(s) since the event(s) that I found hard to cope with (e.g. serious illness, loss of loved one)	☐	☐	☐	☐	☐	☐