FiMT forces in mind trust SUCCESSFUL SUSTAINABLE TRANSITION

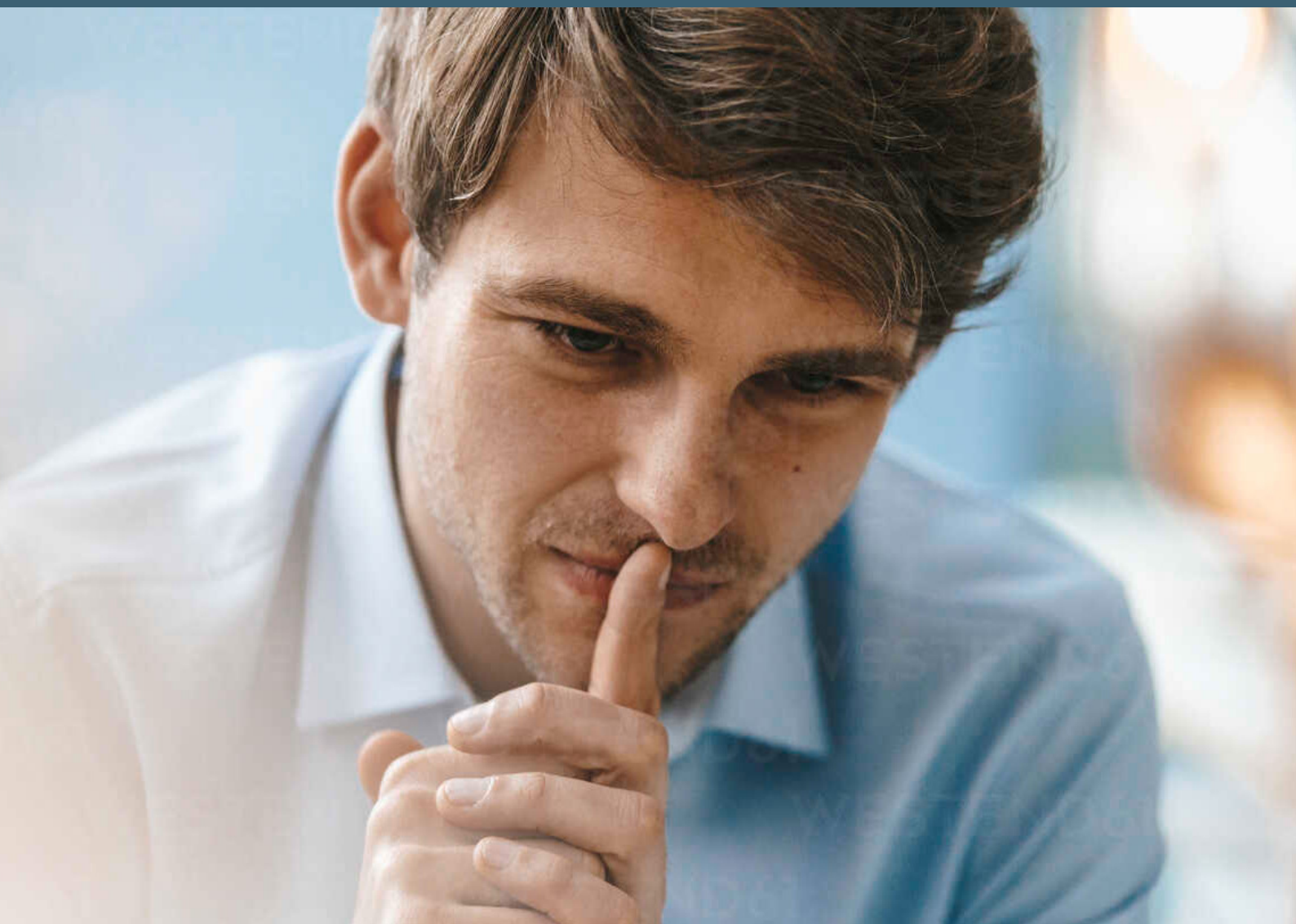
COMBAT STRESS FOR VETERANS' MENTAL HEALTH

COMMUNITY FUND

KING'S College LONDON

KCMHR KING'S CENTRE FOR MILITARY HEALTH RESEARCH

Development of an intervention for moral injury–related mental health difficulties in UK military veterans: *a feasibility pilot study*




SANCTE ET SAPIENTER

Contents

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

Previously the Gulf War Illness Research Unit, the King's Centre for Military Health Research (KCMHR) 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.

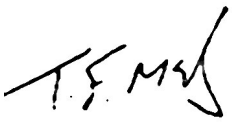
Authors
Dr Victoria Williamson
Professor Dominic Murphy
Dr Danai Seforti
Ms Amanda Bonson
Dr Vicky Aldridge
Professor Neil Greenberg

Foreword

This report into the development of a suitable intervention for moral injury-related mental health difficulties is the second on the topic to attract FiMT's support. It does so because its predecessor, Experiences of Moral Injury in UK Armed Forces, published in August 2020 was the first to establish a clear case for consideration of a relatively new factor and term in mental health and certainly within the context of military health. Consequently, there was a clear need to understand what this meant for the delivery of support for those identified as sufferers.

As a result of that earlier work, moral injury is increasingly understood as a potential aspect of mental distress amongst veterans, and also recognised as such for some beyond the military arena, with that early work having successfully defined moral injury as a potential consequence of trauma, to an extent codified its distinctiveness from other disorders such as PTSD, advanced a validated measure to assess patient exposure and explored the implications for conventional mental health strategies in providing effective treatment. This new report importantly reviews existing treatments taking account of the perspectives of clinicians and veteran patients and then goes further to assess the feasibility of a co-designed restore and rebuild therapy as a bespoke moral injury therapy.

Forces in Mind Trust's vision is for all ex-Service people and their families to lead successful civilian lives and we recognise the significance of good mental health in achieving that goal. That's why we have invested considerably in military mental health research to understand the nature and sometimes uniqueness of veterans' mental health and to advocate for the most effective interventions and support. We are therefore delighted to be supporting this important work in that quest and as a measure of our resolve to ensure ex-Service personnel can reap the benefits of progressive health research and the positive outcomes it can deliver.



Tom McBarnet
Chief Executive (Acting), Forces in Mind Trust

Executive Summary

Background

Moral injury may follow events which transgress from one's deeply held moral and ethical beliefs. Potentially morally injurious events (PMIEs) can be categorised into three distinct event types: acts of commission, omission or betrayal by a trusted other [1]. As an example of moral injury in a military setting; an act of omission may be witnessing a soldier mistreat a prisoner and not intervening to stop it, an act of commission may be shooting at a figure hiding in long grass, to then discover this is an innocent civilian or child. Finally, an act of betrayal may be being provided with faulty or insufficient equipment.

While moral injury is not limited to a military context, the majority of research to date has focused on moral injury in military connected samples. The cost of moral injury is often seen in the impact it has not only on military veterans, but also on a wider interpersonal level, as occupational functioning declines and increased risk-taking and wider social difficulties are evident [2,3]. Those with a moral injury may experience changes in how they view themselves, the world and others, and report intense emotions such as shame, guilt, anger, sadness, and disgust [4]. Developing moral injuries is significantly associated with psychiatric difficulties including posttraumatic stress disorder (PTSD), depression, anxiety, increased suicidality, and alcohol misuse [5–7].

Moral injury has been found to have a lasting impact on not only psychological health, but also spiritual, social, and daily functioning [3,8–10]. Pervasive feelings of guilt, shame and worthlessness can encourage an individual with moral injury to withdraw from others and to not discuss the PMIE with anyone. This may lead to social disconnection and struggling on alone [2,11]. Moral injury can also substantially impact both intrapersonal and interpersonal values, leading to damaged relationships with both self and others [11–13]. Individuals can come to believe that they do not deserve a good life after the PMIE, or they do not deserve to feel better [14] and engage in high levels of self-sabotaging and self-destructive behaviours [15]. This negative impact of moral injury has been found in military as well as non-military samples including police, healthcare workers and journalists [16–20]. Moral injury therefore presents as an important public health concern.

Challenges in treating moral injury.

Currently there is no manualised treatment for moral injury and its related mental health difficulties. Due to this lack of manualised treatment in the UK, clinicians report feeling unconfident in treating cases of moral injury and find that they are delivering treatments which draw from a number of different sources to find a good fit for these patients [17]. While moral injury can often co-occur with PTSD [18] and events can be simultaneously morally injurious and life threatening [5]; moral injury and PTSD are recognised as being distinctly different from each other in presentation [20]. This is supported by evidence that standard PTSD treatment does not seem to fully address symptoms of moral injury [21].

There are some treatments being developed for moral injury; although, these have only been evaluated with American military personnel/ veterans. One such treatment is Adaptive Disclosure (AD) [21], which encourages emotional processing and examination of beliefs from traumatic experiences. Another treatment, The Impact of Killing (IOK) [22] utilises cognitive appraisal techniques and considers the themes of forgiveness and self-forgiveness in moral injury. However, as the name suggests, IOK may not be applicable to a wide range of PMIE types experienced by most of those with moral injury, including military personnel with betrayal or omission experiences. Furthermore, UK and US veterans have different rules of engagement on deployment and have been shown to experience and respond to trauma differently [23]. Therefore, there is a need for a treatment for moral injury that considers the needs and experiences of UK veterans. In time, it may be possible that the treatment is adaptable to other occupational groups.

Developing a treatment for moral injury in a UK context.

Developing a treatment for UK veterans who have experienced moral injury that is acceptable and well tolerated holds a number of challenges. First, the very nature of PMIEs and resulting symptoms of shame and guilt may make accessing and engaging in treatment particularly challenging for patients. Veterans have also been found to have higher rates of treatment drop out, lower engagement and higher rates of relapse compared to the general population [24].

One approach often used in healthcare service design and development is 'codesign', where the lived experiences and knowledge of service users themselves are incorporated to enhance the quality and experiences of care. Codesign aims to develop a detailed understanding of how key stakeholders and service users perceive and experience the look, feel, processes and structures of a service [25,26]. By engaging stakeholders and service users in codesigning a service, this is argued to result in better care and improved service performance by emphasising individual's subjective experiences at various stages in the care pathway which, in turn, may lead to improvements in health outcomes and more efficient use of limited healthcare resources [25,26]. Given the increased awareness of the deleterious impact experiences of PMIE can have on veteran wellbeing, an acceptable treatment that helps veterans process and manage symptoms characteristic of moral injury, improves daily functioning and repairs veterans' relationships with themselves and others is urgently needed.

Aims

To address this gap, our primary objective was to co-design and deliver a manualised treatment for UK veterans with moral injury related mental health difficulties. This study consisted of three stages, each with distinct aims.

In Stage 1, we aimed to understand the effectiveness of existing treatment approaches for the symptoms characteristic of moral injury (i.e. guilt, shame and anger). In Stage 2, we aimed to gain an in-depth understanding of the treatment of moral injury by examining the beliefs and perspectives of leading professionals in the field of moral injury, as well as UK military veterans who have experienced PMIEs. We sought to understand

how existing mental health treatments for moral injury were experienced; what aspects of existing treatments were (un)helpful in managing moral injury-related distress; and the key components that future moral injury treatments should incorporate. In Stage 3, we aimed to co-design and pilot a manual for moral injury-related mental health difficulties – the Restore and Rebuild (R&R) treatment – and examine whether R&R was feasible to deliver, acceptable and well tolerated by morally injured veterans seeking treatment at Combat Stress.

Method

The Medical Research Council (MRC) guidelines for complex intervention development were followed [22]. To meet our research aims, the R&R treatment was co-designed using three stages. Here we briefly describe the processes undertaken and the key findings drawn from Stage 1 and 2 that were used to inform the R&R manual piloted in Stage 3.

Stage 1 was a systematic review of the effectiveness of existing treatment approaches for the key symptoms of moral injury (i.e. guilt, shame, anger) in both civilian and military populations [27]. Following a systematic search of the literature, 15 studies were included in the review. Exposure-based approaches (e.g. Prolonged Exposure, Trauma Management Therapy) were found to be particularly effective at reducing symptoms of shame and anger; while cognitive processing therapy was found to effectively reduce guilt and anger symptoms. The results of this review informed our understanding of the existing validated treatment components that may be especially effective in cases of moral injury.

Stage 2 consisted of qualitative interviews with leading professionals (n=15) and with UK veterans (n=10) exposed to PMIEs which were analysed using thematic analysis [28]. The participating professionals, working across the UK and US, had extensive clinical, pastoral and research experience in moral injury. The purpose of these interviews with professionals was to draw on this expert body of knowledge and experience to better understand perceptions of the needs of morally injured patients and what effective approaches may be helpful. Recommendations from these professional interviews included providing a phase-based treatment in a non-judgmental environment, providing moral injury specific psychoeducation while also actively questioning individuals on their experience, potentially including a third party (e.g. spiritual leader) in treatment if appropriate, and focusing on improving patient daily functioning (e.g. sleep, risk taking). Interviews with professionals also highlighted the potential utility of Acceptance and Commitment Therapy (ACT) and Compassion Focused Therapy (CFT) to support individuals with moral injury to emotionally heal following PMIEs and encourage compassion towards themselves and others.

Information from Stage 1 and the interviews with professionals were compiled and a draft outline of the treatment was created (see Appendix 1). This proposed treatment outline was included in the qualitative interviews conducted in Stage 2 with UK veterans who experienced PMIEs. In these interviews, veterans reflected on their past experiences of moral injury treatment, what aspects of their previous treatment were (or were not) experienced as helpful, potential barriers/facilitators to moral injury treatment and their thoughts on the proposed treatment outline. The Stage 2 veterans reported that a strong rapport with a therapist was key for positive moral injury treatment outcomes. Treatments that incorporated sessions on core values and how one could live a life consistent with those values were considered extremely positive. Veterans also described the potential benefits of including a close companion in treatment sessions given the negative impact their moral injury-related mental health problems could

have on family functioning. Following these veteran interviews, the R&R treatment design and content was further refined and modified where necessary.

Stage 3 consisted of the pilot of the R&R treatment. The finalised R&R treatment manual consisted of 20 sessions, delivered online, one-to-one by a single therapist. This treatment was piloted in Stage 3 with 20 veterans with moral injury-related mental health difficulties. R&R sessions took place weekly, with the exception of the final session which takes place 4 weeks after Session 19.

As an overview, early R&R treatment sessions focus on formulation, review of life experiences including PMIE(s), providing psychoeducation on moral injury and emotional regulation and recounting the PMIE(s). The later R&R sessions focus on identifying problematic appraisals and thinking patterns and exploring personal values. Following this, the sessions aim to help veterans reframe significant belief system changes brought on or further influenced by PMIE and resultant moral injury. Towards the end of treatment, veterans are invited to share a session with a close companion, where their understanding of moral injury, their PMIE experience and future goals is shared. Towards the end of treatment, the last R&R sessions encourage the patient to consider future directions in relationships with self (including forgiveness and self-forgiveness), others and living in accordance with values.

In Stage 3, pre- and post-treatment measures were used to assess the potential impact of receiving the R&R treatment and included measurements of PTSD, depression, alcohol misuse and moral injury-related distress. Data were also collected regarding the number of R&R sessions patients attended, the number of 'did not attends' (DNAs), the number and nature of adverse events, the number of patients who dropped out after the first R&R session and whether any patients were lost to follow up. Qualitative interviews were conducted with the veteran patients who received R&R (n=20) as well as the therapist (n=1) who delivered the treatment to understand their experience of receiving/delivering R&R, aspects of the R&R treatment that did/did not work well, the impact of R&R on daily functioning and wellbeing, barriers and facilitators to treatment and perceptions of any outstanding support needs. Qualitative interviews in Stage 3 were analysed using thematic analysis [28].

Results

As the key findings from Stages 1 & 2 are discussed above and in detail in Chapters 3 to 5, we will focus on the results of the Stage 3 pilot of the R&R manual here.

The 20 veterans who received the R&R treatment were 45 years old on average (SD 9.2) and the majority (90%, n=18) were male. Patients had served in the Armed Forces for an average of 13 years (SD 6.12). Patients had served in the British Army (n=14), Royal Navy / Royal Marines (n=4), and Royal Airforce (n=2).

No patients dropped out of R&R treatment and patients attended all of the R&R treatment sessions. No adverse events were reported. Post-treatment, a statistically significant reduction was found in veteran scores on self-report measures of PTSD, depression, alcohol misuse and moral injury-related distress compared to pre-treatment.

Qualitative interviews found that all patients experienced R&R as beneficial and acceptable. Several core themes and sub-themes were developed which reflected how veteran patients experienced seeking psychological treatment following a PMIE(s), their experiences of being offered R&R, their feelings and responses to R&R therapy, and their perceptions of potential adaptations that could improve R&R acceptability.

Many veterans who received R&R described a decision to seek formal treatment when a 'breaking' point had been reached, often when a spouse or family member insisted that they seek help.

Participating veterans described that, prior to R&R treatment, they had had significant difficulties with feelings of intense shame, anger and guilt surrounding the PMIE. Many described a history of struggles with poor sleep, irritability, and trouble empathising with others.

During the course of R&R treatment, veterans were invited to recount the PMIE in discussions with the therapist. Veteran patients reported how revisiting the memory of the PMIE in R&R treatment was difficult but very cathartic, with many veterans describing a reduction in their feelings of self-blame and guilt as well as reporting reduced rumination. The ongoing self-compassionate focus of the R&R treatment sessions were also described as being extremely beneficial, and veterans reported positive changes in their perceptions of the PMIE, increased self-compassion, improved social connections and greater use of adaptive coping strategies. Several practical possible adjustments to R&R were suggested, such as including infographics, which were thought to potentially improve acceptability and treatment engagement in future.

Key Study Findings

Stage 1 – Results of the systematic review indicate cognitive-based treatments effectively reduce post-trauma related guilt and anger.

Stage 1 - Exposure-based treatments were found to be effective for post-trauma related guilt, shame and anger.

Stage 2 – Professionals recommended providing patients with moral injury specific psychoeducation and ensuring a focus on improving patient

daily functioning (e.g. sleep, risk-taking).

Stage 2 - Professionals suggest that components of Acceptance and Commitment Therapy (ACT) and Compassion Focused Therapy (CFT) may be beneficial in supporting individuals with moral injury following PMIEs.

Stage 3 – Veterans highlighted the importance of a strong therapeutic alliance with a non-judgemental therapist for successful treatment outcomes. Sessions with a focus on core values and sharing a session with a close companion were also considered beneficial.

Stage 3 – R&R treatment was successfully delivered to veterans (n=20) with no adverse events and no dropouts. Following treatment, a significant reduction in PTSD, depression, alcohol misuse and moral injury-related distress symptoms was found compared to pre-treatment scores.

Stage 3 – Qualitative interviews with veteran patients found that R&R treatment was experienced as beneficial and veterans reported positive changes in their perceptions of the PMIE, increased self-compassion, improved social connections and greater use of adaptive coping strategies.

Implications

The results of this research project have considerable implications for how moral injury-related mental health difficulties are treated to ensure positive patient outcomes.

A common challenge faced by trauma-focused treatment trials for military personnel/veterans is the high rates of treatment drop out, which are often higher than civilian trials [29,30]. Research shows that military veterans reportedly drop out of treatment because of perceived PTSD treatment ineffectiveness, work interference, confidentiality concerns, insufficient time with a therapist and stigma related concerns [29]. Supporting this, our Stage 2 research found that veterans with moral injury can experience manualised trauma-focused PTSD treatments as inadequate as these treatments do not fully address their distress following PMIEs.

A key strength of this study was the phased co-design approach to R&R treatment development. By putting the needs and experiences of service users at the heart of treatment development, a co-designed treatment can reduce the associated difficulties populations face when trying to engage with mental health treatment, that commonly results in lower engagement and high drop-out rates [24,31]. Using co-design allowed for a detailed understanding of the needs of UK veterans who are experiencing PMIE-related mental health problems and for these needs to be incorporated into the development and delivery of treatment. In Stage 3, no participants dropped out of the R&R treatment

which suggests that R&R is feasible for delivery in its current format. Patients attended all R&R treatment sessions suggesting that R&R is also considered acceptable and well tolerated. That no adverse events were reported suggested that R&R is unlikely to cause harm. Additional research is needed to compare patient engagement with R&R and treatment as usual for moral injury-related mental health difficulties to better understand how patients engage with and tolerate R&R, and whether R&R may be a superior treatment option for those with moral injuries.

Patients who received R&R treatment reported a significant reduction in their symptoms of PTSD, depression, and alcohol misuse. A statistically significant reduction in moral injury-related distress as measured by the MORIS, a moral injury screening tool recently validated for use in UK samples, was also found. That patients reported a significant reduction in mental disorder symptoms following treatment via R&R is extremely promising and indicates that R&R may be an effective treatment with benefits of the therapy maintained three months post-treatment.

The qualitative interviews with Stage 3 veterans who received R&R highlight that patient experiences of the co-designed treatment were largely positive. Previous studies have found that individuals who experience moral injury often struggle with intense feelings of guilt, shame and anger, report a breaking down in their relationships with others, and engage in self-punishing and risk-taking behaviours to cope with their distress [11]. That veterans described an improvement in areas that are important in moral injury recovery [14,22,32,33] – namely, their moral injury-related symptoms, improvements in social connectedness, greater self-compassion and use of adaptive coping strategies – suggests that R&R was helpful and acceptable to patients. Furthermore, patients identified several areas of the R&R treatment process that could be improved (i.e. using infographics). These recommendations may not only increase the acceptability of R&R in future evaluations but may also be useful for other studies aiming to co-develop acceptable treatments for trauma-exposed samples.

Report

Chapter One
Study Background

Conclusions

In keeping with the Armed Forces Covenant, designing acceptable treatments for mental health difficulties developed following exposure to PMIEs during military service is important for ensuring those who serve in the UK Armed Forces are at no disadvantage compared to the civilian population who have never served. In developing R&R, this study brings together several years of research to understand and better respond to the experiences and needs of UK military veterans affected by moral injury [3,34–36]. Our work has shown that UK veterans are exposed to many and varied challenging events during their military service which can have an adverse impact on their wellbeing and functioning. Standard PTSD treatment does not seem to fully address symptoms of moral injury. The present study is a critical initiative which has gone beyond an examination of the impact of PMIEs on veteran wellbeing and has formulated an evidence-based solution to meet their needs.

This study presents some of the first evidence of an acceptable, well tolerated treatment for moral injury-related mental health difficulties for UK veterans. Patients who received the R&R treatment reported a significant reduction in PTSD, depression, alcohol misuse and moral injury-related symptoms compared to pre-treatment baseline. Given that patients in the present study reported finding the treatment acceptable and beneficial, once R&R is further evaluated, it may be possible to recommend this treatment to other UK veterans who have experienced PMIEs during military service and suffer with moral injury. Therefore, in the future, this study has the potential to ensure that a large population of veterans with complex needs are better cared for, improving wellbeing and transition to civilian life.

What is moral injury?

Moral injury may follow events which greatly transgress from one's deeply held moral and ethical belief systems and frequently comprises of feelings of guilt, shame, disillusionment and anger [12,37]. Potentially morally injurious events (PMIEs) can be categorised into three distinct event types: acts of commission, omission or betrayal by a trusted other [1]. While it has been recognised that moral injury is experienced in civilian settings, currently the majority of literature on moral injury stems from experiences of military personnel [9,38]. In military personnel and veterans, an example of an act of commission could be guiding a bomb to a location which unintentionally leads to the wounding or killing of civilians in combat; or having to make clinical decisions with limited resources in a deployment theatre which leads to some patients dying who could have otherwise survived. An act of omission in a military context may be not being able to feed starving local children or protect them from violence due to rules of engagement. Finally, a PMIE involving betrayal may be experienced when a veteran perceives their injury results from being provided with inadequate battlefield safety equipment or they have been mistreated historically under policies that have now changed, such as being discharged for being gay or pregnant.

What impact can moral injury have?

Moral injury may have profound effects on an individual's view of themselves and others, commonly describing a loss of identity or sense of self, as well as a mistrust of others, with a worldview they can no longer make sense of [4,39] After experiencing PMIEs, people may question their identity in relation to previously held 'just-world' beliefs about good and bad people and how they define themselves within these measures [4,39]. The emotions described most frequently by veterans and other professionals are shame, guilt, and anger as well as sadness, anxiety and disgust [3,40]. Moral injury has subsequently been significantly associated with symptoms of posttraumatic stress disorder (PTSD), depression, anxiety, [38,41] increased suicidality [7,38,42] and alcohol misuse [6,10]. Furthermore, exposure to PMIE can significantly impact the family of the veteran and their occupational functioning; veterans describe withdrawing from loved ones, avoiding disclosing the event, increased risk-taking behaviours and distrust of authority leading to wider social difficulties, such as workplace relationships [2]. In this study, veterans described feelings of shame as being a barrier to relationships with their loved ones as well as feelings of guilt when connecting with their family - who are safe and healthy - after witnessing devastation of local families during deployment [2].

While individuals who experience what appear to be classically traumatic events, involving threats to self or others, may present with symptoms of PTSD it is not uncommon for them also to report symptoms characteristic of moral injury (i.e. shame, guilt, worthlessness) if clinicians ask about them [34]. However, there are some clear distinctions between PTSD and moral injury [43]. Those experiencing symptoms of moral injury-related trauma tend to have increased negative cognitions relating to self, self-blame, sadness and increased re-experiencing symptoms compared to those who have experienced life-threat traumas [44,45]. Those who have been exposed to PMIEs also have been found to have increased suicidality and rumination [6] in comparison to veterans without PMIE exposure. Moreover, large national studies of US veterans find, after controlling for trauma history, psychiatric history & demographic characteristics, those exposed to PMIEs are at increased risk of psychiatric symptoms than those not exposed [46].

What challenges exist in treating moral injury-related mental health difficulties?

Cases of mental illness associated with moral injury can be challenging for clinical care teams to treat. Currently no manualised treatment for moral injury-related mental health difficulties exists and clinicians have reported considerable uncertainty about the best approach for managing patient symptoms [34,47,48]. For example, it has been argued that when exposure-based PTSD treatments are applied to those who have experienced PMIEs, it may be unhelpful – or even harmful – if insufficient attention is paid to the emotional processing of patient symptoms of shame and guilt [49,50]. Equally, many evidence-

based approaches for PTSD (e.g. trauma-focused cognitive behavioural therapy [CBT]) utilise cognitive restructuring to update a patient's erroneous, maladaptive or distorted appraisals and replace them with more adaptive beliefs about the self or event. However, this may not be effective or appropriate in cases of moral injury where a patient's distress arises from PMIEs, including acts of perpetration, where appraisals of blame may be accurate or appropriate [50]. For example, where personnel seriously injured a detainee enemy combatant with undue force it may be futile at best, or increase the likelihood of future perpetration at worst, if a clinician were to challenge their accurate appraisals of wrongdoing.

Finally, recent studies have found evidence of increased moral injury-related difficulties (e.g. shame, guilt, anger) amongst those who met criteria for Complex PTSD (CPTSD) exposed to PMIEs [5], with CPTSD presentations being associated with poorer treatment outcomes [51]. Taken together, these findings highlight a clinical need for a manualised treatment that has been developed for the distinct needs of those who have experienced PMIEs, which may not currently be being met through existing PTSD treatment approaches.

The lack of a manualised treatment, lower clinician confidence in treating cases of moral injury [32,34,52] and the significant associations found between PMIE exposure and suicidality suggests that moral injury may represent an important public health concern. There is some early evidence of potential treatments for moral injury related mental health difficulties in the USA, such as 'The Impact of Killing' treatment [22,40]. This treatment is thought to be beneficial by helping veterans to acknowledge their distress and increase feelings of acceptance and forgiveness, whilst also addressing spiritual dimensions [22,40]. However, "Impact of Killing" focuses primarily on acts of perpetration (i.e. killing in war) and would not target the range of PMIEs that UK veterans have been found to be exposed to (i.e. acts of omission or betrayal). Another proposed treatment, Adaptive Disclosure [53] has also been developed to treat moral injury in US veterans; this treatment considers a wider range of PMIEs. Evidence suggests that Adaptive Disclosure can be effective for those who suffer from moral injury-related difficulties [54], but this treatment was developed for, and currently has only been delivered to, small numbers of US military populations [21]. Studies have shown there to be key differences in trauma exposure and resultant mental health difficulties between UK and US militaries [23,55–57]. US and UK troops can have different approaches to how they conduct themselves on deployment [23,56] which makes translating a US approach to a UK context challenging and suggests that a treatment which considers the needs of UK personnel/veterans could be beneficial.

Developing a treatment for UK veterans who have experienced moral injury that is acceptable and well tolerated represents a number of challenges. First, the very nature of PMIEs and resulting symptoms of shame and guilt may make accessing and engaging in treatment particularly challenging for patients. UK veterans also have higher rates of treatment drop out, lower engagement and higher rates of relapse compared to the general population rates [24] . A frequently reported reason for veteran treatment drop out is a belief that their unique military experiences and trauma exposure cannot be understood by a civilian treatment centre [31] .

Need for research

One approach often used in healthcare service design and development is 'co-design', where the lived experiences and knowledge of service users themselves are incorporated to enhance the quality and experiences of care. Co-design aims to develop a detailed understanding of how key stakeholders

and service users perceive and experience the look, feel, processes and structures of a service [25,26]. By engaging stakeholders and service users in co-designing a service, it is argued that this results in better care and improved service performance by emphasising the individual's subjective experiences at various stages in the care pathway which, in turn, may lead to improvements in health outcomes and more efficient use of limited healthcare resources [25,26].

Research objectives.

Given the increased awareness of the exposure and deleterious impact experiences of PMIEs can have on veteran wellbeing, an acceptable treatment that helps veterans process and manage symptoms characteristic of moral injury, improves daily functioning and repairs veterans' relationships with themselves and others is urgently needed. The primary aim of this Rebuild and Restore (R&R) pilot study is to develop, design and evaluate the feasibility of a module for treatment of moral injury-related mental health problems in UK veterans. This study aims to:

1. Examine the current national and international treatment approaches for military moral injury;
2. Explore the views of leading UK and international professionals and UK veterans regarding the treatment approaches that should be used in cases of moral injury, the symptoms such approaches target, and how effective treatments are;
3. Co-design a treatment manual to be piloted with veteran patients; and
4. Examine whether the treatment developed is acceptable, well tolerated and if it is associated with a reduction in the severity of moral injury-related symptoms.

Chapter Two
Methods Overview

Ethical approval

This research was approved by the King's College London Research Ethics Committee (HR-20/21-20850).

Study design

The purpose of this project was to develop a manualised treatment for UK veterans experiencing moral injury-related mental ill health characterised as a 'moral injury' following exposure to a PMIE. The project had three main stages. The first of these was to conduct a systematic review to understand the best treatments for the symptoms central to moral injury-related mental ill health (i.e., post-trauma guilt, shame, anger). The second stage was to co-design the intervention with the support of UK veteran participants with lived experience of PMIEs as well as key stakeholders, including clinicians and members of the clergy who have been involved with supporting moral injury-affected individuals. The final stage of this study was to conduct a pilot study to explore the feasibility and acceptability of the intervention we developed.

Study context

Several of the key elements of the treatment were specified in advance of the co-design work based on the existing empirical literature on moral injury and consultation with clinicians working at a national mental health charity in the UK that provides clinical services to veterans with complex mental health needs (Combat Stress [58]). Specifically, it was pre-specified that veteran exposure to PMIE in Stage 3 would be assessed by screening questionnaires and by clinicians conducting the veteran patient's initial assessment, which takes place when a patient is referred for psychological support. As the trial was run during the course of COVID-19 social distancing restrictions, it was prespecified that treatment would take place with a therapist on a one-to-one basis using an online video consultation platform (i.e. MS Teams). The one-to-one online method of delivery was agreed as it has the potential to overcome many of the barriers to care detailed above, such as veterans' feelings of shame and guilt surrounding the PMIE which might potentially prevent disclosure and discussion in a group therapy setting. It was also prespecified that the therapist would be a CBT practitioner. CBT practitioners are postgraduate psychological therapists who have received specific (12 months) training in the delivery of psychological therapies to patients who have difficulties with anxiety, depression, PTSD and suicidality. The therapist was based within a mental health setting (Combat Stress) where they could offer rapid access to other manualised psychological therapies and have access to an interdisciplinary team, should the developed R&R manual have proved ineffective. It was pre-specified that participants who received R&R would be followed up three months after completing treatment to monitor treatment outcomes.

To screen veteran patients in Stage 3 for PMIE exposure and associated distress, it was agreed a priori that exposure would be determined via clinician rating during the patient's initial assessment for treatment at Combat Stress.

Following a detailed clinical assessment, the details of veterans who expressed symptoms of moral injury-related mental health difficulties were to be forwarded onto a treatment therapist for review. Following review of the completed assessment, the therapist was to contact the veteran to discuss the pilot, and through discussion of moral injury, would obtain confirmation from the veteran that moral injury appeared to be their main presenting difficulty. Following this, screening outcome measures were sent to the veteran including a validated questionnaire measure of military moral injury. This approach was based on feedback from Combat Stress that the use of questionnaires and clinician assessment is standard practice on referral to Combat Stress and would fit well with their existing procedures.

Co-designing R&R.

We used a mixed-method co-design process to determine what aspects the R&R intervention treatment manual should include, how the treatment should be presented to prospective patients, and by whom, and to address any important considerations to optimise accessibility of and engagement with the treatment. We collected data and conducted data analysis at three stages to inform the treatment manual development. We followed the Medical Research Council's (MRC) guidance on the development of complex interventions [59,60].

Stage 1. In line with MRC guidance for complex intervention development [59,60]we began by reviewing published evidence to identify existing interventions for the core symptoms associated with experiences of PMIEs, specifically guilt, shame and anger. We expected that this procedure in Stage 1 would offer insight into existing effective – as well as ineffective – interventions. The review would provide an understanding of what causal factors or existing intervention components that have the greatest scope for producing patient symptom change and provide an evidence base for intervention components that may be included in the R&R treatment manual [60].

Stage 2. Building on the results of the Stage 1 systematic review, we conducted one-to-one interviews with n=15 leading professional stakeholders in the field of moral injury. These interviews generated insight about the content, format and delivery of the treatment manual. Interviews explored participants views about: the core challenges faced in providing support or treatment to individuals with moral injury-related mental health problems; the support or treatments currently available in cases of moral injury; and features of existing support or treatments that may help or hinder psychological recovery. Interviews were conducted remotely via telephone or video conferencing (e.g. MS Teams), audio-recorded and subsequently transcribed verbatim. These data were used to develop a detailed prototype of the manual to be developed further and tested.

One-to-one in-depth interviews were also conducted with n=10 veterans who experienced military-related PMIEs in Stage 2. Interview questions drew on questioning techniques informed by the Critical Incident Approach [61] to explore veterans' perceptions of the psychological difficulties faced by those who experience PMIEs;

features of previous treatments that have helped/hindered their recovery; and aspects of the developed manual that may facilitate or inhibit a positive experience or which might have been overlooked by the research team altogether. During the interview, veteran participants were shown a visual representation of different aspects of the manual's proposed core components (see Appendix 1), developed from the findings of Stage 1 and the interviews conducted with professional stakeholders. Veteran participants were asked to discuss their thoughts, feelings and concerns with questions, including: 'What would be the best way to do this?', 'What might need to be done to support this part happening?' and 'Do you have any concerns about this part of the treatment?'. Visual representations of the manual aspects were shown to participants via screenshare (e.g. MS Teams) or sent via email/post for telephone interviews. Interviews were audio-recorded and transcribed verbatim. Following an iterative process, these data were used to refine and optimise the finalised manual. Interview guides for Stage 2 can be found in Appendix 2 & 3.

Stage 3. The CBT therapist (AB) received training in the concept of moral injury, PMIEs and delivering the treatment manual. The R&R manual was delivered to eligible veterans seeking mental health treatment following PMIEs at Combat Stress. Interviews were carried out with patients at varying points of the R&R treatment pathway to understand elements of R&R that were/were not well tolerated and perceived impact of R&R on psychological recovery. A qualitative interview was also conducted with the study therapist. Interview schedules can be found in Appendix 4 & 5 and are discussed in more detail below.

For clarity, we will present each of the stages in this study as distinct chapters.

Stages

Chapter Three

Stage 1: Review of Existing Treatments

The aim of the Stage one review was to provide a narrative synthesis of the effectiveness of treatment approaches used to address post-trauma related (i) guilt, (ii) shame and (iii) anger.

Methods

Search Strategy

Electronic literature databases were searched between January 2021 - June 2021. Reference lists of relevant review articles were also manually searched. Search terms included key words for trauma exposure, transgressive events, guilt, shame, anger, PTSD, depression anxiety and clinical treatment. A full list of search terms and search engines used is provided in Supplementary Material 1.

Eligibility

To be considered for inclusion, studies had to:

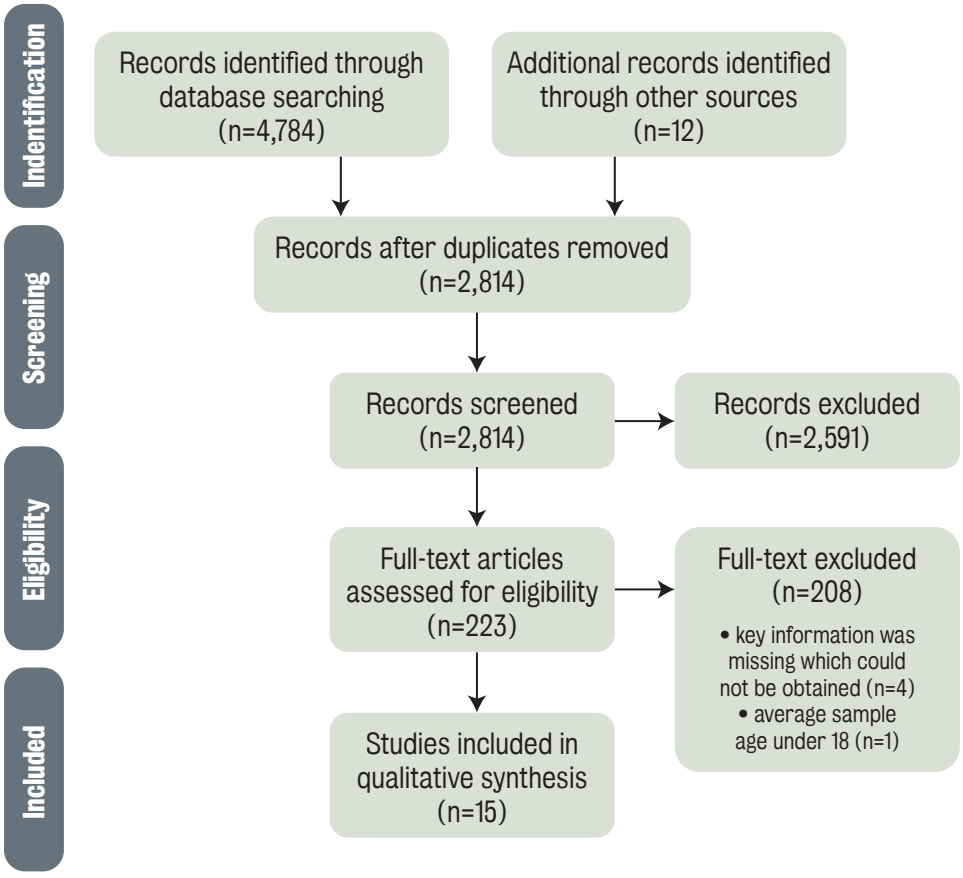
a) use validated measures of mental health outcomes;
b) be published after 2010;
c) be written in English;
d) the mean age of the sample had to be >18 years;
e) include a Randomised Control Trials (RCT) and cross-sectional study designs;
f) have a sample size of 50 or greater (to ensure stable treatment outcome estimates);
g) include civilian or (ex-) military participants exposed to traumatic event(s) which could have occurred during childhood or adulthood; and
h) assessed at least one of the following symptoms: post-trauma related guilt, shame or anger.

Case studies, reviews, qualitative studies or studies which did not provide at least one pre-treatment and post-treatment assessment of these core symptoms, were excluded. Conference abstracts or Ph.D. dissertations where additional information or published versions could not be found or obtained from the corresponding author were also excluded. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart (Figure 1 *overleaf*) describes the systematic review process. Fifteen studies ultimately met the criteria for inclusion in this review. This review was pre-registered on PROSPERO (registration number: CRD42021232311).

Data extraction

The following data were extracted from each study where available: (a) study information (e.g. design, location); (b) participant demographic information (e.g. sample type [e.g. military, non-military], gender distribution, age); (c) event exposure and average time since event occurred; (d) event-related symptoms assessed; and (e) treatment information (e.g. treatment delivered, number of sessions, measures used to assess symptoms and treatment effectiveness including pre, post and follow-up scores). Extracted data were independently assessed by two authors (DS, VW). Any discrepancies were checked and successfully resolved.

Figure 1: PRISMA flow diagram *(PRISMA, Preffered Reporting Items for Systemic Reviews and Meta-Analyses)*



Study quality

The methodological quality of studies was independently assessed by two authors (DS, VW) using a 10-item checklist for assessing quantitative studies [17]. The highest possible quality score was 20, indicative of a better-quality study, with zero as the lowest possible score (Supplementary Material 3). Studies were scored on the extent to which specific criteria were met ('no' = 0, 'partial' = 1, 'yes' = 2). We calculated a summary score for each study by summing the total score across all items of the scale. Agreement between authors was strong, with any disagreements resolved in a consensus meeting. Study quality ratings are provided in Table 1.

Table 1: Included studies sample characteristics, methods of assessment and quality ratings

Study	Design	N	Location	Females (%)
1 Beidel et al. (2017)b	Controlled pilot study	112	US	5
2 Boterhoven de Haan et al. (2020)[a]	RCT	155	International[d]	76.8
3 Bridges et al. (2020)[a]	Cross-sectional	128	US	100
4 Ertl et al. (2011)[c]	RCT	85	N Uganda	55.2
5 Forbes et al. (2012)[b]	RCT	59	Australia	3.3
6 Galovski et al. (2013)[a]	Cross-sectional	69	US	68.1
7 Kip et al. (2013)[b]	RCT	57	US	19.3
8 Langkaas et al. (2017)[a]	RCT	65	Norway	58
9 Larsen et al. (2019)[a]	RCT	108	US	100
10 McGuire et al. (2020)[b]	Cross-sectional	67	US	2
11 McLean et al. (2019)[b]	RCT	331	US	10.9
12 Oktedalen et al (2015)[a]	RCT	65	Norway	57
13 Robjant et al. (2019)[c]	RCT	92	Eastern DRC	100
14 Simon et al. (2019)[b]	RCT	194	US	10.8[e]
15 Talbot et al. (2011)[a]	RCT	70	US	100

Table 1 *continued*

Study	Age (Mean)	Trauma type[f]	Outcomes assesed	Quality rating
1	37.1	Military-related	GuiltAnger	18
1	38.5	Childhood trauma	Guilt Shame Anger	20
3	33.3	Pre-incarceration sexual vicitmasation	Shame	15
4	18	War exposure/child soldiersg	Guilt	20
5	53.3	Military-related	Anger	17
6	40.4	Interpersonal assault survivors	Guilt Anger	20
7	41.4	Military-related	Guilt	15
8	45.2	Wide range of traumas	Guilt Shame Anger	19
9	32	Rape survivors	Guilt	16
10	49.3	Military-related	Guilt Shame Anger	12
11	32.5	Military-related	Guilt	20
12	45.1	Wide range of traumas	Guilt Shame	16
13	18	War exposure/child soldiersg	Guilt	19
14	34[e]	Military-related	Guilt	13
15	36	Childhood sexual abuse	Shame	16

[a]Civilians, [b]Military/ex-military personnel, [c]children/adolescents/young adults, [d]International: Australia, Germany and the Netherlands, [e]Only data of the Complicated grief (CG) group has been used in this review, [f]Further details regarding the type of trauma and time since trauma occurred (where available) are presented in the results (Table 2-4), [g]victims, perpetrators and/or witnesses, RCT=Randomised Control Trial, PTSD=Post-traumatic Stress Disorder

Data synthesis

Effect sizes were calculated according to Cohen's d statistic [18]. Cohen's d was selected as it was commonly used in the included studies but also as it provides an effect size for each study, rather than an effect size defined as the post-treatment difference between a treatment and control trial, which allowed for inclusion of uncontrolled studies [19]. An effect size of 0.20 was considered small, 0.50 medium and 0.80 or above large [20]. Effect sizes were not moderated by time since trauma, publication year, study quality or type of trauma. For each study the magnitude of change from pre- to post- and follow-up treatment was calculated following previous established methods [19, 21] using the means and standard deviations provided in the studies. Post-treatment and three-month follow-ups were reported in this review as these were most common across the studies. Where not available, a two-month follow-up was used.

For the outcome measures used in the present review, positive effect sizes represent improvements in event-related symptoms (i.e., reductions in problem severity), whereas negative effect sizes indicate a worsening of symptoms. When studies reported data for treatment completers then effect sizes were based on completer analyses rather than endpoint or intent-to-treat analyses [19]. When means or standard deviations were not reported, where possible effect size was calculated from other available data, such as confidence intervals [21]. On two occasions necessary data were obtained from pervious parent studies [22-25]. In cases where (a) male and female data were reported separately, the average mean and standard deviation were calculated [26], and (b) subscale data only were reported, the scales were aggregated (e.g. Trauma-Related Guilt Inventory (TRGI) sub-scales) [24, 26-28].

Results

Study sample

This review included 15 studies (Table 1), of which: (a) twelve studies assessed symptoms of post-trauma related guilt (Table 2), (b) six studies assessed symptoms of post-trauma related shame (Table 3), (c) six studies assessed symptoms of post-trauma related anger (Table 4). Across the 15 studies, the total number of participants was n=1657 and the mean age of all participants was 36.9 years old (SD = 9.9). Six studies included military samples and nine studies included general population samples. The majority of the studies were carried out in the US (n=9). There was a fair representation of genders with 51% of the sample being female. Overall, the inclusion criteria of the 15 studies were often broad, allowing patients who experienced a wide range of traumas to participate in the trials. Five studies reported the average time since trauma occurred between 2.5 to 20 years.

RCT design was used in most studies (n=11), while four studies used a cross-sectional design. Notably, studies which included a control group (n=6) (e.g. minimal contact, usual care psychotherapy) reported that those in the control group did not experience a change in symptoms and in some cases their symptoms worsened [29, 30]. Results are presented below by symptom type (i.e. post-trauma related guilt, shame and anger), and civilian or (ex-) military populations findings are presented distinctly for clarity, with distinctions also made between trauma exposure in childhood and adulthood.

Post-trauma related guilt

Twelve treatment studies targeted patient symptoms of post-trauma related guilt (Table 2). Cognitive Processing Therapy (CPT) (n = 3) and Prolonged Exposure (PE) (n = 5) were delivered in the majority of the studies.

Table 2: Included studies effectiveness of treatment for guilt

Study	Treatment	Type of Trauma	Average time since trauma	Measure
1 McGuire et al (2020)[b]	CPT [15 sessions]	Wide range of traumas[d]	_	MDES
2 Galovski et al (2013)[a]	CPT [up to 18sessions]	Interpersonal assault survivors[e]	20 years	TRGI
3 Larsen et al (2019)[a]	CPT [12 sessions] PE [9 sessions] Minimal Attention	Rape survivors	8 years	TRGI
4 McLean et al (2019)[b]	Massed PE [10 sess/2wks] Spaced PE [10 sess/8wks] PCT [10 sess/8wks] Minimal contact control	Military-related incident[f]	_	TRGI-Brief
5 Langkaas et al (2017)[a]	IR [10 sessions] PE [10 sessions]	Wide range of traumas[g]	17.5 years	TRGI Global guilt
6 Oktedalen et al (2015)[a]	PE/IR [10 sessions] PE/IE [10 sessions]	Wide range of traumas[g]	_	TRGI/ PTCI items
7 Ertl et al (2011)[c]	NET [8 sessions] Academic catch-up Wait-list	Wide range of traumash	6.7 years	CAPS
8 Robjant et al (2019)[c]	FORNET [6 sessions] Treatment as Usual	Forced involvement in the armed group, both as victims and perpetrators of violence	2.5 years[k]	AAGS
9 Beidel et al. (2017)[b]	TMT [29 sess intervention]	Military-related trauma	_	TRGI/ CAPS items
10 Boterhoven de Haan (2020)[a]	IR[12 sessions] EMDR [12 sessions]	Childhood traumasi	_	TRGI
11 Kip et al. (2013)b	ART [up to 5 sessions]	Wide range of traumasj	_	TRGI
12 Simon et al (2020)b	PE & Sertraline [24 sess]	Military-related trauma	_	TRGI

Table 2 *continued*

Study	Pre-treatment		Post-treatment			3-month follow-up		
	N	Mean (SD)	N	Mean (SD)	Effect Size (d)	N	Mean (SD)	Effect Size (d)
1	67	3.2 (1.9)	67	1.9 (1.7)	0.72	_	_	_
2	69	2.17 (0.78)	58	1.47 (0.58)	1.00	57	1.47 (0.64)	0.97
3	41	2.37 (1.16)	36	0.85 (0.68)	1.57	_	_	_
	40	2.52 (1.11)	37	1.20 (0.84)	1.33	_	_	_
	13	2.69 (0.72)	37	2.35 (0.97)	0.37	_	_	_
4	75	1.49 (0.49)	75	1.11 (0.33)	0.90	_	_	_
	109	1.31 (0.31)	82	1.03 (0.40)	0.79	82	1.14 (0.40)	0.48
	107	1.40 (0.54)	94	1.17 (0.62)	0.39	94	1.24 (0.60)	0.28
	40	1.23 (0.58)	40	1.06 (0.59)	0.29	_	_	_
5	34	1.92 (1.27)	34	1.43 (1.10)	0.41	_	_	_
	31	2.04 (1.29)	31	1.28 (1.23)	0.60	_	_	_
6	31	38.6 (22.7)	31	25.4 (19.2)	0.62	_	_	_
	29	47.5 (28.0)	29	28.7 (24.7)	0.71	_	_	_
7	29	4.00 (4.62)	_	_	_	26	1.46 (2.60)	0.66
	28	1.71 (2.83)	_	_	_	24	2.00 (3.16)	- 0.09
	28	2.54 (3.10)	_	_	_	28	2.50 (3.50)	0.01
8	45	6.21 (2.25)	_	_	_	45	5.87 (2.5)	0.14
	44	6.12 (2.44)	_	_	_	41	6.18 (2.21)	- 0.02
9	25	5.6 (3.2)	25	2.2 (2.1)	1.25	24	1.4 (1.8)	1.60
						2-month follow-up		
10	74	24.3 (13.0)	66	18.0 (12.3)	0.49	60	17.2 (11.8)	0.56
	81	24.9 (13.8)	72	17.3 (12.1)	0.58	68	15.9 (11.2)	0.68
11	38	15.5 (7.8)		_	_	38	9.7 (5.6)	0.85
12	46	2.16 (0.86)	46	1.61 (0.64)	0.72	_	_	_

[a]Civilians, [b]Military/ex-military personnel, [c]Children/adolescents/young adults, [d]Combat-related trauma, physical assault, military sexual trauma, [e]Child or adult sexual/physical abuse, [f]High magnitude operational experience that occurred during a military deployment, [g](Non) sexual assault by a familiar person/stranger, accidents, natural disasters, war-related traumas, captivity or torture, [h]Abduction, exposure to war zone, witnessing death/abduction/assault, [i]Sexual assault, physical abuse, mixed abuse, domestic violence, serious injury before 16 years of age, [j]Witnessing of death, execution, and/or major injuries, combat explosion, homicide of civilian, [k]Since escape/release from the armed group, CPT=Cognitive Processing Therapy, PE=Prolonged Exposure, IR=Imagery Rescripting, IE=Imagery Exposure, PCT=Present-Centered Therapy, NET=Narrative Exposure Therapy, FORNET=NET for forensic offender rehabilitation, TMT=Trauma Management Therapy, EMDR=Eye Movement Desensitisation and Reprocessing, ART=Accelerated Resolution Therapy, TRGI=Trauma-Related Guilt Inventory, PTCI=Posttraumatic Cognition Scale Inventory, MDES=Modified Differential Emotions Scale, CAPS=Clinically Administered PTSD Scale, AAGS=Attitudes About Guilt Survey

Civilian sample: Five studies investigated treatment outcomes for symptoms of post-trauma related guilt in civilian adults [25-27, 31, 32]. CPT was delivered in two studies and appeared to be highly effective. A large reduction in symptoms of post-trauma related guilt using CPT was found for rape survivors (d=1.57) [25] and interpersonal assault survivors (d=1.00) [26], with treatment gains maintained after three months (d=0.97) [26]. Nonetheless, the samples of these two studies were small, consisting of mostly females, with no reported perpetrator-based experiences. Whether CPT is as effective for male survivors, or individuals who experience post-trauma related guilt following perpetration events, remains unclear. In addition, time since trauma occurred varied considerably in these studies. Further investigation is necessary to determine the relationship between time since trauma occurred and efficacy of treatments.

PE was delivered in three studies [25, 27, 31]. While in one study post-treatment results were large (d=1.33) [25], PE produced more moderate effect sizes in the other two studies (d=0.60) [27] and (d=0.61 & 0.71) [31]. The lack of follow-ups in these three PE studies did not allow for measurement of treatment effectiveness for post-trauma related guilt symptoms long-term.

Childhood trauma treatment of guilt in adulthood: Two studies examined the effectiveness of psychological treatments for adults who experienced adverse childhood experiences [29, 30]. Narrative Exposure Therapy (NET) and FORNET (a form of NET adapted for traumatised/violent offenders), were delivered in these studies. Both treatments were culturally adapted and delivered in non-western societies to former child soldiers (average age of the sample being 18 years old at time of treatment) who had experienced high levels of trauma exposure as both victims and perpetrators of violence. Mixed results were found. NET appeared to produce a moderate effect size three months post-treatment (d=0.66) in a mixed-gender sample [29], while FORNET was not effective three months post-treatment (d=0.14) in a female only sample [30]. In these studies, therapists were lay counsellors or individuals without a mental health qualification who were trained to deliver the treatment which may have impacted the findings.

Military sample: Five studies examined treatment outcomes for symptoms of post-trauma related guilt in (ex)-military samples [24, 28, 33-35]. The most effective treatment in this population was Trauma Management Therapy (TMT) [33], which was found to effectively reduce post-trauma related guilt symptoms (d=1.25) with continuous improvements after three months (d=1.60). Therapists were clinical psychologists and treatment fidelity processes were well monitored, yet the study was not an RCT and masking of independent evaluators was not possible. Other studies examined the effectiveness of ten-session PE (post-treatment: d=0.90) and spaced PE delivered over eight weeks (three months follow-up d=0.48) [24], five sessions of Accelerated Resolution Therapy (ART) (three months follow-up: d=0.85) [34], and 15 sessions of CPT (d=0.72) [28]. Notably large effects were found for the two studies which utilised shorter (therefore potentially more cost effective) treatments. However, as these samples included mostly males (84.9%) as well as both active and ex-military personnel who served in different eras, the findings may not be generalisable.

Post-trauma related shame

Six treatment studies targeted the symptoms of post-trauma related shame (Table 3). Only one study provided a two-month follow-up [32]. Civilian sample: Three studies examined the impact of treatment on symptoms of post-trauma related shame in adult civilian populations [27, 31, 36]. PE (or the combination of PE and Imagery Rescripting (IR) were delivered in these three studies (d=0.79 [36]; d= 0.75 [27]; d=0.80, [31]) with the treatments appearing to be effective in reducing post-trauma related shame symptoms.

Notably, standard PE (d=0.90) [31] reduced shame symptoms post-treatment for individuals presenting a wide range of trauma experiences (e.g. sexual/nonsexual assault). In addition, a combination of PE and IR delivered in the same population also produced a large effect size post-treatment (d=0.80) [31]. This combination treatment of PE and IR aimed to target negative self-evaluative emotions of post-trauma related shame as well as fear. A strength of this study was that the sample consisted of treatment-resistant patients who had been exposed to a variety of traumas; this could indicate that such treatment may be beneficial even in a population with severe symptoms that appear to be treatment refractory.

Childhood trauma treatment of shame in adulthood: Two studies examined the effectiveness of treatments for post-trauma related shame for adult survivors of childhood trauma [32, 37]. Eye movement desensitisation and reprocessing (EMDR) (d=0.85 [32]) and Interpersonal Psychotherapy (IP) (d=0.87 [37]) were found to reduce post-trauma related shame symptoms post-treatment in civilians with histories of childhood trauma or sexual abuse. Data suggests that there were longer-term improvements for patients who were treated with EMDR (d=0.90) after two months [32] compared to IR (d=0.78) [37]. However, methodological limitations to these studies (e.g. a small-scale effectiveness trial with no follow-up assessments, and only including females), and lack of data about time since trauma, limits our understanding of which treatments are more effective in particular contexts.

Military sample: Only one study examined treatment outcomes for symptoms of post-trauma related shame in ex-military populations [28]. There was considerable diversity in participant demographic characteristics, such as branch, years of service or trauma type. Fifteen sessions of CPT (both group and individual sessions) did not significantly improve post-trauma related shame symptoms post-treatment (d=0.40).

Table 3: Included studies effectiveness of treatment for shame

Study	Treatment	Type of Trauma	Average time since trauma	Measure
1 McGuire et al (2020)[b]	CPT [15 sessions]	Wide range of traumas[d]	_	MDES
2 Langkaas et al (2017)[a]	IR [10 sessions] PE [10 sessions]	Wide range of traumas[g]	17.5 years	TRGI Global guilt
3 Oktedalen et al (2015)[a]	PE/IR [10 sessions] PE/IE [10 sessions]	Wide range of traumas[g]	_	TRGI/ PTCI items
4 Larsen et al (2019)[a]	CPT [12 sessions] PE [9 sessions] Minimal Attention	Rape survivors	8 years	TRGI
5 Bridges et al (2020)a	SHARE [8group sessions]	Wide range of traumas[f]	_	PFQ-2 Shame
6 Talbot et al (2011)a	IP [up to 16sessions]	Wide range of traumas[g]	_	Differential Emotions Scale

Table 3 *continued*

Study	Pre-treatment		Post-treatment			3-month follow-up		
	N	Mean (SD)	N	Mean (SD)	Effect Size (d)	N	Mean (SD)	Effect Size (d)
1	67	2.97 (2.10)	67	2.19 (1.73)	0.40	_	_	_
2	34	24.5 (19.4)	34	15.3 (14.7)	0.53	_	_	_
	31	28.3 (19.8)	31	14.2 (17.5)	0.75	_	_	_
3	30	40.2 (24.2)	30	22.0 (20.9)	0.80	_	_	_
	28	49.7 (26.3)	28	26.1 (25.9)	0.90	_	_	_
4	90	2.1 (0.8)	90	1.5 (0.7)	0.79	_	_	_
5	37	10.1 (2.4)	34	7.5 (3.5)	0.87	_	_	_
	33	10.0 (3.2)	32	8.8 (3.7)	0.34	_	_	_
						2-month follow-up		
6	74	29.6 (21.1)	66	14.7 (18.1)	0.75	60	14.5 (16.9)	0.78
	81	28.4 (20.8)	72	12.6 (15.7)	0.85	68	12.0 (14.5)	0.90

[a]Civilians, bMilitary/ex-military personnel, [d]Combat-related trauma, physical assault, military sexual trauma, e(Non) sexual assault by a familiar person/stranger, accidents, natural disasters, war-related traumas, captivity or torture, [f]Child sexual abuse, sexual assault by family member/stranger (pre-incarceration), [g]Moderate to severe levels of sexual, physical or emotional abuse before age 18, [h]Sexual assault, physical abuse, mixed abuse, domestic violence, serious injury before 16 years of age, CPT=Cognitive Processing Therapy, PE = Prolonged Exposure, IR = Imagery Rescripting, IE=Imagery Exposure, SHARE= Survivors Healing from Abuse: Recovery Through Exposure (influenced by PE), EMDR=Eye Movement Desensitisation and Reprocessing, IP=Interpersonal Psychotherapy, MDES= Modified Differential Emotions Scale, TRSI= Trauma-Related Shame Inventory, PTCI=Posttraumatic Cognition Scale Inventory, TRGI= Trauma-Related Guilt Inventory, PFQ-2=Personal Feelings Questionnaire–2

Post-trauma related anger

Six studies targeted the symptoms of post-trauma related anger (Table 4). Three studies used CPT [26, 28, 38], two studies used IR [27, 32], while EMDR [32], PE [27] and Trauma Management Therapy (TMT)[33] were delivered in one study respectively. Three studies examined patient outcomes at three-month follow-ups [26, 33, 38] and one study at two-month follow-up [32].

Civilian sample: Two studies examined the effects of treatment on symptoms of post-trauma related anger in civilian adults [26, 27]. CPT had the largest change in post-trauma related anger symptoms post-treatment (d=0.86) for interpersonal assault survivors, and although results were not maintained after three months, anger symptom scores remained low (d=0.61) [26]. It should be borne in mind that despite regular supervision being provided, the therapists were master-level clinicians who had never delivered CPT previously [26]. PE (d=0.24) was found to be ineffective for post-trauma related anger symptoms [27]. Participants in this study experienced a wide range of traumas including sexual assaults, war-related traumas or accidents. Whether PE could be effective in reducing post-trauma related anger symptoms in civilian adults with a specific trauma type (e.g., perceived perpetration-based trauma) remains unclear.

Table 4: Included studies effectiveness of treatment for anger

Study	Treatment	Type of Trauma	Average time since trauma	Measure
1 McGuire et al (2020)[b]	CPT [15 sessions]	Wide range of traumas[d]	_	MDES
2 Galovski et al (2013)a	CPT [up to 18sessions]	Interpersonal assault survivors[d]	20 years	STAXI
3 Forbes et al (2012)b	CPT [12sessions]	Military-related trauma	_	DAR-7
4 Langkaas et al (2017)[a]	IR [10sessions]	Wide range of traumase	17.5 years	AX
5 Beidel et al. (2017)b	TMT [29sessions intervention]	Military-related trauma	_	PCL, CAPS, BRIEF-A, daily diary
6 Boterhoven de Haan (2020)a	IR [12 sessions]	Childhood traumaf	_	Anger Expression & Control Composite Score

Childhood trauma treatment of anger in adulthood: In adult civilians with childhood trauma, EMDR was found to reduce symptoms of post-trauma related anger post-treatment (d=0.79) with an indication of continuous improvements after two months (d=0.75) [32].

Military sample: Three studies investigated treatment effectiveness on symptoms of post-trauma related anger in (ex-) military personnel. The different treatment elements included in the TMT appeared to reduce post-trauma related anger symptoms (d=1.08) with continuous improvements after three months (d=1.10) [33]. CPT was also found to be effective for (ex-) service personnel with military-related trauma (d=3.08) [28], with an indication of a long-term impact (3-month follow-up: d=0.99) [38]. Nonetheless, it must be noted that the first study did not employ an RCT design, and thus accurate conclusion regarding the changes are limited [28]; and in in the second study, 17% of participants changed psychiatric medications during the course of treatment, which may have influenced findings [38].

Table 3 *continued*

Study	Pre-treatment		Post-treatment			3-month follow-up		
	N	Mean (SD)	N	Mean (SD)	Effect Size (d)	N	Mean (SD)	Effect Size (d)
1	67	3.5 (0.06)	67	2.4 (0.5)	3.08	_	_	_
2	69	17.8 (3.71)	58	15.0 (2.57)	0.86	57	15.8 (2.64)	0.61
3	30	31.2 (14.3)	30	23.8 (15.6)	0.49	24	17.6 (12.8)	0.99
	28	28.7 (11.3)	28	26.4 (13.9)	0.18	23	21.6 (12.5)	0.59
4	34	11.0 (4.4)	34	10.7 (6.0)	0.05	_	_	_
	31	10.8 (5.5)	31	9.4 (6.0)	0.24	_	_	_
5	93	6.3 (1.9)	93	3.9 (2.5)	1.08	93	3.9 (2.4)	1.10
						2-month follow-up		
6	73	-3.45 (15.8)	66	-13.5 (16.0)	0.63	59	-14.6 (15.4)	
	80	-7.39 (15.8)	72	-20.1 (16.1)	0.79	68	-19.6 (16.4)	

[a]Civilians, bMilitary/ex-military personnel, [d]Combat-related trauma, physical assault, military sexual trauma, e(Non) sexual assault by a familiar person/stranger, accidents, natural disasters, war-related traumas, captivity or torture, [f]Child sexual abuse, sexual assault by family member/stranger (pre-incarceration), [g]Moderate to severe levels of sexual, physical or emotional abuse before age 18, [h]Sexual assault, physical abuse, mixed abuse, domestic violence, serious injury before 16 years of age, CPT=Cognitive Processing Therapy, PE = Prolonged Exposure, IR = Imagery Rescripting, IE=Imagery Exposure, SHARE= Survivors Healing from Abuse: Recovery Through Exposure (influenced by PE), EMDR=Eye Movement Desensitisation and Reprocessing, IP=Interpersonal Psychotherapy, MDES= Modified Differential Emotions Scale, TRSI= Trauma-Related Shame Inventory, PTCI=Posttraumatic Cognition Scale Inventory, TRGI= Trauma-Related Guilt Inventory, PFQ-2=Personal Feelings Questionnaire–2

Conclusions drawn from Stage 1 Review of Existing Treatments

The aim of this review was to examine and evaluate the effectiveness of treatment approaches in reducing post-trauma symptoms of post-trauma related guilt, shame and anger. Although, exposure-based and cognitive-based treatments may use different processes (e.g. imaginal and in vivo exposure vs. directly modifying maladaptive cognitions) to produce change [22, 39], our findings indicated a moderate strength of evidence that both approaches are effective in reducing symptoms. In particular, cognitive-based treatments were found to reduce symptoms of post-trauma related guilt and anger [25, 26, 28, 38], while exposure-based treatments were more effective in reducing post-trauma related guilt, shame and anger [25, 31, 33]. Taken together, these findings suggest the importance of confronting and discussing the traumatic event during therapy rather than using less directive treatments (e.g. supportive counselling).

Post-trauma related guilt

Avoidance is a main coping strategy associated with guilt symptoms, making guilt particularly difficult to treat [40]. This review suggests that cognitive-based treatment approaches, and in particular CPT, were most effective at reducing symptoms of post-trauma related guilt in civilian populations [25, 26] with effects maintained at a three-month follow-up [26]. It is possible that cognitive-based treatments could be more appropriate for addressing symptoms of guilt post-trauma as these treatments focus on altering patients' appraisals of their role in an event; for example, challenging patients' interpretation of what happened to reduce post-trauma related guilt symptoms [41, 42]. Cognitive-based treatments could encourage patients to more accurately appraise their actions (or inactions) in the event by examining cognitions common to those experiencing post-trauma related guilt [43]. For example, patients may be invited to consider the full context of what happened, the options or responsibilities they truly had during the event, to identify whether they purposefully did something that was wrong or overcome possible hindsight bias [44].

Our results suggest mixed evidence for exposure-based treatments, such as PE, for (ex-) military [24, 35] and civilian populations [25, 27, 31]. TMT led to a significant post-trauma related guilt symptom reduction in (ex-) military populations with treatment gains being maintained after three months [33]. Interestingly, some have argued that exposure-based treatments may be harmful as guilt symptoms can be exacerbated, increasing the risk of patient drop out [41, 45, 46]. However, this theory is contrary to research which has shown a decrease in guilt symptoms when using exposure-based treatments, in particular PE [47] or a combination of imagery rescripting and imagery exposure [48].

CPT and PE use different processes to produce symptom change, with CPT directly modifying maladaptive cognitions and PE utilising repeated imaginal and in vivo exposure exercises. Nonetheless, some of the common mechanisms in the two treatments (e.g. rescripting of the traumatic event, habituation of distressing emotions, integration into the autobiographic memory) could be the effective treatment component(s) that lead to a reduction in post-trauma related guilt symptoms [39]. The mixed findings found in this review highlight the need for further research, such as a study that examines CPT versus PE to better understand effective treatment approaches for post-trauma related guilt.

Post-trauma related shame

Shame is associated with a range of psychological difficulties, including suicidality [49], social withdrawal and poor health outcomes [50]. Although shame is commonly experienced following trauma [51, 52], relatively little is known about effective treatments for reducing post-trauma related shame symptoms [53]. Evidence from similar studies also suggests that encouraging patients to notice and experience shame can be a helpful in promoting symptom reduction [54,

55]. Consistent with this, the findings of this review suggest that exposure-based treatments, in particular PE, were effective in reducing post-trauma related shame post-treatment [27, 31, 36]. PE may lead to modifications in maladaptive beliefs about the patient's role in the traumatic event or allow for recognition of new trauma-related information regarding the circumstances of the event. Through this exposure and reflection upon the trauma memory in PE, patients may be able to cognitively approach the trauma in a different way and be more able to process post-trauma related shame symptoms. Additionally, this review found that EMDR significantly reduced post-trauma related shame, with symptoms being further reduced over time [32]. It is argued that EMDR desensitises patients to anxiety and allows them to be exposed to the trauma memories without detailed descriptions or strong psychological responses [32]. This distancing from (rather than re-living) the event, while rapidly re-establishing a secure interpersonal context, may be helpful mechanisms leading to shame symptom reduction [56]. Finally, we found cognitive-based treatments (CPT) had mixed effectiveness for reducing post-trauma related shame [28]. In light of these promising but mixed findings, there is a pressing need to better understand how symptoms of post-trauma related shame are developed and maintained following trauma exposure, including events that are and are not 'classically' threatening/frightening, to better support patients in treatment.

Post-trauma related anger

Anger is a particularly pernicious symptom that can decrease a patient's ability to engage in treatment [57]. The present review suggests that cognitive-based treatments (CPT, [26, 28, 38]) and exposure-based treatments (TMT, [33]) were most effective for reducing post-trauma related anger, with treatment gains being generally maintained in the long-term for both approaches [33, 38]. CPT treatment includes patients writing about the personal meaning of the trauma which may help to facilitate the resolution of unprocessed emotions, such as anger. TMT is influenced by exposure-based approaches, allowing patients to re-experience and process the event, but also features group-administered social and emotional skills training sessions. Whether this later feature improves interpersonal functioning which could be a key mechanism that leads to post-trauma related anger symptom reduction in military samples requires further investigation [33, 58]. It is also possible that to enhance patient treatment outcomes, it may be useful to address problematic post-trauma related anger early in treatment to encourage patient engagement and prevent drop-out, especially those who may be limited in their engagement with trauma accounts for fear of anger expression.

Translational applications of the findings

This is the first systematic review to specifically examine the effectiveness of evidence-based trauma treatments on post-trauma related guilt, shame and anger following exposure to a traumatic event(s). Overall, the 15 included studies examined a range of different treatments approaches, populations and traumatic events. Our findings expand current knowledge on the efficacy of post-trauma treatment approaches, allowing for a better understanding of methods (e.g. cognitive/exposure-based) that could be more or less effective for reducing symptoms of post-trauma related guilt, shame and anger. Overall, the findings indicate that cognitive-based (CPT), exposure-based (PE, TMT) and other treatments (EMDR) can lead to symptom reduction post-treatment, with benefits maintained at follow up. These findings demonstrate that there may be therapeutic benefits to confronting and discussing the traumatic event during therapy, rather than using less directive supportive treatments. Nonetheless, using these direct approaches is unlikely to be safely achievable without suitable preparation work to build up emotional regulation strategies, which should continue to remain a treatment priority to reduce risks of additional distress or

drop out from active confrontative treatment [59]. As research attention increasingly turns towards investigating the impact of other types of traumatic events, such as transgressive acts of perpetration or betrayal [60], existing manuals for cognitive or exposure-based could perhaps be revisited to determine how they could be used in case of non-fear based trauma. For example, the recently updated CPT manual [61] is more flexible and offers guidance on how to determine the patient's actual role in the event. This update also includes cases where individuals may have symptoms of post-trauma related guilt or shame due to perpetration events or moral compromises that violated their values. These updates to existing manualized treatments may help improve clinician confidence in treating cases presenting with intense post-trauma related shame, guilt and anger, such as individuals with moral injury [62].

At this stage, firm conclusions cannot be drawn about which treatment approach is likely to be the most effective for all three symptoms. There was also insufficient evidence to determine if specific treatments are effective for all individuals or if they are more effective in certain populations (e.g. military personnel or civilians). The studies included in this review did not typically report the treatment outcomes by gender, making it difficult to draw conclusions about treatment efficacy in male and females. Female gender remains a risk factor for the development of PTSD and other mental disorders [63]. Nonetheless, the fair proportion of females (51%) included in this review could suggest that treatment approaches may be similarly effective for both genders, something that should be considered in future studies. In addition, information regarding time since the event exposure was not consistently reported and, as time since trauma could be associated with distinct profiles of distress [64], future studies should also aim to provide more comprehensive data to allow for a better understanding of treatment efficacy.

Strengths & Limitations

The results of this review should be interpreted in light of the following limitations. First, both RCT and cross-sectional studies were included in this review and, while these studies reported good levels of treatment fidelity, a range of different treatment approaches and outcome measures were used. This heterogeneity across studies did not allow for a meta-analytic approach to be used. Second, our findings regarding the effectiveness of exposure-based or cognitive-based treatment approaches are largely driven by the larger number of PE (n=5) and CPT (n=4) treatment studies, while other treatments (e.g. EMDR, NET) were used in fewer studies and in specific populations (e.g. military samples). Third, this review is also heterogeneous in nature with the inclusion of a range of populations exposed to a variety of traumatic events. Nonetheless, this diversity does allow for a better understanding of the various approaches to care. Finally, this review did not account for publication bias, and it was beyond the scope of this review to include grey literature [65], which may have excluded some potentially relevant data.

Conclusions

This review systematically examined the effectiveness of a range of treatments for reducing symptoms post-trauma related guilt, shame and anger following a traumatic event(s). Several psychological treatments, including both exposure and cognitive-based treatments, were found to have moderate to large effects in reducing symptoms. The included studies were heterogeneous, with a variety of index trauma types and patient demographic characteristics. At present, while it is not possible to draw firm conclusions about comparative effectiveness, this review does suggest that both exposure and cognitive-based treatments can be efficacious in reducing symptoms of post-trauma related guilt, shame and anger following a range of traumas in various populations.

Chapter Four

Stage 2: Perspectives of Leading Professionals

In Stage 2, qualitative interviews were conducted with leading professionals with extensive clinical, pastoral and research experience in moral injury. The purpose of these interviews was to draw on this expert body of knowledge and experience to better understand perceptions of the needs of morally injured patients and what effective approaches may be helpful.

Methods

Study design

Stage 2 was a qualitative study using in-depth, semi-structured interviews. The qualitative approach utilised allowed for the exploration of professionals' experiences and perceptions of moral injury and treatments associated with it.

Participants

In total, 15 interviews were conducted with UK and US professionals working in the field of moral injury (Table 5). To participate in the interviews, participants had to be professionals who had experience of either providing clinical treatment, other forms of support (e.g. chaplaincy support), or have experience of carrying out evidence-based moral injury research in order to provide insight into the latest developments in moral injury. Participants had to be aged 18 years or above, English speaking and willing to provide informed consent. There were no limitations on eligibility according to demographic characteristics (e.g. gender, age, geographic location) or professional grade, rank or qualification.

Qualitative interview schedule

The interview schedule was developed based on the research questions, the relevant academic literature relating to moral injury [9,34] and the experiential knowledge of the research team. The semi-structured interview questions focused on participants' experiences of working with individuals who have experienced moral injury. In particular, topics included their experience of supporting individuals with moral injury, the core psychosocial difficulties experienced by individuals with moral injury, the approaches they used to support individuals with moral injury, whether existing approaches are feasible to deliver and well tolerated, perceived advancements in moral injury care, perceptions of existing barriers to care. The interview schedule can be found in Appendix 2.

Procedure

A snowball sampling methodology was employed. Professionals were recruited via circulation of study advertisements via mailing lists, on social media, within organisations that provide mental health treatment/psychological care to military/ex-military populations, and in veteran-affiliated

Table 5: Stage 2 Professional Participants' Demographic Information

Participants	Country	Gender	Profession	Veteran/ Civilian patients	Years of experience
P1	US	M	Clinical Psychologist	Veterans	30
P2	UK	M	Army Chaplain	Veterans	25
P3	UK	M	Psychiatrist	Civilians	30
P4	US	M	Clinical Psychologist/Researcher	Veterans	37
P5	US	M	Clinical Psychologist	Veteran /Civilian	25
P6	US	M	Clinical Psychologist	Veterans	20
P7	US	M	Psychiatrist/ Researcher	Veterans	20
P8	US	M	Psychiatrist	Veterans	43
P9	UK	M	Psychiatrist	Veterans	31
P10	UK	M	Clinical Psychologist	Veteran /Civilian	25
P11	UK	M	Chaplain	Veterans	15
P12	US	M	Clinical Psychologist	Veterans	15
P13	US	M	Clinical Psychologist	Veterans	30
P14	US	F	Clinical Psychologist	Veterans	20
P15	UK	F	Clinical Psychologist	Veterans/Civilians	25

Note. M = Male, F = Female

newsletters. Participating professionals were also be asked to share the study with potentially eligible colleagues.

Interviews were conducted by a researcher who had training and experience in qualitative methods (VW). All interviews were carried out by telephone or online via Microsoft Teams. All participants gave audio-recorded verbal informed consent for their participation. Prior to the interview, basic demographic information was collected from each participant. Interviews lasted for 56.3 minutes on average (22.5 – 79.2 range). All interviews were audio-recorded and transcribed verbatim with personally identifying information removed.

Data analysis

Data were analysed using thematic analysis [28]. Thematic analysis was utilised as it is an analytical strategy used to identify patterns of meaning across the data set as a whole, in keeping with the study's aims of exploring professionals' perceptions regarding the presentations of moral injury, care approaches and potential barriers to care. Data collection and analysis took place simultaneously

to allow emerging topics of interest to be explored further in later interviews and to determine whether thematic saturation had been reached [62]. For clarity, we refer to all individuals who participating professionals described treating or supporting as 'patients'.

The following steps were utilised as described by Braun and Clarke [28] - reading and rereading the transcripts, producing codes, searching for and developing early themes, and revising and classifying themes. NVivo V.12 software was used to facilitate analysis. An inductive analytical approach was used, with initial codes and themes proposed by DS. To ensure rigour, the coding frame was scrutinised by VW, with any disagreements resolved by a thorough re-examination of the data. A reflexive journal was kept throughout data collection and analysis in an effort to recognise the potential influence of the researchers' prior experiences and assumptions and prevent premature and/or biased interpretations of the data [63]. Peer debriefing was conducted and feedback regarding data interpretation and analysis was regularly sought from co-authors NG and DM.

Results

As shown in Table 6, two overarching themes and seven subthemes emerged from the data, reflecting professionals' perceptions and experiences of providing care to (ex-) serving military and civilian patients following exposure to PMIEs. Anonymous participant quotations are provided to illustrate our findings and all participants have been assigned a pseudonym.

Table 6. Themes and subthemes following thematic analysis

Themes and subthemes
Perceived barriers to effective care for moral injury cases
• Lack of diagnostic and clinical certainty
• Existing materials and approaches: Lack of flexibility to target the complexities of moral injury
Recommendations for providing effective care to moral injury patients
• An in-depth understanding of the patient
• The importance of being non-judgmental when offering psychological care
• The need for flexibility in psychological care for moral injury
• Re-connection
- (i) Fostering self-compassion in psychological care
- (ii) Reconnection with social networks
• The role of non-clinicians in psychological care for moral injury

Perceived barriers to effective care for moral injury cases

Lack of diagnostic and clinical certainty

The lack of consensus regarding the definition of moral injury and the similarities observed in symptoms following a fear-based event and a PMIE (e.g. omission, commission, betrayal) were considered a major challenge to identify, disentangle and treat patients. It was noted by many professionals that due to the clear and structured process of identification and treatment of PTSD, the concept of moral injury can be neglected in clinical treatment. Notably, clinicians argued that identifying moral injury-related psychological problems can be a complicated process for those who are not familiar with moral injury and are thus less experienced in asking effective questions, identifying and working with such complicated and potentially indistinct set of symptoms.

> *Clinicians are focusing on PTSD, that's the big one. They are focusing on a lot of times the consequences of MI, one of which is PTSD but also they're focusing on depression and suicide, and these are big things that clinicians have to address. The moral injury part, that's kind of optional, so they don't ask about it, they don't treat, they don't make attempts really to not knowing that it may be driving these comorbid symptoms including substance abuse, relationship problems, unemployment… – P7 (Psychiatrist, male, US)*

Existing materials and approaches: Lack of flexibility to target the complexities of moral injury

Clinicians reported that patients often struggled to define or express their distress following PMIEs. This was thought to be potentially due to a lack of vocabulary or difficulties in making sense of a situation and expressing it in words, which in some cases was a result of a poorer educational background or lower literacy level. In many cases, clinicians described that existing psychoeducation materials (e.g. therapy handouts) are written for targeting fear-based symptoms and are not tailored to include a wide range of symptoms related to moral injury (e.g. guilt and shame). This can result in missed opportunities for patients to make disclosures, and for clinicians to explore in-depth the patient's understanding and interpretation of the events. This lack of a flexible and patient-centred approach was reported to be a challenge in the development of an effective moral injury care plan.

> *Probably the emotion that people hide the most and is least easily disclosed is shame and so you need to have your clinical chops about you to be looking out for that. People don't just say, 'oh I'm ashamed' […] psychoeducation stuff around PTSD should include some information on shame. Even if people aren't disclosing there's a route in and one of the things that typically I would do is give people physical written information, and then ask them to highlight which are the bits that are most relevant for them… – P10 (Clinical Psychologist, male, UK)*

Professionals who work with (ex-) military personnel or civilian patients (that have been tortured, trafficked or abused in a domestic setting), argued that religion or spirituality in general could help to disentangle underlying moral injury causes. These professionals highlighted that central to moral injury is ethical or moral beliefs which stem from one's cultural or religious experiences. Nevertheless, they described that patients' belief systems are not often explored in clinical settings, due to the lack of clinician awareness and inadequate training on how to broach such topics. Clinicians highlighted that not prioritizing patients' worldviews, culture, and self-perception could hinder the development of a thorough and effective clinical treatment or care plan.

...Most of our clinicians seem to be anti-religion; not just not religious but against religion. A lot of them are uncomfortable... I say this is why you need to understand all religions, you are going to have Jewish clients, Christian clients, Hindu clients, you'll have atheists. You need to understand where they are all coming from so as a clinician you can help them the best, particularly the moral injury area where it's all about ethics and right and wrong... - P1 (Clinical Psychologist, male, US)

Existing evidence-based treatments for PTSD (e.g., Prolonged Exposure [PE] or Cognitive Processing Therapy [CPT]) were often considered by professionals as unable to effectively target the range of distress that patients with moral injury presented with, leading to poorer patient outcomes. More specifically, profound moral suffering was perceived to increase the complexity of a patient's case and contribute towards a disordered relationship with the self, others and the world. For example, although intense emotions, such as shame, guilt, worthlessness, or anger were thought to be common responses after fear-based traumatic events, in cases of PMIEs, professionals argued that such emotions are based on moral judgment and triggered by the violation of one's moral beliefs and ethical standards. Professionals reported that the lack of flexibility or clinician ability to effectively adjust standard psychological treatments to the unique patients' needs could be a key barrier to recovery for cases of moral injury.

...there are a lot of therapists who are treating this in a more scientific tradition, and they're not freed up and authentic to be compassionate and to be caring... The work is only going to be effective if you start to really get somebody and care for them... - P4 (Clinical Psychologist, male, US)

Recommendations for providing effective care to moral injury patients.

<u>An in-depth understanding of the patient</u>

With these hurdles in identifying and treating moral injury in mind, it was argued that to identify and effectively work with moral injury-related psychological problems, a personalised and holistic approach needed to be followed. Professionals, who worked with diverse populations (e.g. refugees, (ex-) military personnel, victims of human trafficking/abuse) stated that more time needed to be allocated at the beginning of the treatment/support process in order to develop a personalised care plan and gain a deeper understanding of the patient's personal meanings, belief systems (including spirituality and culture), past experiences, trauma history and current life situation (e.g. relationships, employment). This, in turn, could facilitate rapport building and ensure the use of the most appropriate therapeutic techniques. It was reported that by allocating more time, patients may also have the opportunity to feel more comfortable with the professional, which could reduce unhelpful beliefs regarding treatment/ psychological care (e.g. the fear of being judged, concerns about confidentiality) and facilitate the disclosure of profound moral suffering.

...with moral injury you have to tailor so much more... with PTSD we think we'll go in and give them this evidence-based psychotherapy and you tailor it to some extent but in many ways you are sticking to the core and that's just not the case with moral injury [...] I think you have to set the stage, there is a lot of secrecy and shame and withdrawal, it has to be a process where they feel comfortable and they're asked the right questions and they feel comfortable answering.. – P14 (Clinical Psychologist, female, US)

...I'd start at the very human level, 'tell me what's going on, what you are thinking or feeling about what's going on ... just throw it out there'. From there, in that hopefully intimate safe space we can start to unpack and put together, repack, shape things and helping people to see for themselves that kind of Rogerian it's not for me to tell you what you need to think but let's work through this together until you find something that works for you to put this in its place... - P11 (Chaplain, male, UK)

The importance of being non-judgmental when offering psychological care

Employing a non-judgmental approach was considered a key fundamental part of clinical treatment or psychological care when working with moral injury and in particular in cases of perpetration-based events or PMIEs which could include disclosure of horrific events (e.g. carrying out torture, death). The importance of a non-judgement approach was acknowledged by both professionals who work with (ex-) military and civilian populations. It was argued that one of the first steps of the care should be to explore the patient's memories and events that occurred before and after the PMIEs to increase the understanding of what happened and help patients to contextualise the PMIEs in a way that would make sense to them. Some examples include having discussions about the uncertainty of specific situations (e.g. combat theatres) and introducing the idea that the PMIE may be something that other people could have also experienced. In addition, during this process of normalisation, professionals reported that patients should be encouraged to accept their responsibility for what happened in a constructive way, to help them move forward.

…the main way of trying to find out if it's happened is to listen actively and non-judgmentally and to be curious […] Then if you are not shocked by that you may say 'well these are some of the things that I've seen in other people', and if you are non-judgmental, if you make it clear that you are not going to show them out of the room, then they will feel a little bit less unable to tell you... - P3 (Psychiatrist, male, UK)

…once you've contextualised events, actually there can be a better understanding about how it came to that point that that event occurred. That's not to absolve the person of responsibility they may hold for certain elements of it but that it's happened in a context […] someone has done something bad, and they're worried about it and they feel guilty about it that's probably a good sign in itself as a starting point. So, normalising that. - P10 (Clinical Psychologist, male, UK)

The need for flexibility in psychological care for moral injury

Professionals perceived therapeutic approaches which included concepts of acceptance, compassion and forgiveness as helpful in promoting patient wellbeing holistically. It was reported that such approaches would allow patients to develop adaptive coping mechanisms and resolve or come to terms with their moral injury-related symptoms (e.g. guilt or shame). In particular, it was reported that using approaches that are flexible and include a wide range of therapeutic approaches was the best way to introduce and promote such concepts, tailored to patients' values and self-concept. Some examples of treatments that clinician professionals recommended include Adaptive Disclosure (AD), Compassioned-Focused Therapy (CFT), Acceptance & Commitment Therapy (ACT), Impact of Killing (IOK) or adapted versions of these. Overall, professionals argued that patients often feel like they are carrying a burden following the PMIE, and this feeling was considered by professionals as a barrier for patients to make sense of who they have become and to re-build meaningful lives. Accepting what has happened through a compassionate approach was thought by professionals to have the potential to help patients to accept events and forgive themselves or others. This process of forgiveness was reported to have the potential to enhance the healing process leading to long-term results.

…AD is more multifarious, more personalised, there are a lot of different routes to behaviour change in the world and service of healing and repairing and we've incorporated loving kindness mediation as a vehicle to push to the needle on either self-compassion or other compassion or both... -P4 (Clinical Psychologist, male, US)

I think the psychotherapeutic notion that comes closest is CFT… it does seem to me to be a way of addressing precisely that notion of feeling worthless and ashamed which among other things makes one more vulnerable to further injury or exploitation. - P3 (Psychiatrist, male, UK)

The need for alternative resources tailored to the needs of the patients was also highlighted as fundamental part of a personalised moral injury care. Although many clinician professionals reported that providing tailored psychoeducation materials could facilitate patients to express themselves, chaplain professionals recommended the inclusion of literature, poems, or allegories, which could provide different ways for patients to make sense of the PMIEs and help to normalise their experience and emotions.

…you are not yourself because of moral injury and there's something inside which is not right. Things that people often say and they can't put their finger on it, can't name it […] we have to give more than a voice, maybe we actually have to give vocabulary. It's very allegorical as well. I think poetry is going to help with this rather than just description and narrative, making some sort of meaning of it will be really helpful… - P2 (Chaplain, male, UK)

Alternatives in treatment or support delivery was also discussed by professionals. For example, the increased use of delivering therapy online or via telephone due to COVID-19 was thought to be effective when the process included careful organisation and clear guidelines. In addition, although individual clinical treatment or psychological care is what professionals usually see in practice for moral injury-related psychological problems, the potential benefits of a carefully designed group therapy were also reported. A group setting with like-minded patients who may share a common understanding, similar PMIE experiences or values, such as (ex-) military veterans or victims of human trafficking, was reported to have the potential to facilitate disclosure and reduce feelings of shame. A combination of individual and group work was also recommended.

I think that there's a good therapeutic rationale though for doing it as group work. Moral injury can be an extremely isolating experience… one of the things is withdrawing from other people so doing this work in a group… I think it's one of the more restorative experiences and it's one of the challenges with individual psychotherapy… -P12 (Clinical Psychologist, male, US)

Re-connection

Treatment approaches to foster self-compassion in psychological care:

Professionals reported that understanding patients' perceptions of spirituality, including religious beliefs, could make clinical treatment or psychological care more beneficial. In a clinical context, ACT and IOK were described by some professionals as some of the treatment approaches which address the concept of spirituality in moral injury psychological care. However, professionals reported that a meaningful definition for spirituality needs to be agreed with the patient early on in treatment process. Professionals described that a patient's definition of spirituality did not need to necessarily include a specific religion or include a higher power. Patients could also benefit from incorporating a non-religion specific benevolent moral authority or a person the patient trusts, respects and admires (e.g. a family member, a friend, a respected figure). Clinical treatment or psychological care that allowed space and time to the patient to think what this benevolent person would say to them, or what they would advise this person if they were facing similar struggles, was viewed as beneficial by professionals. This type of technique was described as being used in AD and it was thought to help patients become more compassionate and increase acceptance of human pain, emotions and experiences. Although this specific technique may not be useful for all patients, professionals described that similar benefits could be achieved through other alternative techniques including engagements in social activities and amends making, which could be tailored to patients' customs and traditions.

…the animistic belief is very widely true across communities particularly in Nigeria, which goes alongside with both their religious beliefs and their extensive Western education… I see in some victims of trafficking that the effect of the witchcraft rituals can be incredibly powerful as a form of control… - P3 (Psychiatrist, male, UK)

Once you have the person describe who this benevolent moral authority figure is and what's so great and wonderful about them then all of a sudden you put them in a position of saying now what would they say back to you… it's harder for them to put those words in that person's mouth. It's easy for them to beat themselves up […] there's other things that can be helpful and that might be more focused on symbolic and actual amend making, to begin to chip away at the rigidity and toxicity of self as evil conceptualisation… - P5 (Clinical Psychologist, male, US)

Reconnection with social networks:

Another potential beneficial aspect of a personalised moral injury psychological care plan was working with patients to target their social functioning to help them move towards the person they want to become. Professionals stated that the aim of this aspect of treatment/care would be to reduce feelings of isolation and encourage patients to accept that they cannot change the event but must move forward, re-build interpersonal relationships, re-engage effectively in work and conduct everyday activities independently. Professionals reported that patients should be encouraged to make amends, including activities which the patient considers healing and restorative (e.g. writing an apology letter, volunteering, dedicating time to their family). However, this amends making was thought by professionals as something that needed to be carefully managed. They stated that making amends should not be presented in treatment/care as a reminder of the patient's perceived mistakes (which could exacerbate feelings of shame or guilt); but presented rather as a way to restore the disordered relationship with themselves and others in a compassionate and meaningful way.

It's really based on how they feel like they can best heal. So again, it's very personalised for each person and so they are able to really focus on what's in their best interests and how we can move forward with that. Then we encourage them to follow through with that plan because for each person again those amends are going to look really different… - P14 (Clinical Psychologist, female, US)

The role of non-clinicians in psychological care for moral injury

The impact that moral injury could have on spirituality was perceived as an important consideration by both clinician and non-clinician professionals. Professionals described that chaplains had the potential to be effective non-judgmental figures who can listen to a patient's story and potentially make a unique contribution to their recovery. This perception of the potential role of chaplains was largely reported by professionals who work with (ex-) military personnel, as militaries often include chaplains to support personnel. Nonetheless, professionals who work with refugees or victims of torture who are religious also highlighted the importance of involving spiritual figures during clinical treatment/psychological care. Collaborative work between clinicians and chaplains, recognising that both disciplines can contribute towards a patient's recovery, was acknowledged as having the potential to be very beneficial for patients with religious backgrounds not only during treatment but in the longer-term.

…one of the things within our mental health and chaplaincy programme that we really try to do is bring to the table approaches that extend beyond what we typically see in evidence-based psychotherapy protocols […] if that chaplain can be a benevolent, accepting, moral authority … just the person of a chaplain being there with an open accepting posture can go a long way towards starting to maybe restore, maybe rebuild in some new kind of way a moral or spiritual foundation for a lot of people. – P12 (Clinical Psychologist, male, US)

Some of these people are able to move on because of the spiritual restructuring that the particular priest in question who is quite experienced in this sort of thing seems to be able to facilitate. You work with what you have and in some of these people their religious belief is one of their remaining strengths and so trying to encourage cultivate that remaining strength… - P3 (Psychiatrist, male, UK)

Conclusions drawn from Stage 2 with Leading Professionals

This qualitative study provides insights into what clinical and non-clinical professionals experience when supporting individuals affected by MI. The key themes identified were (i) the perceived barriers to effective care that occur due to the lack of empirical experience with MI, the neglect of patients' unique individual needs and lack of flexibility of existing manualised treatments; and (ii) recommendations for providing effective care to moral injury patients, emphasising the need for highly personalised and flexible approaches that are open to interdisciplinary collaborations.

The current findings are in line with previous research indicating that moral injury is perceived as a highly complex construct caused by events that transgressed an individual's moral code and ethics [9,11,34]. For both clinical and non-clinical professionals, the key to understanding and addressing moral injury appears to be targeting each patient's unique appraisal process and interpretations not only of the PMIE but the context in which it occurred, as well as pre- and post-event experiences. This is thought to be what determines whether the PMIE will increase dissonance with the patient's worldview and belief system and lead to moral injury development [64]. In particular, our results suggested that patient's understanding and experiences of the PMIE is often only covered at a surface level at the beginning of the care process and was considered by participating professionals as one of the main issues that can later challenge the delivery of effective psychological care.

Currently, a common response to patients' disclosure to trauma is the use of formal questionnaires and further evaluations to screen and determine whether they meet the DSM-5 diagnostic criteria for PTSD, and if they do, they are likely to be referred for an evidence-based, manualized treatment [65]. As research into moral injury has expanded, it is now clearer that moral injury appears to be a separate and distinct aspect of trauma exposure, although it is frequently associated with PTSD [45]. These somewhat rigid processes following patient disclosures of trauma, combined with a lack of experience of some clinicians to identify and treat moral injury, were considered by participating professionals in the present study as a major barrier to effective care. As both moral injury and PTSD can stem from similar events (DSM-5 Criterion A for PTSD), both clinical and non-clinical professionals highlighted the need to clearly distinguish between moral injury and PTSD during clinical treatment/psychological care. A recommendation from professionals was to allocate more time at the beginning of the process to gain an in-depth understanding of the patient, beyond a comprehensive trauma history, consistent with previous studies [34]. This time should include collecting information about patients' developmental experiences, their belief systems, culture, spirituality or religion to shed light on how they interpret the world and understand themselves. Notably, most of these aspects are understudied and poorly understood in the context of moral injury [64]. A recent article suggested that one of the limitations in the conceptualisation of moral injury in Western literature is the focus on the individuo-centric perspective in a clinic-based environment which often excludes the social-cultural aspect [66]. The article discussed moral injury drawing from an Afri-centric perspective to indicate the lack of emphasis on the problem of violation of Indigenous cultural mores (i.e. offences/experiences that are perceived to be against the acceptable cultural mores and traditions of the community) in Euro-centric approaches to psychological care.

In addition to culture, spirituality and religion are two aspects that were reported to be often overlooked at the beginning of the care process, leading to a less tailored care plan. Only more recently has spirituality and religion gained more systematic attention in the moral injury literature [9,66]. Although spiritual aspects will not necessarily be crucial for all moral injury patients, it will be useful for clinicians to bear this in mind with cases of moral injury so they can

adjust the care plan according to patients' beliefs and needs. Research indicates that individuals raised in religious environments may be particularly vulnerable to moral conflicts [67], while moral compromise can create spiritual dissonance in those with or without religious faith by damaging foundational assumptions about self and the world [67]. One recommendation drawn from the present study was to actively encourage interdisciplinary collaborations among clinicians and religious figures who have a good understanding of mental health (e.g. undertaken mental health training). These findings are in line with existing research which recognises spiritual symptoms as a core dimension of moral injury [68,69], suggesting that religious figures could potentially be ideally positioned to address some of these concerns because of their role and authority with regard to carrying out the "sacrament of reconciliation" (i.e., confession and forgiveness for offenses committed against God) [42]. For example, a recent article has discussed the possible value of rituals as a resource for healing and reconnection for US ex-military personnel and their families affected by moral injury [70] It was suggested that rituals, and overall spiritual care, could help moral injury affected individuals to reclaim the transformative power of hope, reduce the isolation of shame and guilt, recognise the need for confession, and strengthen familial and communal support. Additional research is needed to explore how such collaborative work between clinicians and religious figures should be structured to maximize potential benefits to individuals struggling with moral injury.

Finally, patients' educational background, was also viewed as an underlying barrier to clinical treatment/psychological care. In general, poorer educational attainment has been found to contribute to higher levels of mental stress later in life [71]. There are cases where some patients find it challenging to understand complex concepts or find the right words to describe their feelings and thoughts during clinical treatment/ psychological care. It is the clinician's responsibility to build a good rapport with patients and ensure they have the necessary tools, such as accessible psychoeducation materials, to help facilitate PMIE disclosure and co-create a more accurate narrative of their experiences. The importance of psychoeducation in clinical treatment/ psychological care is well established [72] and the present study suggests that tailored moral injury psychoeducation, especially regarding complex emotions such as guilt and shame, could help facilitate PMIE disclosure and normalise distress. An additional recommendation from participating chaplains was the use of alternative psychoeducation materials (e.g. poems, literature) – which may not be typically drawn on in manualised therapy - to increase the understanding and normalisation of the event(s) and facilitate therapeutic interaction. Further research is needed to better understand how less 'traditional' psychoeducation materials in the form of poems, literature and other sources may contribute towards recovery for those struggling following PMIEs. The benefits of exploring these aspects in depth at the beginning of the process were thought to lead to a beneficial treatment or psychological care "cycle". In many cases PMIEs include 'unspeakable' events (e.g. death, suffering, abuse, torture) in often volatile contexts, such as war, police work, or natural disasters [9]. Disclosure of such events can be challenging for patients, who may think that they will be judged or misunderstood by professionals who may lack similar life experiences and occupational backgrounds [47]. Results indicated that a less rigid screening assessment process could help professionals gain a holistic understanding of the patient and thus adopt a non-judgmental approach which is clear to the patient. This, in turn, could enhance rapport building and increase the patient's sense of security.

In line with previous research [9], moral injury in this study was considered to have a profound impact on an emotional, mental and social level (e.g. emotional numbing, inability to enjoy life/ trust others, self-harm/suicide, demoralization, social isolation). For this reason, professionals highlighted the need for flexible approaches to clinical treatment/psychological care, which do not only target appraisals of the PMIE(s) but also

provide guidance and support so that patients' re-gain confidence and take charge of their lives. The most effective approach to clinical treatment/psychological care for moral injury remains unclear, mainly because most research is targeting PTSD symptom reduction [45]. Results from other studies indicate the need to modify existing manualised treatments or combine alternative therapeutic tools/techniques to better address symptoms of moral injury. More specifically, recent studies and reviews also suggest that alternative approaches, such as AD, ACT, CFT, pastoral care interventions or spiritual/religious treatments may be beneficial by covering many aspects of patients' lives [34,45,73]. Notably, what was believed to be the key for effective clinical treatment or psychological care with long-term benefits in the present study was the effort made by the professional to adjust therapeutic techniques to the patient's unique needs and way of life. This was thought to be achievable through discussion and acknowledgment of the past moral violations, self-acceptance, emotional flexibility, self-forgiveness and making amends. These themes are broadly consistent with the previous literature regarding secular and non-secular approaches and interventions [9,40]

Strengths & Limitations

A strength of this study is the diverse nature of the sample, which included clinical and non-clinical professionals who have experience working with a range of (ex-) military personnel and civilian victims of abuse, torture or human trafficking. Additionally, professionals were recruited from a number of UK and US mental health services offering an opportunity to observe similarities or differences in the perceptions of moral injury and clinical and chaplain-delivered support approaches. This study adds to the literature by suggesting potential therapeutic aspects that professionals could focus on at the beginning of the treatment/support to help them develop a care plan by incorporating individually specific factors such as spiritual background, culture, community, and educational background. However, as with most studies on MI, the professional participants in the present study were recruited from a Western context, were primarily male, with more experience of working with (ex-) military personnel than civilians. A larger-scale investigation, involving non-western countries and diverse civilian samples, would be useful to determine how the perspectives of professionals compare across settings internationally. Further systematic research is also necessary to investigate the potential short- and long-term benefits of pastoral care and the consideration of spirituality/religion and culture in psychological support (e.g., RCTs comparing secular and non-secular care) [66]

Conclusions

This research expands on earlier qualitative studies [3,74,75] and provides further insight into the experiences of clinical and non-clinical professionals who provide care to moral injury patients, including civilian and (ex-) military populations. These findings highlight the range of difficulties faced by such professionals including the inflexibility in existing manualised treatments and the limited incorporation of patients' unique individual needs. Recommendations on the development of clear guidance on best practice for treating moral injury include: incorporating additional time to develop an in-depth understanding of the patients' personal, cultural and spiritual background and current needs, the importance of taking a non-judgmental approach, and encouraging the patients to foster self-compassion and (re)connect with social networks. Finally, spirituality and religion are two aspects that could be explored, ideally early in the care process, which could lead to a more tailored approach that includes interdisciplinary collaborations between clinicians and trained religious or spiritual figures.

Chapter Five

Stage 2: Perspectives of Veterans who have experienced PMIEs

Methods

Participants

Between April 2021 – August 2021, eligible veteran participants were recruited to the study. Eligibility required participants to be aged 18 years or more, report having served in the UK Armed Forces, and willing to self-report their experiences of PMIEs during their Armed Forces service. No limits on eligibility were imposed according to demographic characteristic (e.g. gender, age, years of service).

We utilized opportunity sampling and recruited participants by circulating study information on social media, online platforms and via relevant mailing lists. The sampling method of 'snowballing' was also used with participants invited to share the study with other possibly eligible individuals. Prior to participation, individuals were screened for eligibility by a study researcher using the study inclusion/exclusion criteria. Participants provided informed consent prior to participation and were informed that they were under no obligation to take part and that they could stop participating at any time. Researcher contact details were provided to all participants should they have had any questions about participating or have any questions about the study.

Participants were 10 male military veterans of the British military who were recruited through opportunity sampling, ranging in age from 36-65 years (mean = 51.1). Most veterans had served in the Army (n=5), compared to the RAF (n=4) and Royal Navy (n=1). Veterans' years in service ranged from 5-38 years (M= 17.8). Prior to interviews, veterans also completed two moral injury measures - the MORIS [76] and the Expressions of Moral Injury Scale- Military version [15]. Information about the development and validation of the MORIS can be found in Appendix 6. Demographic information was also collected and is presented in Table 7.

Table 7: Demographic and Moral Injury Exposure Information of Stage 2 Veterans

ID	Age Range	Service	Years in Service	PMIE type indicated in MORIS	Symptoms of moral injury indicated in interview	Score on EMIS	Received MH diagnosis	Received MH Treatment
ID01	30-40	Army	7.5	Commission, omission and betrayal	Yes	61	PTSD	Yes
ID02	50-60	Navy	23	Commission, omission and betrayal	Yes	77	PTSD	Yes
ID03	40-50	Army	5	Commission, omission and betrayal	Yes	30	n/a	Yes
ID04	60-70	Army	28	Commission, omission and betrayal	Yes	47	n/a	Yes
ID05	60-70	RAF	10	Commission, omission and betrayal	Yes	57	Anxiety, depression	Yes
ID06	40-50	Army	15	Commission, omission and betrayal	Yes	53	PTSD	Yes
ID07	60-70	RAF	38	Commission and omission	Unclear	26	n/a	No
ID08	40-50	Army	27	Betrayal	Unclear	36	n/a	Yes
ID09	50-60	RAF	16	Omission and Betrayal	Unclear	44	n/a	Yes
ID10	50-60	RAF	9	Commission, omission and betrayal	Yes	66	PTSD	Yes

Note. Age Range= age range at time of interview. RAF = Royal Air Force. PMIE = potentially morally injurious events. EMIS = Expressions of moral injury scale [15].

Procedures

Interviews were conducted by a researcher with experience and training in qualitative methods (VW). All participants provided written consent prior to participation. The interview schedule was informed by the research questions and the existing literature related to the impact of moral injury on wellbeing and existing treatment approaches [4, 9, 12, 13, 24]. Prior to the semi-structured interview, participants were asked basic demographic information.

As part of the interview, participants were shown an outline of a proposed future moral injury treatment; information about the design and development can be found in [21]. As an overview, the proposed treatment was developed following a review of the literature on the treatment of the core moral injury symptoms (e.g. guilt, shame, anger) [25]. Leading international experts in the field of moral injury were then interviewed for their views on treating cases of moral injury and what they felt would be beneficial to include in future treatments. From this, a basic treatment outline was developed, including the key components of treatment recommended from the interviews and the evidence base. The inclusion of these recommended interventions influenced length of treatment. In addition, moral injury has been shown to have significant positive association with CPTSD symptom clusters [26], and veterans have previously expressed finding shorter treatments less effective for CPTSD [27] suggesting a short treatment may not be as effective. As mentioned above, this treatment outline was shown to participants as part of their interview (Appendix 1).

The interview questions focused on participants' experience of moral injury related mental health difficulties, previous treatment for this and what had been helpful or unhelpful in previous treatment. They were then asked to share their thoughts and reflections on the proposed treatment outline.

Data Collection & analysis

Participants were interviewed via an online video format (duration range 66 -121 minutes, mean= 89.93 minutes). The interviews were recorded and transcribed in full, with potentially identifying information removed on transcription. After transcription, audio files were destroyed. Braun and Clarke's guidance for completing Thematic Analysis [28] was followed. The following steps were completed to conduct thematic analysis: interviews were recorded and transcribed, transcriptions were read and re-read, initial ideas from this were noted by AB. Data was coded and initial themes were generated. All data relevant to these themes were collected, reviewed, refined and named by AB. To ensure reliability, transcripts and development of themes were reviewed by VW with further evidence being drawn from the data as needed.

Results

Three superordinate themes were identified: Experiences of previous mental health treatment and perceptions of future proposed treatments which include six sub-themes (see Table 8). Participant quotations have been anonymized and included for illustration.

Table 8: Illustrative Quotations Supporting Themes and Subthemes of Thematic Analysis

Theme and Sub-Themes	Quote
1 What Veterans Found Helpful in Previous Treatments for Moral Injury Related Distress	
	"… it was so positive and helpful…I had about six sessions and it was really, really good and it helped me identify … flaws in my character to do with emotional understanding and awareness and [how my parents] manage[d] emotional responses or [didn't] express it at all generally. So, for me that mental health help was really, really important and really helpful at that time." (ID 03, Army)
2 What Veterans Found Unhelpful or Lacking in Previous Treatments	
a) Moral injury- Distress Inadequately Targeted by Existing Treatments	*"…CBT there are just some bits of that just aren't relevant. Like, I get the fact that it's not happening now so this whole cyclical thoughts, feelings, beliefs – fine, get what you are doing -but that's not my issue. I know it's not happening now that's the point."(ID 01, Army)* *"The problem is the guilt end of the spectrum, the guilt, shame end of the spectrum, [CBT] doesn't really deal with that.... CBT is great at resolving the issue [of] what am I feeling, why am I feeling this, OK just stop, pause, breathe … It's putting a break into the thought process or into the physical process or whatever it is. … The problem is that doesn't necessarily address the root cause per se in my mind." (ID 01, Army)*
b) Experience of Receiving (Inadequate) Treatment and Support from Military Service Providers	*"So our decompression and imagine I'm doing air quotes here. Our decompression was we were taken to a closed military base, given three cans of beer, enforced overnight sleep and a one hour PowerPoint and told to go and collect our vehicles, our hire cars to go home." (ID 02, Navy)* *"…I just refused to engage with it….I'm angry with him and I'm also angry with the [military mental health] system. Why have they, in such a situation where people have been blown up and shot…why have they put [in] someone who is brand new into the mental health world?. … I think what it is, is those people have let me down badly… where they should have got it, where they should have understood it…they didn't and it was like that's awful. That's awful." (ID 08, Army)*

Table 8 *continued*

Theme and Sub-Themes	Quote
3. Potentially Helpful Features for Future Moral Injury Treatments	
a) Sessions Focusing on Core Values	*"…in essence it's contracting. Contracting with yourself, contracting with the spiritual, contracting with the family and in fairness the therapist to say this is what I'm talking about, this is what we've agreed, this is why it's important, this is what I'm going to do about it and how I'm going to do it…" (ID 01, Army)* *"People have the Army's values and standards and that's drilled into you and you don't really have any options in that. It's like the Army says you will subscribe to these values and standards and…I don't know how many people have given in depth thought as to what their own personal moral code might be…" (ID 06, Army)*
b) Perceptions of Letter Writing Exercises	*"She got me to write a letter to him and that actually really helped me process the guilt and the grief that was coming off the back of that." (ID 06, Army)* *"I wouldn't do it. And not because I didn't want to do it I'd just find a reason not to do it. Not because necessarily it was too painful, just because it was something to do and it would have to go on my 'to do list' and…is yet another thing I have to do and that can actually put me quite out of kilter." (ID 04, Army)*
c) Inclusion of Close Companions	*"I wish that I'd actually had…this in my earlier stages when I was still with the family, there is a chance I might still have a relationship with them…. early engagement with families is essential…we're chucking all the time and effort at that damaged individual and the families are an afterthought… they're not participants, they are spectators…it doesn't acknowledge the fact that the families are suffering just as much… I think is really important that they will be involved in the recovery process because they are hurting as well" (ID 02, Navy)*

Table 8 *continued*

Theme and Sub-Themes	Quote
	"I think there are two reasons why it's a good thing. 1) I think it would help the person. 2) I think it would help the significant other because I think often… if somebody goes seeking help, getting help for their partner [too]… is almost impossible. It's focused on the individual. … Now God there are some dangers involved though aren't there. [She could say] "You never told me about that…why wouldn't you tell…don't you care…And well what else is he keeping?". … So my overarching [sense] is yes if you make it happen I think it would be a really good thing for both people but beware unintended consequences."(ID 04, Army)
d) Strong Rapport is Key in Cases of Moral Injury	*"that first impression is…the most important thing that you can do in the first couple of sessions… If you've got a moral injury, you just won't go back because you've got such badly damaged trust mechanisms anyway…that you are already sceptical before you even go in there."(ID 06, Army)*

Note. MI = moral injury. CBT= Cognitive Behavioural Therapy. EMDR= Eye Movement Desensitisation and Reprocessing

What Veterans Found Helpful in Previous Treatments for Moral Injury Related Distress

Veterans reported receiving a range of psychological therapy sessions, delivered by both military and non-military services following exposure to PMIE. Some veterans reported receiving CBT, which for a few veterans was experienced as positive. They described how the CBT approach helped them to develop a greater emotional understanding and awareness of themselves and others as outlined in Table 8. Similarly, another veteran described how they found CBT helpful as it provided space to develop a better understanding of their own emotions, and how they could communicate their feelings with others.

What Veterans Found Unhelpful or Lacking in Previous Treatments

Moral Injury-Distress Inadequately Targeted by Existing Treatments. On the other hand, CBT was not universally experienced as effective. One veteran described how they did not find all aspects of their CBT treatment helpful, particularly the

sessions which focused on managing feelings of current threat as these were not issues that were particularly troubling to them following the PMIE, highlighting a potential distinction between PTSD re-living symptoms which CBT treatment aims to target, while other moral injury-related difficulties were not felt to be particularly well addressed.

Similarly, other veterans described how their CBT treatment focused on making regular changes to their day-to-day activities. However, these suggested behavior changes were not felt to be effective in resolving their ongoing inner moral injury-related conflict and feelings of guilt. Other veterans reflected on the limited effect of cognitive strategies suggested in therapy. While some veterans described how this allowed space for them to see, logically, that there was no reason to feel guilty or ashamed, this treatment approach was not effective at helping to reduce these feelings.

EMDR was another treatment that veterans did not experience as very beneficial following PMIEs. While some veterans reported that EMDR was effective at helping them process key traumas or "big ticket items", others found it ineffective. Veterans described that they did not disclose the PMIE in EMDR sessions due to feelings of shame. Others reported how after EMDR their PTSD symptoms reduced but EMDR did not allow an opportunity to address other psychological symptoms.

Experience of Receiving (inadequate) Treatment and Support from Military Service Providers

While a small number of veterans spoke positively about their experience of mental health treatment from the military, the majority of those who had received military mental health support described it negatively. In the time after a PMIE, some veterans described a lack of information or opportunity to access support from military mental health services. Others reflected on a lack of appropriate debriefing and immediate support following a PMIE.

Those who did seek support for mental health difficulties from the military described feeling that the mental health staff seen during service did not seem to understand their needs. Issues surrounding rank and seniority could also hinder the effectiveness of treatment, leaving veteran patients feeling let down by the military.

Potentially Helpful Features for Future Moral Injury Treatments

Sessions Focusing on Core Values. Veterans described that following a PMIE, they often felt like a 'bad' person. Treatment helping to address this sense of being 'bad' was thought to be helpful. Treatment that included sessions on one's core values and how one could live a life consistent with those values was considered extremely positive. This focus on values was considered worthwhile for veterans who, in subscribing to military values, may not know their own personal values after leaving service.

Perception of Letter Writing Exercises. Veterans were asked about their perceptions of letter writing about the PMIE, as many treatments such as CPT and adaptive disclosure include letter writing aspects. Veterans identified potential barriers to engaging with this task being reading and writing difficulties, which they suggested could be overcome using audio/visual recording (e.g. speech to text software). Veterans described that letter writing exercises could be beneficial in facilitating their emotional processing.

However, when reflecting on writing letters, one veteran stated outright that he would not feel able to do this treatment exercise and would find ways of procrastinating to avoid this. The veteran goes on to say that he may be able to complete the assignment orally via Dictaphone but acknowledges that "I think because I've read it there as letter writing exercise that's what's put me off." This provided helpful feedback in how many veterans may find writing exercises intimidating to complete in moral injury treatment, therefore the way that it is introduced in sessions would need to be carefully managed.

Inclusion of Close Companions.

During the interview, many veterans described the negative impact of their mental health changes on their family life and close personal relationships. Veterans were asked about their views on a future moral injury treatment featuring session where a close companion (e.g. spouse, close friend) would be invited into the therapy space and the veteran could share their experiences of moral injury and treatment. The majority of veterans considered this to be a potentially positive moral injury treatment feature with various therapeutic uses, including: informing their companion about the PMIE, providing psychoeducation about moral injury, engaging this other person in their recovery processes and enhancing communication in the relationship.

Nonetheless, veterans reported that key factors in a successful session with a close companion was having the session be carefully facilitated and the close companion reacting to the veteran in an understanding manner. This underlines that should future moral injury treatments incorporate a session with close companions, it will be important that both therapist and veteran carefully plan and prepare the session to try and prevent negative reactions or discussions which may cause harm.

Strong Rapport is Key in Cases of Moral Injury.

Finally, all veterans stated the importance of the relationship with the therapist. A strong rapport was seen as a key to treatment effectiveness and taking time building this rapport in the early treatment sessions was felt to be worthwhile. Veterans expressed that given the nature of the PMIEs and their resulting feelings of intense guilt, disgust and shame, it would be imperative that a moral injury therapist is overtly empathic and non-judgmental in order for them to feel able to disclose their PMIE and discuss their mental health.

Conclusions drawn from Stage 2 with Veterans

This Stage 2 study aimed to gather in-depth data about veterans' experiences of existing mental health treatments; the aspects of treatments that were experienced as (un)helpful in managing moral injury-related distress; and the key components that future moral injury treatments should incorporate. We found that several features of existing treatments were experienced as helpful, as well as several which were unhelpful. We also found a number of treatment features that were considered to be beneficial for future moral injury treatments, including focusing on core values, written reflections through letter writing, sharing a session with a close companion, and building a strong therapeutic alliance with the therapist. It is worth noting, in consideration of these findings, that the small sample size and mixed degrees of exposure and treatment in this sample limits generalisability and as such, the sample may not be considered representative of the wider experience of veterans with moral injury. However, the themes discussed here demonstrate a considerable consistency with existing findings in previous literature, adding to the findings included below.

Veterans interviewed described that a notably unhelpful aspect of existing standardised treatments (e.g. CBT, EMDR) was their reported inadequacy in addressing feelings of guilt and shame following PMIEs. Veterans described feeling treatment was limited in effectiveness in treating key features of moral injury. This is consistent with the existing literature which argues that guilt and shame are not often central targets in traditional PTSD treatments, but that to effectively treat moral injury, feelings of guilt and shame need to be addressed [10]. Previous moral injury treatment models have highlighted a need to modify both cognitive and behavioral interventions to effectively meet the needs of those with moral injury, which seems to also be reflected in interviews with veterans in this research [1]. In addition, the effectiveness of EMDR for combat veterans has

been unclear in previous literature [29], this has also been consistent with the comments made by veterans in this research. From the descriptions veterans provided in these interviews, using EMDR following PMIE may lead patients to feel that discussion of the event and associated affect is limited, meaning feelings of shame and guilt may be exacerbated. Previous findings have indicated that treatment for PTSD which draws on self-compassion has been shown to have better outcomes, helping individuals overcome avoidance associated with fear and self-judgment [30]. This would suggest that incorporating other treatment approaches targeting development of compassion may be helpful in moral injury treatment. However, some of the veterans who were interviewed in the present study reflected on positive experiences with existing standard treatments, and this should not be overlooked. While findings detailed above may support the reflections of some of the veterans interviewed who had negative experiences, it is difficult to ascertain the quality of the therapy that the participants received, therefore important factors such as therapist skill and training could be of great benefit in adapting existing treatment and influencing patient experience and outcome. This would be a vital direction for future research in review of existing moral injury treatments.

This study also supports previous findings that indicate features of future moral injury treatments that could be beneficial. Values, consideration of goals and use of letters were viewed favorably among this sample. Veterans frequently mentioned the military's core values , which may highlight a potential loss of connection with their own personal values; this would support previous research that suggests exploring patients' personal values would be worthwhile for clinicians in the treatment of moral injury [31]. Other studies of veterans with moral injury also support our finding that the use of letters in sessions can be highly therapeutic [23]. Narrative writing exercises are used in Cognitive Processing Therapy (CPT) alongside cognitive re-appraisal and exploration of patient beliefs [32]. CPT has been found to be helpful in processing cognitions and emotions around guilt and shame [33] and has been a key influence in CPT treatment development. The veterans participating in the present study also saw the therapeutic benefit of writing exercises, although how it should be introduced by clinicians should be carefully considered. Veterans in this study also frequently commented on therapeutic rapport being key to treatment success. Veterans highlighted that empathy, understanding, and no judgment need to be clearly communicated from the therapist. This has been found in previous research as good rapport is often advocated as important in the successful delivery of many types of treatments [34] and may therefore be an important feature in guidance given to clinicians working with cases of MI. One could predict that if this need is met, the rapport between therapist and veteran could facilitate a relationship where the veteran feels safe to share what may feel shameful, which in itself will be a core therapeutic intervention. This therapeutic rapport will also be essential in helping the clinician to be discerning about the reality of the patient's sense of responsibility in the event: it has been suggested that one's interpretation of harm in an event may be more crucial in the development of moral injury than the degree of actual harm caused [35]. Furthermore, inflated perceptions of responsibility or overlooking of key contextual information can be observed by the therapist and used to help the patient challenge morally-injurious appraisals [36]. These interviews have provided a vital source of discussion and experience in the development of a novel treatment for MI, as despite limitations in this sample, findings appear to overlap strongly with existing literature. Taking a co-design approach where veterans are included in treatment development provides a key indication that the treatment will be tolerated and acceptable, increasing chances of treatment adherence by other veterans who may have had similar experiences of barriers to treatment.

Strengths and limitations

This Stage 2 study has several strengths and weaknesses. Amongst the strengths was the use of qualitative methods to explore the lived subjective experiences of veterans with MI. The sample size (n=10) allowed for in-depth data analysis to occur. Amongst the weaknesses is the opportunistic nature of the sample and it is possible that individuals who participated in this study had especially salient experiences to discuss. Another weakness is the limited diversity of the sample as, while all Armed Forces branches were represented, only males were successfully recruited, and the experiences of women veterans and their experiences of treatment and perceived treatment needs should be examined in future studies. Furthermore, it was unclear from some interviews whether veterans had previously had treatment that was PMIE targeted, 'mixed event' targeted or targeted at other traumatic events.

Conclusions

Overall, the qualitative data within this study provided a helpful source of information for the development of our treatment. By understanding the participating veterans' previous experiences of treatment, we were able to identify what was seen as having been effective or ineffective for helping with specific features of moral injury. By gaining feedback on our treatment outline, we better understand veteran's reactions to key interventions, techniques and terminology, which can be applied in therapy sessions. More broadly, the research highlights the value of good therapeutic rapport when working to treat symptoms of moral injury, the meaning that the events can hold, and what can be experienced when this therapeutic rapport is broken. In addition, the findings provide an important insight into how current treatment approaches to moral injury may be experienced by patients and provides a useful commentary on how this may be adapted to best meet the needs of this population.

Chapter Six

Stage 3 - Piloting R&R with veteran patients at Combat Stress

Methods

Design

The finalised R&R treatment manual consisted of 20 sessions delivered online by a single therapist. The treatment was piloted in Stage 3 with n=20 military veterans, with sessions taking place weekly, with the exception of the final session which took place 4 weeks after Session 19. An outline of the R&R treatment is presented in Table 9. Early treatment sessions focused on formulation, review of life experiences including PMIE(s), providing psychoeducation on moral injury and emotional regulation, and recounting the PMIE(s). The sessions then went on to focus on identifying problematic appraisals and thinking patterns and exploring personal values. Following this, the sessions then aimed to help veterans reframe significant belief system changes brought on (or further influenced) by a PMIE(s) and resultant moral injury. After these sessions, veterans were invited to share a session with a close companion, where their understanding of moral injury, their PMIE experience and their future goals could be shared. The remaining sessions encouraged the patient to consider future directions in relationships with self (including forgiveness and self-forgiveness), relationships with others, and living in accordance with core values.

Table 9: R&R treatment session outline

Session 1-2	Resource building	Formulation and emotional regulation strategies focused on building self-compassion.
Session 3-8	Focusing on the event	Recounting the PMIE through narrative exposure, evaluating response to the event and identifying stuck points.
Session 9-12	Moving on from the event	Cognitive re-structuring of core beliefs about self and others through exploration of key themes such as power and control, and trust.

Table 9 *continued*

Session 13–18	Rebuilding connections	Overcoming shame through sharing of PMIE narrative. Developing values-based goals to help re-build a valued life and improve connections with others. Exploration of barriers to recovery. Integrating self-compassion into daily life.
Session 19–20	Ending	Reviewing progress, maintaining gains and future plan, signposting if further needs are identified.

Recruitment

Participants in Stage 3 were recruited through a UK wide veterans mental health charity (Combat Stress) between September 2021 – December 2022. Veterans who had contacted the charity for support completed a full clinical assessment with a clinician which was then presented at a local interdisciplinary team meeting where treatment pathways are decided. At this point, potential moral injury treatment needs were identified. If moral injury appeared to be the main presenting problem, the assessment information was sent to the pilot's research therapist (AB), who screened assessment notes. If a veteran patient was potentially eligible, the research therapist made contact with them for a brief screening telephone call. During this call, they also provided the veteran with an outline of moral injury, what the R&R treatment pilot entailed and discussed with the veteran whether R&R seemed to be the most appropriate course of treatment. The research therapist was able to confirm treatment suitability through this screening call and identify any potential treatment barriers.

Inclusion and Exclusion Criteria

To be eligible to participate in the R&R treatment pilot, patients had to be a UK Armed Forces veterans, aged 18 years or more, currently receiving psychological treatment. In addition, it had to be determined by a clinician that moral injury-related mental ill-health was the main presenting difficulty; this was ascertained by asking the veteran for a brief overview of their main difficulties, the type of event(s) the veteran felt led to this difficulty, and what they were hoping to achieve through treatment. Questions were guided by existing measures of moral injury (e.g. [77]) where needed.

Individuals were excluded from the treatment pilot if they experienced significant speech or hearing difficulties, significant cognitive impairment, severe psychotic disorder, dissociative identity, severe mental health difficulty or significant current life stressors which would impede treatment engagement. Veterans who were actively deliberately self-harming or expressing significant suicidal ideation where they were at active risk of harm to themselves were also excluded, as well as veterans with ongoing alcohol or drug use disorder. Veterans were also excluded if they were unwilling to provide informed consent, had begun new trauma-focused individual therapy within the last three months, or had planned concurrent treatment. Finally, if it was determined by clinician during screening that no moral injury

was present, or if this was not the main presenting problem for the veteran, they would not be eligible for the treatment pilot. Ineligible veterans for this pilot trial were signposted and supported to access alternative support within the mental health service.

Materials

Psychological outcome measures. Veteran patients were asked to complete self-report measures at baseline prior to starting R&R treatment sessions, post-treatment, one month and three months after treatment was completed. Demographic information (e.g. age, gender, years of military service, ethnicity, etc) were also collected at baseline.

Choice of primary measure. A measure of PTSD and moral injury were chosen as the primary outcome measures to explore if R&R was well tolerated. To measure PTSD, the PTSD Checklist for DSM-5 (PCL-5) was used [78,79]). This is a validated 20-item measure that assesses the DSM-5 symptoms of PTSD and is widely used in trauma exposed populations internationally [80]. Items are scored on a five-point Likert scale and scores range between 0 and 80 with a cut off score of 38 used to indicate likely PTSD caseness. Moral injury related distress was assessed via the Moral Injury Scale (MORIS, [8]). The MORIS is 21 item questionnaire that has been validated for use in UK populations. The MORIS consists of four subscales which measure PMIE exposure, time since event, moral injury related distress, and potential risk and protective factors. Data from the MORIS moral injury related distress subscale were used in the present study. The moral injury related distress subscale consists of 8 items, rated on a 5-point Likert scale (0 = not at all) (4 = very much) and a cut off score of 12 has been suggested as an indicator of likely moral injury related distress. More information about the design and validation of the MORIS can be found in Appendix 6.

Other measures utilised included the Alcohol Use Disorders Identification Test (AUDIT) [81] which was used to measure likely alcohol misuse. The AUDIT is a 10-item measure and a cut off score of 16 or more was used to indicate likely alcohol misuse. Patient depression was assessed using the Patient Health Questionnaire (PHQ-9) [82], a nine-item measure (possible total score 0-27) which uses a Likert scale of 0 (not at all) to 3 (nearly every day). A cut off score of ten or more was used to indicate likely depression [83]. The Expressions of Moral Injury Scale- Military Version (EMIS-M) [15] was used to assess moral injury related distress. The EMIS is a 17-item scale for assessing beliefs and behaviours following PMIEs in a military context. Items are measured on a Likert scale (1= strongly disagree, 5= strongly agree) and the total possible score ranges from 17 to 85. While there is no recommended cut off score, higher scores are taken to indicate worse outcomes and maladaptive responses related to PMIEs.

Treatment delivery information

Data were collected regarding the number of R&R sessions patients attended, the number and nature of serious adverse events, the number of patients who dropped out after the first R&R session and any patients who were lost to follow up. Serious adverse events were defined according to the National Research Ethics Service Guidelines [84]

Qualitative interviews. To gain an in-depth understanding of whether R&R was acceptable and well tolerated, all veterans taking part in the treatment pilot were invited to interview at

one point during their treatment by VW. Prior to interviews, veterans were informed that their interviews would be anonymised with identifying information removed on transcription and their participation in the interview would not adversely impact the care they receive from Combat Stress or other services. The one-to-one qualitative interviews were staggered, with interviews conducted after Session 5, 10, 15 or 20 to gather information on veteran's experience of treatment so far, what they had found helpful and what they had found challenging. The therapist for the treatment pilot was also interviewed within the first six months of delivering the treatment to understand their experience of treatment delivery. Interview schedules can be found in Appendices 4 & 5.

The interview schedule was informed by the research questions, the broader moral injury literature and previous qualitative studies of experiences of psychological treatment post-trauma [14,33,40,85,86]. Interviews focused on veterans' experiences of accessing treatment at Combat Stress, their perceptions of being offered a novel treatment for MI, their experience of receiving R&R, aspects of the R&R treatment that did/did not work well for them individually, the impact of R&R on their daily functioning and wellbeing, what they felt were barriers and facilitators to treatment, and their perceptions of any outstanding support needs. Interview questions were open ended, inviting participants to reply in their own words. Interviews were conducted by telephone or MS teams and audio-recorded with consent. Interviews were transcribed verbatim, with audio recordings destroyed following transcription.

Data Analysis

Quantitative Data Analysis. STATA 17 was used for data analysis. Descriptive statistics were calculated for baseline, follow up and change scores for outcome measures with paired t-tests used to test for significant changes in scores from baseline. Descriptive statistics were also used to examine the treatment delivery information to evaluate feasibility.

Qualitative Analysis. Two approaches were taken for data analysis: 'fast and direct' and 'slow and in-depth' [87]. The 'fast and direct' approach involved researchers taking notes of any key observations during the interviews, with notes collated and shared with the broader research team and, where necessary, used to rapidly alter the R&R treatment procedures. An example of a rapid alteration made included the revision of a title of a worksheet where veteran feedback suggested it could be framed more positively. The 'slow and in-depth approach' utilised thematic analysis as recommended by Braun and Clarke [28]. This analytic approach first required researchers to be familiar with the data, re-reading transcripts several times. The primary author (VW) then used an inductive approach to generate initial codes, searched for and created early themes, and finally revised the themes. Data collection and both forms of analysis took place at the same time, allowing developing topics of interest to be explored in subsequent interviews and to determine if thematic saturation had been reached [62]. Peer debriefing was regularly used, with feedback sought from co-authors (DM & NG) who have several years of expertise in moral injury and clinical treatment. To ensure reflexivity, a reflexive journal was kept by the primary author (VW) to note the influence of their own beliefs, expectations, assumptions and experiences and prevent premature or biased interpretation of the data [88].

Results

Quantitative findings

The 20 participants were 45 years old on average (SD 9.2) and the majority (90%, n=18) were male (broadly consistent with the make up of the UK Armed Forces). All were White British and served in the Armed Forces, across branches, for an average of 13 years (SD 6.12). Demographic information can be found in Table 10.
Veteran participants experienced a significant mean improvement for all total scores on the primary outcome measures, apart from the EMIS. The mean change for each of the primary outcomes is presented in Table 11. None of the 20 participants who enrolled in the R&R treatment dropped out of sessions (see Table 12) and all patients attended all 20 of the R&R treatment sessions, with only one participant lost to follow up.

Table 10: Stage 3. R&R patient demographic information

Index	Total sample (n=20)
Mean age, M (SD)	45.15 (9.17)
Male, n(%)	18 (90%)
Marital status, n(%)	
Single	2 (10%)
Married/living with a partner	15 (75%)
Divorced/separated	3 (15%)
Education attainment, n(%)	
School ≥18 years	3 (15%)
Further education	11 (55%)
Higher education (BSc)	3 (15%)
Masters/doctoral degree	3 (15%)
Branch, n(%)	
British Army	14 (70%)
Royal Airforce	2 (10%)
Royal Marines/ Royal Navy	4 (20%)
Length of service, M(SD)	12.65 (6.12)
Number of times deployed, M(SD)	4.55 (2.25)
Years since left the military, M(SD)	13.5 (10.69)

Table 11: Stage 3 patient outcomes at baseline, 1-month and 3-months post treatment

Baseline	Met case criteria, n(%)	Mean score (SD)	Mean change from baseline (95% CI)	t-test P value
PTSD	19 (95.0%)	69.5 (15.3)	-	-
Alcohol misuse[a]	17 (100.0%)	21.8 (2.7)	-	-
Depression	20 (100.0%)	23.65 (6.70)	-	-
MORIS[b]	15 (83.3)	17.6 (6.7)	-	-
EMIS[c]	n/a	56.6 (12.6)	-	-
1-month follow up				
PTSD	10 (50.0%)	34.85 (19.07)	34.65 (23.6 – 45.71)	<0.001
Alcohol misuse[b]	8 (44.4%)	12.11 (8.07)	9.07 (4.88- 13.25)	0.001
Depression	13 (65.0%)	11.30 (7.36)	12.35 (7.85-16.85)	<0.001
MORIS	8 (40%)	9.35 (5.96)	8.26 (4.10 12.42)	0.001
EMIS[b]	n/a	50.0 (11.47)	6.63 (-1.42 -14.68)	0.10
3-month follow upc				
PTSD[c]	4 (21.1%)	30.63 (16.70)	38.87 (28.5 – 49.25)	<0.001
Alcohol misuse[b]	4 (22.2%)	8.66 (7.52)	12.51(8.58 – 16.44)	<0.001
Depression[c]	8 (42.11%)	8.84 (5.04)	14.81 (10.95-18.67)	<0.001
MORIS[d]	4 (25.0%)	8.56 (5.18)	9.05 (4.83 – 13.26)	0.001
EMIS[c]	n/a	52.63 (12.34)	4.0 (-4.19 -12.2)	0.33

Note. a= data missing for 3 participants. b= data missing for 2 participants. c= data missing for 1 participant. d = data missing for 4 participants. n/a = not applicable. PTSD = measured via PCL-5 [89]. Depression = measured by PHQ-9 [82]. Alcohol misuse = measured via AUDIT [81]. MORIS = Moral Injury Scale (Williamson et al., under review). EMIS = Expressions of Moral Injury Scale [15].

Table 12: Stage 3 Patient treatment attendance information

Outcome	N(%)
Drop out after first session	0 (0.0%)
Number of R&R sessions attended	20 (100.0%)
3-month follow up attenders	19 (95.0%)
Adverse events	0 (0.0%)

Note. Number of R&R sessions attended = there are 20 sessions in the R&R treatment manual.

Qualitative findings

Four core themes and several sub-themes were developed. These themes reflected how veteran patients experienced (i) seeking psychological treatment following a PMIEs, (ii) their experiences of being offered R&R, (iii) their feelings and responses to R&R therapy, (iv) and their perceptions of adaptations needed to R&R to improve acceptability.

Reaching out for treatment

Veterans who received R&R often described a decision to seek treatment from the mental health charity when a 'breaking' point had been reached, often when a spouse or family member insisted that they seek formal help. Presenting veterans described that they had had significant difficulties with feelings of intense shame, anger and guilt surrounding the PMIE, with these feelings easily triggered by other perceived transgressions they encountered later (e.g. feeling extremely guilty when running late for a meeting). Veterans reported often ruminating or thinking about the PMIE and their, and others', role and responses to the event. Many veterans described having difficulties with how they saw themselves or others – often seeing themselves as a bad person and others as untrustworthy. Many veterans described significant difficulties with sleep, reactivity to loud noises (e.g. passing helicopters, balloons popping), being quick to anger, trouble empathising with others, as well as a history of suicidal ideation.

Veteran: I started getting more stroppy and finding myself quite anxious and remembering things... and wishing I'd done more about that...[and] some of the stuff I'd been put through at work it just made it worse...because I started doubting myself ... I was thinking maybe I could have done more then, maybe it is me that's at fault and maybe it was my fault and this, that and the other...I'd go round and round. (Male)

Veteran: My wife...said you've totally changed because ...I was drinking heavily, I was just shutting things out, I was getting irritable really quickly. My mood was up and down but quite severely. She said you are not the person you used to be. I said well I'm not sleeping. I can't sleep... It's only when my wife said you need to do something because this is having an effect on the marriage and the kids can see it Male).

Experiences of being offered a pilot treatment for moral injury

Many veterans reported receiving treatment for their psychological difficulties in the past. However, for veteran patients in the present study, being offered the R&R treatment was often the first time they had encountered the concept of moral injury which was described as resonating with their psychological difficulties – a 'light bulb' moment for some veterans who described experiencing relief at finally having a name for the collection of symptoms they were experiencing. Veterans described that their previous treatments, often for PTSD, did not address the root cause of their difficulties or their feelings of shame, anger, or guilt. In some cases, veterans described how previous treatments had exacerbated their symptoms and following the prescribed number of sessions, little additional help had been available for their ongoing psychological problems.

> *Veteran: They talked about moral injury, and something just clicked...I thought, my goodness, of course! If you treat the [PTSD] symptoms that's fine... because at least now when bangs happen, and helicopters go over I don't completely freak out so that's much better. But I still haven't addressed the moral injury side of how I feel about the world and that keeps coming round. (Male)*

Several veterans reported that it was exciting or novel to be part of a treatment trial for moral injury and considered participating and providing feedback as an opportunity to help other veterans facing similar struggles. A key factor to engaging in the R&R treatment was reportedly a 'readiness' for treatment, being at a stage in their recovery journey where they felt willing to try anything, to devote their energy and time to sessions, and continue with treatment despite the need to revisit and encounter difficult emotions and memories.

> *Veteran: Everything was just in that downward spiral where everything that I took from my previous [treatment] sessions just wasn't working. ...I feel like I'm at the stage where I wanted to give it a go and really have a go at it, where other times I've felt I'd tried it out of necessity of saying well I need to do something, this is there I'll try this. This time I thought no, I want to focus on it and really get into it and really give it a go, listen a bit more, be a bit more engaged in it and give it a real go and see if it has some beneficial effects on me. (Male)*

Experiences of receiving R&R treatment

<u>Re-evaluation of the event, in context and one's role</u>

During the course of R&R treatment, veterans were invited to recount the PMIE and other challenging events in discussions with the therapist, a timeline and letter writing exercises. Veterans described that these sessions and exercises provided the opportunity to be fully honest about their experience, helping them to remember aspects that they had forgotten or overlooked, and to look at the event from a more compassionate 'outsider' perspective. Treatment that incorporated processing of the PMIE memory from an outsider or allocentric perspective was considered a key therapeutic approach by the interviewed therapist, especially if veteran patients had previously received PTSD treatment that had included reliving sessions.

> *Veteran: It's about being invested in the treatment I think... You have to be truthful in writing this stuff down because otherwise what's the point? If [you] want it to be effective, so that letter writing thing for me was me getting a grip of myself and writing down stuff that I really didn't want to write down. I really didn't want [the therapist] or other people to hear about this because I was horrified about my own thoughts and feelings at*

that time. But I want to get better, so you have to, it's just a hurdle to get over isn't it. I knew this treatment wasn't going to be easy, it was just like you know what [the event happened], I've unlocked it, it gets written down. It was by far probably the most effective thing... of all the exercises that I've done so far. (Male)

Therapist: I think there is something really important...about allocentric versus egocentric memory processing with moral injury.... Especially if you've got a veteran that has gone through loads of reliving [PTSD treatment] before...There is something... so helpful - rather than having that memory of...I was directing the drone and this is what I could smell and...see - ... Being able to look at it from an outside perspective and see the way that guy was being treated and see the way that guy was having to make a quick decision. There is something really important [in that] ... and it's what the veterans keep saying as well, especially the ones that have had PTSD treatment before, there has been something about being able to look at it from...an outsider perspective it's been really helpful.

Revisiting the memory of the event in this R&R treatment process was experienced as difficult but very cathartic, with many veterans describing a reduction in their feelings of self-blame and guilt as well as reporting reduced rumination. The written letters and timeline exercises were materials veterans reported that they would return to and reflect on their progress should they experience difficulties in the future. Several veterans reported that the disclosure of the PMIE to the therapist was often the first time that they had told anyone of the event or their reactions to it and disclosure was often a relief.

Veteran: I told [the therapist] something that I've never told anyone else, which was quite amazing. Hard work though.... It hurts at the time...But when you look back, it's a relief to actually share it with someone. (Male)

Veteran: I realise my health is getting worse and worse and we all die sometimes and I know it's heading in that direction so...[by doing this] it's wanting...[to] come to peace or...being able to face up to things, being able to face the demons...[to] put names to them, put faces to them, be no longer terrified by them....But I'll not go... to my grave with a part unexpressed, so yes [it's] been really, really, really important. (Male).

Veteran: The memories will still be in my mind but I've accepted it now and know how to deal with it as far as I'm concerned. ...Because they happened, simple as that, but ...it's just horrible pictures that you keep in your mind. I just blame myself for, well I did, I don't anymore. (Male)

Increased self-compassion and use of adaptive coping strategies

Another aspect of treatment veterans described as being extremely beneficial was the ongoing self-compassionate focus of sessions. Veterans reported finding it helpful to receive encouragement and support to incorporate dedicated time for themselves in the week (e.g. to meditate, to practice a hobby, exercise) as well as making compassionate lifestyle changes, including reducing long working hours to be more manageable, setting boundaries, and revisiting the division of family responsibilities so they are not constantly overwhelmed.

Veteran: We talked a lot about perfectionism and that fear of failure...I feel less stressed [now]...I have also changed my hours... so I give myself more time... it's partly to do with the way that you think about things, but partly to do with the recognition of actually it's acceptable to give yourself time and therefore I could change my days. It doesn't have to be me who is back to get the kids. My husband can do it on a certain day, so let him do it. I don't feel like I have to do everything all the time. (Female).

Veterans described that they found a number of the coping strategies for emotional self-regulation taught during the course of R&R to be helpful in managing their distress, including breathing techniques. Through treatment, veterans reported experiencing greater self-compassion and were less harsh or punishing towards themselves. Veterans described how they had become to feel more

accepting of difficult emotions, such as anger or anxiety, when these arose and reported being better able to reflect on their thoughts, feelings and behaviours to understand and manage these feelings.

Veteran: [the therapist] went through [my] average days and…[asked] when I take time for myself [for] reading which I enjoy doing. I like[to] paint, I like doing all sorts of different things, but I never fitted them in. [The therapist] was like try and fit them in. Start with 15 minutes, 20 minutes, half an hour… She was just encouraging me to think of myself and don't be too hard on myself. If I've had a hard day there's nothing wrong with being quiet and relaxing and not doing anything, taking that time to rest and chill out and what have you. I don't have to be actively doing stuff with the kids all the time. It was just some really good advice throughout to be fair that I've never really thought about. (Male)

Veteran: I'll go and sit in the woods for 20 minutes and the dogs are running around and just try and switch it off, just be a little bit with nature and just try and take a little bit of time for myself… there's quite a lot of reflection really. You have to within this [treatment] process, it does make you think about things a little bit more even if you don't want to, it kind of just trickles in even subconsciously, it's kind of there. But that shows it's working as well if that makes sense…. I can pull some stuff out on a daily basis already and say 'yes, you are feeling that'. Some of it is linked to lack of sleep, disability and nightmares and stuff but it's given me the ability to just pull stuff out from it and say 'OK cool you are feeling that today because of that'. (Male)

<u>Experiencing improved social connections</u>

Towards the end of treatment, one of the R&R sessions included the option of having a close companion (e.g. spouse, parent, trusted friend) attend. Veterans described how, prior to this session, they and the therapist carefully discussed what goals the veteran had for the session, including what information they did and did not want to discuss with their close companion and how they wanted to share it. Many veterans reported finding this close companion session extremely helpful as it was considered an opportunity to discuss the PMIE and their psychological distress with a significant other in a safe, structured way and this session reportedly improved their companion's understanding of MI, R&R treatment and the difficulties they had been facing.

Veteran: I think [the companion session] sits perfectly, you are beyond halfway through the course so obviously I'm confident by that stage with talking to [the therapist], I've got trust in her … I was comfortable with it, and I think the way that it was structured, the way that me and [the therapist] built a plan before we came into [the session]… so I knew how things were going and I think it worked well. The only thing I was nervous about was just reactions from my wife because there's stuff that I've told nobody before or there's parts of my work that…I've not really spoken about. So I've opened up a lot more… and just talk more in depth. Obviously, she knows what I did in the military but just to talk more in depth over the things that I think have affected me and why they've affected me. (Male)

Veteran: My partner…she was able to come along and be part of the accompanied session, which again was very, very beneficial for her because I was able to open up and speak to her about particular incidents because she's had no exposure to the military whatsoever prior to us meeting and obviously us trying to build a life together she wanted to know about how it affected me and what had happened so that she was able to best support me in the future. So again that was beneficial as difficult as it was and as emotional as it was that particular session it definitely helped her to have a better grasp of what I've gone through and for her to find out that there was a period last year that I didn't want to be around anymore. (Male).

Similarly, the therapist described how this session provided veterans with the opportunity to practice discussing the PMIE with others in a contained

way – as many veteran patients had difficulties sharing their PMIE experience - and a supportive response from a close companion was very therapeutic and de-shaming for the veteran. Several veterans described how, following this session, they went on to have more open discussions with their companion outside of treatment about their difficulties and felt more able to approach their companion for support when needed. Six veterans who chose not to include a close companion (i.e. due to relationship breakdowns, difficulties arranging a time where the companion could attend), instead used the session to describe what they would say to a companion about their moral injury and reported that this was also experienced as cathartic and beneficial.

Therapist: What we did instead [of having a companion attend] was we used the session to write a...letter...[the veteran] had children... and they were saying 'well if my children ask me about moral injury or my sessions in the future what would I want to tell them?' So that's what we covered in the session, and it was...a bit of an outline...of what you'd want to include in the letter, what you wouldn't want to include... how you want to explain what we've covered in the therapy. It was...almost like having the close companion there, but it was just having it in written format instead...I think the close companion session is important because it gives someone the tools to be able to explain it to someone else if they want to in a containable way.

Beyond the inclusion of a close companion, veterans described experiencing improvements in social connectedness in other ways. Several veterans described that due to their past PMIEs, they identified as 'perfectionists' with a deep fear of failure and situations where they felt out of control. Veterans described receiving support during R&R to try small experiments (e.g. to not plan a weekend in advance, to try a new hobby, to try a different childcare routine) and to reflect on this experience and their feelings. This was reportedly very beneficial in building their confidence but also their connections with others. As detailed in the previous theme, as veterans reported feeling more accepting of difficult feelings and developing adaptive coping strategies, they also described how their relationships with friends and family members had improved over the course of R&R treatment; they spent more quality time together and they felt more able to share how they were feeling.

Veteran: [I'm] talking loads more with my wife about it. I've become quite passive, quite calm within stuff, I'm reacting to the children a little bit less... I am able to put that on to conversations with the kids and open up a little bit more and just be a little bit kinder to myself. I think they can see a softness within me. My daughter came up and gave me a hug yesterday and just said 'you alright, how did treatment go today'...So, conversations are getting better, softer and more understanding since starting this [treatment], which is fantastic. (Male)

Re-evaluation of values

Throughout treatment, veterans were encouraged to evaluate their core values. Veterans described how they examined their pre-PMIE values, which were often values instilled during military service, and whether these values were still meaningful to them now or whether amendments were needed. Examining one's current values was reported by veterans as an important part of being more self-aware. Carefully considering one's core values also helped veterans to think about their future in a more positive way by actively reflecting on ways to behave and respond to others in line with their values. They described how using their present core values helped to guide their decision making, and this values-based work also served to increase empathy as they were more able to consider how others may hold different values which shape their actions/responses.

Veteran: To me it's all about making, I wouldn't say a better me but getting myself to a place I want to be... my values standards have pretty much been set by the Army... To then go completely against your values for five years, that [values] session was probably one of the strongest and most important for me especially to learn...to look at what these values and standards mean in everyday life and to be able to say 'well actually I

don't need that value anymore'… and to actually pick ones that you wanted to move forward with … and look at what I need now to be happy. (Male).

Veteran: Because you've got to think about what your value was…I think is quite a powerful tool [to think] why you are behaving the way and which direction you are going in and what things would be beneficial for you later on… And realise that other people's values are different and that's why they behave in a different way. (Female)

Aspects of R&R that could be improved or altered

Most veterans described that they felt that 20 was the right number of sessions as it provided enough time to discuss and address their PMIE and moral injury-related symptoms in detail. They also reported that while therapy face-to-face in a clinic may allow for more social cues to be picked up, many felt that therapy delivered online allowed them to be more vulnerable and open than in person and online treatment meant they did not have to take time off work or travel long distances.

Veteran: [Online] it's convenient really…some people might find it's not as personable but I think it is having that person up on the screen is just as effective as being sat there face to face. I think I'd find the sessions a little bit harder maybe in person because I'd be a little bit more guarded. You potentially wouldn't [open] up as much because of this person that I am, the person that I profess to be… and I should be not breaking down in front of people. Whereas over Teams… I've been able to open up a little bit more than I would have been able to do face to face (Male)

Veterans also described the importance of the time taken by the therapist in the early sessions to build rapport and trust. While veterans reported that they preferred the one-to-one nature of the R&R treatment, they did describe how they would have valued additional opportunities to receive peer support, with several veterans going on to access the peer support programmes available at the mental health charity after finishing treatment. Veterans suggested that future trials could include more information about how R&R had been co-designed with military veterans - as this would foster confidence and trust in the therapy - and the inclusion of information about the treatment appropriate for families. It was also suggested that future trials could provide information and worksheets in alternative formats to be more accessible to individuals with special educational needs (e.g., including more infographics or audio recordings of text). Finally, the therapist and a small number of veterans described how despite experiencing significant improvements in their PMIE difficulties and reductions in feelings of shame, anger and guilt, these veterans did have some non- moral injury related difficulties following R&R treatment – such as fears of loud noises or being in crowded places – which would require further support from other services available at the mental health charity.

Veteran: I don't know whether there could have been just a bespoke [information sheet]…because when all the information is written down, it's directed at me whereas…it would be good to have a little guide that explains to them…about moral injury and explains about the treatment process and then also maybe how they can support during the treatment and look after themselves as well because people seem to forget that they are right there and they get a lot of the brunt and go through everything and he is trying to Google stuff to find out what best to do but Google isn't really a very reliable resource. Whereas if he had a resource that was from yourselves, and it was specific to the [R&R] course then that might be helpful. (Female)

Therapist: For one [veteran]… I will get to the end of sessions and I'll go, oh he's doing really well, the moral injury events processing them… but he's still really anxious about going out in crowds… I'm like well actually we've done our job here… crowds are nothing to do with moral injury events, it's to do with other military experiences. So, I think in terms of working with the moral injury itself, I haven't come across anything yet [in R&R] which has been left out but realistically working with a veteran population [they] have multiple other PTSD events that aren't morally injurious and they sometimes need help with those bits afterwards.

Conclusions drawn from the Stage 3 Pilot with Veteran Patients at Combat Stress

The aim of this study was to examine how the co-designed R&R treatment was experienced by patients, whether it was perceived as acceptable, well tolerated and feasible. Three key findings were observed. First, all patients attended all R&R treatment sessions with no dropouts and no serious adverse events. Second, statistically significant reductions in PTSD, depression, moral injury-related distress and alcohol misuse were observed at 1-month and 3-months post-treatment compared to pre-treatment baseline. Third, patients told us that they experienced R&R as beneficial and reported positive changes in their perceptions of the PMIE, increased self-compassion, improved social connections and greater use of adaptive coping strategies.

A common challenge faced by trauma-focused treatment trials for military personnel/veterans is the high rates of treatment dropout, which are often higher than civilian trials [29,30]. The published literature highlights that military veterans report dropout of treatment because of perceived PTSD treatment ineffectiveness, work interference, confidentiality concerns, insufficient time with a therapist and stigma related concerns [29]. Previous studies have also found that veterans with moral injury can experience manualised trauma-focused PTSD treatments as inadequate as these treatments do not fully address their distress following PMIEs [90]. No participants dropped out of this treatment, and only one participant was lost to follow up in this pilot feasibility study which suggests that R&R is feasible for delivery in its current format. It is also considered acceptable and well tolerated by veteran patients. That no adverse events were reported suggested that R&R is unlikely to cause harm. Additional research is needed to compare patient engagement with R&R and 'treatment as usual' for moral injury-related mental health difficulties, to better understand how patients engage with and tolerate R&R and whether R&R may be a superior treatment option for those with moral injuries.

Patients who received R&R treatment reported a significant reduction in their symptoms of PTSD, depression, and alcohol misuse. A statistically significant reduction in moral injury-related distress as measured by the MORIS, a moral injury screening tool validated for use in UK samples (Williamson et al., under review), was also found. However, no statistically significant changes were observed in patient expressions of moral distress post-treatment as measured by the EMIS [15]. There have been some noted methodological problems with the EMIS as several EMIS items measure both transgressive acts and effects (i.e. 'I sometimes lash out at others because I feel bad about things I did/saw in the military'). Assessing both the cause and effect in the same item suggests a connection between the two that may not be present [68]. The MORIS assesses event exposure separately from moral injury-related distress. Further, the EMIS was developed to understand expressions of moral injury related distress, rather than explicitly targeting moral injury. It is also possible that a lack of significant change in EMIS scores indicates that some patients continued to experience some PMIE-related distress post-treatment, although the qualitative findings suggested that ongoing psychological difficulties post-treatment largely related to re-experiencing symptoms. It may be useful to include validated measures specifically designed to assess symptoms of shame, guilt and anger post-trauma (e.g. Trauma-related Guilt Inventory, [91]) to better understand patient outcomes in future evaluations of R&R. However, the benefit of this must be balanced against the need to not overburden patients with lengthy questionnaires. Nonetheless, that patients consistently reported a significant reduction in PTSD, depression and alcohol misuse symptoms following treatment via R&R is extremely promising and indicates that R&R may be an effective treatment with benefits of the therapy maintained three months post-treatment.

The qualitative results of this study highlight that patient experiences of the R&R treatment were largely positive. Previous studies have found that individuals who experience moral injury often struggle with intense feelings of guilt, shame and anger, report a breaking down in their relationships with others, and engage in self-punishing and risk-taking behaviours to cope with their distress [11]. That veterans described an improvement in areas that have been conceptualised to be important in moral injury recovery [14,22,32,33] – namely, their moral injury-related symptoms, improvements in social connectedness, greater self-compassion and use of adaptive coping strategies – suggests that R&R was helpful and acceptable to patients. A key challenge found in previous studies investigating the treatment of patients with moral injury has been that patients experience difficulties disclosing the PMIE and their associated distress during therapy [34]. That patients who received R&R reported feeling able to disclose the event and their feelings to the therapist, and to a close companion in some cases, and the experience of disclosure as beneficial is also promising. As this study was run during the social distancing restrictions of COVID-19, online treatment of R&R was offered and experienced positively by patients (i.e. more convenient than face-to-face, patients felt more able to disclose difficult feelings), whether there may be added benefits to delivering R&R face-to-face is unknown at this stage. Furthermore, patients identified several areas of the R&R treatment process that could be improved (i.e. using infographics). These recommendations may not only increase the acceptability of R&R in future evaluations but may also be useful for other studies aiming to develop acceptable treatments for trauma-exposed samples.

Strengths and limitations

This study has a number of strengths and limitations. First, the study included both male and female veterans from all branches of the UK military. Second, we assessed veteran outcomes at a number of points (i.e. one month and three months post-treatment) and included qualitative interviews to better understand veteran patients' lived experiences of receiving treatment. A limitation of the present study is that, despite evidence that patient symptoms improved post-treatment, without a control or comparison group it is not possible to determine at this stage how much of a reduction in symptoms is due to R&R. Further, given the design of the current trial, it was not powered to detect significant reductions in health outcomes, but rather to explore the feasibility of offering R&R. As a pilot feasibility study, it was beyond the scope of this study to include a control or comparison group. A randomised control trial is needed to compare R&R to the treatments currently offered to veterans with moral injury related mental health difficulties to better understand R&R's efficacy. Future studies should also utilise diagnostic interviews which are the gold standard, rather than self-report measures of mental health outcomes that were used in the present study.

Conclusions

This study presents some of the first evidence of an acceptable, well tolerated treatment for moral injury-related mental health difficulties for UK military veterans. Patients who received the R&R treatment, delivered one-to-one online, reported a significant reduction in PTSD, depression, alcohol misuse and moral injury-related symptoms compared to baseline. Given that patients found the treatment acceptable, helpful and feasible, once R&R is further evaluated, it may be possible to recommend this treatment to UK veterans who have experienced PMIEs during military service and are suffering with moral injury. Whether R&R may be beneficial to other non-military groups who struggle with moral injury should be investigated.

References

References

1 Bryan CJ, Bryan AO, Anestis MD, et al. Measuring Moral Injury: Psychometric Properties of the Moral Injury Events Scale in Two Military Samples. Assessment 2016;23:557–70. doi:10.1177/1073191115590855

2 Williamson V, Murphy D, Stevelink SA, et al. Family and occupational functioning following military trauma exposure and moral injury. BMJ Mil Health Published Online First: 31 March 2021. doi:10.1136/BMJMILITARY-2020-001770

3 Williamson V, Murphy D, Stevelink SAM, et al. The impact of trauma exposure and moral injury on UK military veterans: a qualitative study. Eur J Psychotraumatol 2020;11:1704554. doi:10.1080/20008198.2019.1704554

4 Yeterian JD, Berke DS, Carney JR, et al. Defining and Measuring Moral Injury: Rationale, Design, and Preliminary Findings From the Moral Injury Outcome Scale Consortium. J Trauma Stress 2019;32:363–72. doi:10.1002/JTS.22380

5 Currier JM, Foster JD, Karatzias T, et al. Moral injury and ICD-11 complex PTSD (CPTSD) symptoms among treatment-seeking veterans in the United Kingdom. Psychol Trauma 2021;13:417–21. doi:10.1037/TRA0000921

6 Hamrick HC, Kelley ML, Bravo AJ. Military Behavioral Health Morally Injurious Events, Moral Injury, and Suicidality among Recent-Era Veterans: The Moderating Effects of Rumination and Mindfulness Morally Injurious Events, Moral Injury, and Suicidality among Recent-Era Veterans: The Moderating Effects of Rumination and Mindfulness. Behavioral Health 2019;8:109–20. doi:10.1080/21635781.2019.1669509

7 Bryan CJ, Bryan ABO, Roberge E, et al. Moral injury, posttraumatic stress disorder, and suicidal behavior among national guard personnel. Psychol Trauma 2018;10:36–45. doi:10.1037/TRA0000290

8 Williamson V, Murphy D, Stevelink SA, et al. Experiences of moral injury in UK military veterans. London: 2020.

9 Griffin BJ, Purcell N, Burkman K, et al. Moral Injury: An Integrative Review. J Trauma Stress 2019;32:350–62. doi:10.1002/JTS.22362

10 Battles AR, Kelley ML, Jinkerson JD, et al. Associations Among Exposure to Potentially Morally Injurious Experiences, Spiritual Injury, and Alcohol Use Among Combat Veterans. J Trauma Stress 2019;32:405–13. doi:10.1002/jts.22404

11 Bonson A, Murphy D, Aldridge V, et al. Conceptualization of moral injury: A socio-cognitive perspective. J Mil Veteran Fam Health Published Online First: 2023. doi:10.3138/jmvfh-2022-0034

12 Atuel HR, Barr N, Jones E, et al. Understanding moral injury from a character domain perspective. Journal of Theoretical and Philosophical Psychology Published Online First: 29 April 2021. doi:10.1037/teo0000161

13 Richardson NM, Lamson AL, Smith M, et al. Defining Moral Injury Among Military Populations: A Systematic Review. J Trauma Stress 2020;33:575–86. doi:10.1002/jts.22553

14 Litz BT, Stein N, Delaney E, et al. Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. Clin Psychol Rev 2009;29:695–706. doi:10.1016/J.CPR.2009.07.003

15 Currier JM, Farnsworth JK, Drescher KD, et al. Development and evaluation of the Expressions of Moral Injury Scale-Military Version. Clin Psychol Psychother 2018;25:474–88. doi:10.1002/cpp.2170

16 Komarovskaya I, Maguen S, McCaslin SE, et al. The impact of killing and injuring others on mental health symptoms among police officers. J Psychiatr Res 2011;45:1332–6. doi:10.1016/j.jpsychires.2011.05.004

17 Feinstein A, Pavisian B, Storm H. Journalists covering the refugee and migration crisis are affected by moral injury not PTSD. JRSM Open 2018;9:2054270418759010. doi:10.1177/2054270418759010

18 Backholm K, Idås T. Ethical Dilemmas, Work-Related Guilt, and Posttraumatic Stress Reactions of News Journalists Covering the Terror Attack in Norway in 2011. J Trauma Stress 2015;28:142–8. doi:10.1002/jts.22001

19 Čartolovni A, Stolt M, Scott PA, et al. Moral injury in healthcare professionals: A scoping review and discussion. Nurs Ethics 2021;28:590–602. doi:10.1177/0969733020966776

20 Williamson V, Lamb D, Hotopf M, et al. Moral injury and psychological wellbeing in UK healthcare staff. medRxiv 2022;:2022.06.16.22276476. doi:10.1101/2022.06.16.22276476

21 Gray MJ, Schorr Y, Nash W, et al. Adaptive Disclosure: An Open Trial of a Novel Exposure-Based Intervention for Service Members With Combat-Related Psychological Stress Injuries. Behav Ther 2012;43:407–15. doi:10.1016/J.BETH.2011.09.001

22 Maguen S, Burkman K, Madden E, et al. Impact of Killing in War: A Randomized, Controlled Pilot Trial. J Clin Psychol 2017;73:997–1012. doi:10.1002/jclp.22471

23 Sundin J, Herrell RK, Hoge CW, et al. Mental health outcomes in US and UK military personnel returning from Iraq. The British Journal of Psychiatry Published Online First: 2014.http://bjp.rcpsych.org/content/early/2014/01/02/bjp.bp.113.129569.short (accessed 10 May 2017).

24 Kitchiner NJ, Roberts NP, Wilcox D, et al. Systematic review and meta-analyses of psychosocial interventions for veterans of the military. Eur J Psychotraumatol 2012;3. doi:10.3402/EJPT.V3I0.19267

25 Boyd H, McKernon S, Mullin B, et al. Improving healthcare through the use of co-design. New Zealand Medical Journal 2012;125.https://www.nzma.org.nz/journal-articles/improving-healthcare-through-the-use-of-co-design (accessed 15 Sep 2020).

26 DIMOPOULOS-BICK, DAWDA P, MAHER L, et al. Experience-Based Co-Design: Tackling common challenges | The Journal of Health Design. Journal of Health Design 2019;3:86–93.https://www.journalofhealthdesign.com/JHD/article/view/46 (accessed 15 Sep 2020).

27 Serfioti D, Murphy D, Greenberg N, et al. Effectiveness of treatments for symptoms of post-trauma related guilt, shame and anger in military and civilian populations: a systematic review. BMJ Mil Health 2022;:e002155. doi:10.1136/military-2022-002155

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

29 CW H, SH G, JL A, et al. PTSD treatment for soldiers after combat deployment: Low utilization of mental health care and reasons for dropout. Psychiatric Services 2014;65.

30 Edwards-Stewart A, Smolenski DJ, Bush NE, et al. Posttraumatic Stress Disorder Treatment Dropout Among Military and Veteran Populations: A Systematic Review and Meta-Analysis. J Trauma Stress 2021;34. doi:10.1002/jts.22653

31 Weiss E, Coll J. The Influence of Military Culture and Veteran Worldviews on Mental Health Treatment: Practice Implications for Combat Veteran Help-seeking and Wellness. International Journal of Health, Wellness & Society Published Online First: 1 January 2011.https://pdxscholar.library.pdx.edu/socwork_fac/403 (accessed 26 May 2022).

32 Phelps AJ, Adler AB, Belanger SAH, et al. Addressing moral injury in the military. BMJ Mil Health 2022;:e002128. doi:10.1136/BMJMILITARY-2022-002128

33 Nash WP, Litz BT. Moral Injury: A Mechanism for War-Related Psychological Trauma in Military Family Members. Clin Child Fam Psychol Rev. 2013;16:365–75. doi:10.1007/s10567-013-0146-y

34 Williamson V, Murphy D, Stevelink SAM, et al. Delivering treatment to morally injured UK military personnel and Veterans: The clinician experience. Military Psychology 2021;33:115–23. doi:10.1080/08995605.2021.1897495

35 Williamson V, Murphy D, Stevelink SAM, et al. Family and occupational functioning following military trauma exposure and moral injury. J Affect Disord

36 Williamson V, Murphy D, Stevelink SAM, et al. The impact of moral injury on the wellbeing of UK military veterans. BMC Psychol 2021;9:1–7. doi:10.1186/s40359-021-00578-7

37 Williamson V, Murphy D, Phelps A, et al. Moral injury: the effect on mental health and implications for treatment. Lancet Psychiatry 2021;8:453–5. doi:10.1016/S2215-0366(21)00113-9

38 Williamson V, Stevelink SAM, Greenberg N. Occupational moral injury and mental health: Systematic review and meta-Analysis. British Journal of Psychiatry 2018;212:339–46. doi:10.1192/BJP.2018.55

39 Farnsworth JK. Is and Ought: Descriptive and Prescriptive Cognitions in Military-Related Moral Injury. J Trauma Stress 2019;32:373–81. doi:10.1002/JTS.22356

40 Purcell N, Burkman K, Keyser J, et al. Healing from Moral Injury: A Qualitative Evaluation of the Impact of Killing Treatment for Combat Veterans. J Aggress Maltreat Trauma 2018;27:645–73. doi:10.1080/10926771.2018.1463582

41 Battles AR, Bravo AJ, Kelley ML, et al. Moral injury and PTSD as mediators of the associations between morally injurious experiences and mental health and substance use. Traumatology (Tallahass Fla) 2018;24:246–54. doi:10.1037/trm0000153

42 Ames D, Erickson Z, Nagy ;, et al. Moral Injury, Religiosity, and Suicide Risk in U.S. Veterans and Active Duty Military with PTSD Symptoms. Mil Med 2019;184:271. doi:10.1093/milmed/usy148

43 Barnes HA, Hurley RA, Taber KH. Moral Injury and PTSD: Often Co-Occurring Yet Mechanistically Different. J Neuropsychiatry Clin Neurosci 2019;31:A4-103. doi:10.1176/APPI.NEUROPSYCH.19020036

44 Litz BT, Contractor AA, Rhodes C, et al. Distinct Trauma Types in Military Service Members Seeking Treatment for Posttraumatic Stress Disorder. J Trauma Stress 2018;31:286–95. doi:10.1002/jts.22276

45 Barnes HA, Hurley RA, Taber KH. Moral injury and PTSD: Often co-occurring yet mechanistically different. Journal of Neuropsychiatry and Clinical Neurosciences 2019;31:A4-103. doi:10.1176/APPI.NEUROPSYCH.19020036/ASSET/IMAGES/LARGE/APPI.NEUROPSYCH.19020036F3.JPEG

46 Wisco BE, Marx BP, May CL, et al. Moral injury in U.S. combat veterans: Results from the national health and resilience in veterans study. Depress Anxiety 2017;34:340–7. doi:10.1002/DA.22614

47 Williamson V, Murphy D, Stevelink SAM, et al. Confidentiality and psychological treatment of moral injury: The elephant in the room. BMJ Mil Health Published Online First: 13 July 2020. doi:10.1136/bmjmilitary-2020-001534

48 Currier JM, Drescher KD, Nieuwsma J. Future directions for addressing moral injury in clinical practice: Concluding comments. Addressing moral injury in clinical practice 2020;:261–71. doi:10.1037/0000204-015

49 Maguen S, Burkman K. Combat-Related Killing: Expanding Evidence-Based Treatments for PTSD. Cogn Behav Pract 2013;20:476–9. doi:10.1016/J.CBPRA.2013.05.003

50 Steinmetz S, Gray M. Treatment for Distress Associated with Accurate Appraisals of Self-Blame for Moral Transgressions. Curr Psychiatry Rev 2015;11:207–19. doi:10.2174/1573400511666150629105709

51 Lonergan M. Cognitive behavioral therapy for PTSD: The role of complex PTSD on treatment outcome. J Aggress Maltreat Trauma 2014;23:494–512. doi:10.1080/10926771.2014.904467

52 Williamson V, Greenberg N, Murphy D. Moral injury in UK armed forces veterans: a qualitative study. Eur J Psychotraumatol 2019;10:1562842. doi:10.1080/20008198.2018.1562842

53 Gray MJ, Schorr Y, Nash W, et al. Adaptive Disclosure: An Open Trial of a Novel Exposure-Based Intervention for Service Members With Combat-Related Psychological Stress Injuries. Behav Ther 2012;43:407–15. doi:10.1016/J.BETH.2011.09.001

54 Litz BT, Lebowitz L, Gray MJ, et al. Adaptive disclosure : a new treatment for military trauma, loss, and moral injury. New York: : The Guildford Press 2017. 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%20Disclosure%3B%20Litz%20et%20al.%2C%202017&f=false

55 Malcolm E, Stevelink SAM, Fear NT. Care pathways for UK and US service personnel who are visually impaired. J R Army Med Corps 2015;161:116–20. doi:10.1136/jramc-2014-000265

56 Fear NT, Jones M, Murphy D, et al. What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study. The Lancet 2010;375:1783–97. doi:10.1016/S0140-6736(10)60672-1

57 Castro C, Hall JK. Post-traumatic stress disorder in UK and US forces deployed to Iraq Cite this paper. www.thelancet.com (accessed 22 Sep 2022).

58 Combat Stress. Mental health services for veterans | Combat Stress. 2022.https://combatstress.org.uk/ (accessed 23 Sep 2022).

59 Craig P, Dieppe P, Macintyre S, et al. Developing and evaluating complex interventions: The new Medical Research Council guidance. BMJ 2008;337:979–83. doi:10.1136/bmj.a1655

60 O'cathain A, Croot L, Duncan E, et al. Guidance on how to develop complex interventions to improve health and healthcare Communication. doi:10.1136/bmjopen-2019-029954

61 Butterfield LD, Borgen WA, Amundson NE, et al. Fifty years of the critical incident technique: 1954-2004 and beyond. Qualitative Research 2005;5:475–97. doi:10.1177/1468794105056924

62 Hennink MM, Kaiser BN, Marconi VC. Code Saturation Versus Meaning Saturation. Qual Health Res 2017;27:591–608. doi:10.1177/1049732316665344

63 Morse JM. Critical Analysis of Strategies for Determining Rigor in Qualitative Inquiry. Qual Health Res 2015;25:1212–22. doi:10.1177/1049732315588501

64 Koenig HG, Youssef NA, Pearce M. Assessment of moral injury in veterans and active duty military personnel with PTSD: A review. Front Psychiatry. 2019;10. doi:10.3389/fpsyt.2019.00443

65 Kinghorn W. Challenging the hegemony of the symptom: Reclaiming context in PTSD and moral injury. Journal of Medicine and Philosophy (United Kingdom). 2020;45. doi:10.1093/jmp/jhaa023

66 Nwoye A. Decolonizing moral injury studies and treatment approaches: An Africentric perspective. Theory Psychol 2021;31. doi:10.1177/09593543211027228

67 Worthington EL, Langberg D. Religious considerations and self-forgiveness in treating complex trauma and moral injury in present and former soldiers. J Psychol Theol 2012;40. doi:10.1177/009164711204000403

68 Frankfurt S, Frazier P. A review of research on moral injury in combat veterans. Military Psychology 2016;28:318–30. doi:10.1037/MIL0000132

69 Carey LB, Hodgson TJ. Chaplaincy, Spiritual Care and Moral Injury: Considerations Regarding Screening and Treatment. Front Psychiatry 2018;9:619. doi:10.3389/fpsyt.2018.00619

70 Doehring C. Military Moral Injury: An Evidence-Based and Intercultural Approach to Spiritual Care. Pastoral Psychol 2019;68. doi:10.1007/s11089-018-0813-5

71 Compton MT, Shim RS. The Social Determinants of Mental Health CLINICAL SYNTHESIS. Focus (Madison) 2015;13.

72 Alizioti A, Lyrakos G. Measuring the effectiveness of psychoeducation on adherence, depression, anxiety and stress among patients with diagnosis of schizophrenia. a control trial. Current Psychology 2021;40. doi:10.1007/s12144-019-00255-4

73 Serfioti D, Murphy D, Greenberg N, et al. Effectiveness of treatments for symptoms of post-trauma related guilt, shame and anger in military and civilian populations: a systematic review. BMJ Mil Health Published Online First: 28 November 2022. doi:10.1136/MILITARY-2022-002155

74 Drescher KD, Foy DW, Kelly C, et al. An exploration of the viability and usefulness of the construct of moral injury in war veterans. Traumatology (Tallahass Fla) 2011;17:8–13. doi:10.1177/1534765610395615

75 Victoria Williamson, Murphy D, Stevelink S, et al. Delivering treatment to morally injured UK military personnel and veterans: The clinician experience. British Journal of Psychiatry

76 Allen S, Williamson V, Stevelink SA, et al. The impact of moral injury on beliefs and behaviours: A systematic review. London: 2020.

77 Currier JM, Holland JM, Drescher K, et al. Initial Psychometric Evaluation of the Moral Injury Questionnaire-Military Version. Clin Psychol Psychother 2015;22:54–63. doi:10.1002/cpp.1866

78 Weathers FW, Litz BT, Herman DS, et al. The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility. Paper presented at the Annual Meeting of International Society for Traumatic Stress Studies, San Antonio, TX, October, 1993 1993.

79 Bovin MJ, Marx BP, Weathers FW, et al. Psychometric properties of the PTSD checklist for diagnostic and statistical manual of mental disorders-fifth edition (PCL-5) in veterans. Psychol Assess 2016;28:1379–91. doi:10.1037/PAS0000254

80 Forkus SR, Raudales AM, Rafiuddin HS, et al. The Posttraumatic Stress Disorder (PTSD) Checklist for DSM–5: A Systematic Review of Existing Psychometric Evidence. Clinical Psychology: Science and Practice Published Online First: 2022. doi:10.1037/CPS0000111

81 Babor TF, Higgins-Biddle JC, Saunders JB, et al. AUDIT-The Alcohol Use Disorders Identification Test-Guidelines for use in primary care. 2001. doi:10.1177/0269881110393051

82 Kroenke K, Spitzer RL, Williams JBW. The PHQ-9. J Gen Intern Med 2001;16:606–13. doi:10.1046/j.1525-1497.2001.016009606.x

83 Manea L, Gilbody S, McMillan D. Optimal cut-off score for diagnosing depression with the Patient Health Questionnaire (PHQ-9): A meta-analysis. CMAJ Canadian Medical Association Journal 2012;184. doi:10.1503/cmaj.110829

84 Hull and East Yorkshire Hospitals NHS Trust. A Handbook for Researchers involved in Non-CTIMP studies . 2015.

85 Schorr Y, Stein NR, Maguen S, et al. Sources of moral injury among war veterans: A qualitative evaluation. J Clin Psychol 2018;74:2203–18. doi:10.1002/JCLP.22660

86 Williamson V, Murphy D, Stevelink SAM, et al. The impact of trauma exposure and moral injury on UK military veterans: a qualitative study. Eur J Psychotraumatol 2020;11. doi:10.1080/20008198.2019.1704554

87 Williamson V, Larkin M, Reardon T, et al. Codesign and development of a primary school based pathway for child anxiety screening and intervention delivery: a protocol, mixed-methods feasibility study. BMJ Open 2021;11:e044852. doi:10.1136/BMJOPEN-2020-044852

88 Campbell KA, Orr E, Durepos P, et al. Reflexive thematic analysis for applied qualitative health research. Qualitative Report 2021;26. doi:10.46743/2160-3715/2021.5010

89 Weathers FW, Bovin MJ, Lee DJ, et al. The clinician-administered ptsd scale for DSM-5 (CAPS-5): Development and initial psychometric evaluation in military veterans. Psychol Assess 2018;30:383–95. doi:10.1037/PAS0000486

90 Bonson A, Murphy D, Aldridge V, et al. Veterans' experiences of moral injury, treatment and recommendations for future support. BMJ Mil Health 2023;:e002332. doi:10.1136/MILITARY-2022-002332

91 Kubany ES, Haynes SN, Abueg FR, et al. Development and validation of the Trauma-Related Guilt Inventory (TRGI). Psychol Assess 1996;8. doi:10.1037//1040-3590.8.4.428

92 French L, Hanna P, Huckle C. "If I die, they do not care": U.K. National Health Service staff experiences of betrayal-based moral injury during COVID-19. Psychol Trauma Published Online First: 13 September 2021. doi:10.1037/TRA0001134

93 Williamson V, Murphy D, Greenberg N. Experiences and impact of moral injury in U.K. veterinary professional wellbeing. Eur J Psychotraumatol 2022;13. doi:10.1080/20008198.2022.2051351

94 Williamson V, Murphy D, Castro C, et al. Moral injury and the need to carry out ethically responsible research. Res Ethics Published Online First: 2020. doi:10.1177/1747016120969743

95 Levin AP, Kleinman SB, Adler JS. DSM-5 and posttraumatic stress disorder. J Am Acad Psychiatry Law 2014;42:146–58.http://www.ncbi.nlm.nih.gov/pubmed/24986341 (accessed 28 Jul 2016).

96 Jordan AH, Eisen E, Bolton E, et al. Distinguishing war-related PTSD resulting from perpetration-and betrayal-based morally injurious events. Psychol Trauma 2017;9:627–34. doi:10.1037/tra0000249

97 Bravo AJ, Kelley ML, Mason R, et al. Rumination as a Mediator of the Associations Between Moral Injury and Mental Health Problems in Combat-Wounded Veterans. Traumatology (Tallahass Fla) 2020;26:52. doi:10.1037/TRM0000198

98 Nash WP, Marino Carper TL, Mills MA, et al. Psychometric Evaluation of the Moral Injury Events Scale. Mil Med 2013;178:646–52. doi:10.7205/MILMED-D-13-00017

99 Currier JM, Holland JM, Rojas-Flores L, et al. Morally injurious experiences and meaning in Salvadorian teachers exposed to violence. Psychol Trauma 2015;7:24–33. doi:10.1037/a0034092

100 Lamb D, Greenberg N, Hotopf M, et al. NHS CHECK: protocol for a cohort study investigating the psychosocial impact of the COVID-19 pandemic on healthcare workers. BMJ Open 2021;11:51687. doi:10.1136/bmjopen-2021-051687

101 Schorr Y, Stein NR, Maguen S, et al. Sources of moral injury among war veterans: A qualitative evaluation. J Clin Psychol 2018;74:2203–18. doi:10.1002/jclp.22660

102 Papazoglou K, Chopko B. The Role of Moral Suffering (Moral Distress and Moral Injury) in Police Compassion Fatigue and PTSD: An Unexplored Topic. Front Psychol 2017;8:1999. doi:10.3389/fpsyg.2017.01999

103 Currier JM, Holland JM, Malott J. Moral injury, meaning making, and mental health in returning veterans. J Clin Psychol 2015;71:229–40. doi:10.1002/jclp.22134

104 Jinkerson JD. Defining and Assessing Moral Injury: A Syndrome Perspective. Traumatology (Tallahass Fla);22:122–30. doi:10.1037/trm0000069

105 Litz BT, Kerig PK. Introduction to the Special Issue on Moral Injury: Conceptual Challenges, Methodological Issues, and Clinical Applications. J Trauma Stress 2019;32:341–9. doi:10.1002/JTS.22405

106 Drescher KD, Foy DW, Kelly C, et al. An exploration of the viability and usefulness of the construct of moral injury in war veterans. Traumatology (Tallahass Fla) 2011;17:8–13. doi:10.1177/1534765610395615

107 Bryan CJ, Bryan ABO, Anestis MD, et al. Measuring Moral Injury: Psychometric Properties of the Moral Injury Events Scale in Two Military Samples. Assessment 2016;23:557–70. doi:10.1177/1073191115590855

108 Nickerson A, Schnyder U, Bryant RA, et al. Moral Injury in Traumatized Refugees. Psychother Psychosom 2015;84:122–3. doi:10.1159/000369353

109 Nieuwsma JA, Brancu M, Wortmann J, et al. Screening for moral injury and comparatively evaluating moral injury measures in relation to mental illness symptomatology and diagnosis. Clin Psychol Psychother 2021;28:239–50. doi:10.1002/CPP.2503

110 Foa E. PDS: Posttraumatic Stress Diagnostic Scale: manual. Published Online First: 1995.https://scholar.google.com/scholar_lookup?title=Posttraumatic%20Stress%20Diagnostic%20Scale%20Manual&author=EB%20Foa&publication_year=1995#0 (accessed 26 May 2016).

111 Foa EB, Cashman L, Jaycox L, et al. The validation of a self-report measure of PTSD: The Posttraumatic Diagnostic Scale. Psychol Assess 1997;9:445–451.

112 Murphy D, Shevlin M, Pearson E, et al. A validation study of the International Trauma Questionnaire to assess post-traumatic stress disorder in treatment-seeking veterans. British Journal of Psychiatry 2020;216:132–7. doi:10.1192/bjp.2020.9

113 Haight W, Sugrue E, Calhoun M, et al. "Basically, I look at it like combat": Reflections on moral injury by parents involved with child protection services. Child Youth Serv Rev 2017;82:477–89. doi:10.1016/J.CHILDYOUTH.2017.10.009

114 Held P, Klassen BJ, Zou DS, et al. Negative Posttrauma Cognitions Mediate the Association Between Morally Injurious Events and Trauma-Related Psychopathology in Treatment-Seeking Veterans. J Trauma Stress 2017;30:698–703. doi:10.1002/JTS.22234

115 Lang AJ, Wilkins K, Roy-Byrne PP, et al. Abbreviated PTSD Checklist (PCL) as a guide to clinical response . doi:10.1016/j.genhosppsych.2012.02.003

116 Sudom K. Evaluation of three abbreviated versions of the PTSD Checklist in Canadian Armed Forces personnel | Journal of Military, Veteran and Family Health. doi:10.3138/jmvfh-2019-0062

117 Han B, Wong EC, Mao Z, et al. Validation of a Brief PTSD Screener for Underserved Patients in Federally Qualified Health Centers. Gen Hosp Psychiatry 2016;38:84. doi:10.1016/J.GENHOSPPSYCH.2015.07.009

118 K K, RL S, JB W, et al. An ultra-brief screening scale for anxiety and depression: the PHQ-4. Psychosomatics 2009;50:613–21. doi:10.1176/APPI.PSY.50.6.613

119 Khubchandani J, Brey R, Kotecki J, et al. The Psychometric Properties of PHQ-4 Depression and Anxiety Screening Scale Among College Students. Arch Psychiatr Nurs 2016;30:457–62. doi:10.1016/J.APNU.2016.01.014

120 AUDIT & AUDIT-C | Drink Talking Portal. https://www.drinktalkingportal.co.uk/clinical-guidance/alcohol-abuse-screening/alcohol-audit-audit-c (accessed 25 Jan 2023).

121 Barry AE, Chaney BH, Stellefson ML, et al. Evaluating the psychometric properties of the AUDIT-C among college students. https://doi.org/103109/146598912013856479 2014;20:1–5. doi:10.3109/14659891.2013.856479

122 Jeong HS, Park S, Lim SM, et al. Psychometric Properties of the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) in Public First Responders. https://doi.org/101080/1082608420161271986 2017;52:1069–75. doi:10.1080/10826084.2016.1271986

123 UTILITY OF THE DIMENSIONS OF ANGER REACTIONS–5 (DAR 5) SCALE AS A BRIEF ANGER MEASURE - Forbes - 2014 - Depression and Anxiety - Wiley Online Library. https://onlinelibrary.wiley.com/doi/full/10.1002/da.22148?casa_token=SnLkb_wHR18AAAAA%3AfFDfkVsV1NYM8zOZzr9udVaw__OWKK54liyQxtr0Q4TApvQxbgQShga7bysW8U-2BW-OhCcDEHMIa9o (accessed 13 Aug 2020).

124 Forbes D, Hawthorne G, Elliott P, et al. A concise measure of anger in combat-related posttraumatic stress disorder. J Trauma Stress 2004;17:249–56. doi:10.1023/B:JOTS.0000029268.22161.bd

125 Stewart-Brown S, Tennant A, Tennant R, et al. Internal construct validity of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): A Rasch analysis using data from the Scottish Health Education Population Survey. Health Qual Life Outcomes 2009;7:1–8. doi:10.1186/1477-7525-7-15/TABLES/3

126 Fabrigar LR, Wegener DT, Maccallum RC, et al. Evaluating the Use of Exploratory Factor Analysis in Psychological Research. Psychol Methods 1999;4:272–99.

127 Widaman K. Common Factor Analysis Versus Principal Component Analysis: Differential Bias in Representing Model Parameters? Multivariate Behav Res. 1993;28:263–311. doi:10.1207/s15327906mbr2803_1

128 Williams B, Onsman A, Brown T. Exploratory factor analysis: A five-step guide for novices. Journl of Emergency Primary Health Care 2012;19:42–50. doi:10.1080/09585190701763982

129 Matsunaga M. How to factor-analyze your data right: Do's, don'ts, and how-to's. Int J Psychol Res (Medellin) Published Online First: 2011. doi:10.4090/juee.2008.v2n2.033040

130 Horn JL. A rationale and test for the number of factors in factor analysis. Psychometrika 1965;30:179–85. doi:10.1007/BF02289447

131 Byrne BM. Factor Analytic Models: Viewing the Structure of an Assessment Instrument From Three Perspectives. J Pers Assess 2005;85:17–32. doi:10.1207/s15327752jpa8501_02

132 Brown T. Confirmatory Factor Analysis for Applied Research, Second Edition - Timothy A. Brown - Google Books. 2nd ed. New York: : Guilford Press 2015. https://books.google.co.uk/books?hl=en&lr=&id=tTL2BQAAQBAJ&oi=fnd&pg=PP1&dq=brown+confirmatory+factor+analysis&ots=alVvsLVP5G&sig=6CQJiR_Kjx7twNSsQYFLX4URcYg#v=onepage&q=brown%20confirmatory%20factor%20analysis&f=false (accessed 25 Jan 2023).

133 Singh G. Determination of Cutoff Score for a Diagnostic Test. Internet Journal of Laboratory Medicine Published Online First: 2007.https://www.researchgate.net/publication/289368035_Determination_of_Cutoff_Score_for_a_Diagnostic_Test (accessed 19 Dec 2022).

134 Clayton P, Clayton, Phil. CUTPT: Stata module for empirical estimation of cutpoint for a diagnostic test. Published Online First: 16 October 2013.https://EconPapers.repec.org/RePEc:boc:bocode:s457719 (accessed 1 Feb 2023).

135 Williamson V, Greenberg N, Murphy D. Predictors of moral injury in UK treatment seeking veterans. Child Abuse Negl 2021;112. doi:10.1016/J.CHIABU.2020.104889

136 Papazoglou K, Chopko B. The Role of Moral Suffering (Moral Distress and Moral Injury) in Police Compassion Fatigue and PTSD: An Unexplored Topic. Front Psychol 2017;8. doi:10.3389/FPSYG.2017.01999

137 Baker C. Mental health statistics: prevalence, services and funding in England. London: 2021. https://commonslibrary.parliament.uk/research-briefings/sn06988/ (accessed 25 Jan 2023).

138 Zuromski KL, Ustun B, Hwang I, et al. Developing an optimal short-form of the PTSD Checklist for DSM-5 (PCL-5). Depress Anxiety 2019;36:790–800. doi:10.1002/DA.22942

139 Guy W. The Clinical Global Impresssion Scale. 1976.

140 Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med 2001;16:606–13. doi:10.1046/J.1525-1497.2001.016009606.X

Appendices

Appendix 1

The visual representation of R&R's proposed components shown to Veterans in Stage 2

Section 1	Formulation & treatment planning	Developing rapport/trust. Establishing limits of confidentiality. Teaching adaptive coping skills.
Section 2	Rapport & resource building	Developing rapport/trust. Providing psycho-education about moral injury and its impact, discuss common issues that might arise in therapy, make referrals to necessary support, and teaching adaptive coping skills (e.g. relaxation, meditation skills).
Section 3,4,5	Recounting the event	Providing account of the event, the meaning and its impact. Discuss current understanding of the event, its impact on one's beliefs. Begin a letter writing exercise about the event. Encourage practice of adaptive coping strategies.
Section 6,7,8	Evaluating response to an event	In-depth review of account of the event. Examine feelings of grief, guilt, shame, anger, betrayal, and trust and how these can be addressed. Begin to examine definitions of, and barriers to, forgiveness. Continue the letter writing exercises about the event and its impact.
Section 9,10,11,12	Resource building	Explore and reconstruct difficulties faced in how one relates to one's self and others (e.g. trust, power, esteem issues) related to the event. Begin to evaluate the values one held pre-event and identify core values. Engage in activities that are meaningful in life and consistent with core values.
Section 13,14	Raising self compassion	Restoring or increasing self compassion by exploring and expressing self compassion and forgiveness of self/others. Provide compassion-focused therapy psycho-education, begin to challenge self-criticism and develop the compassionate self, carry out mindful exercises. Letter writing focused on what would help you to move on and whether it's possible to forgive and have compassion.

Section 15,16	Restoring relationships	Engaging in reconnection with friends, family members or community. Examine whether relationship breakdowns have occured, how and if these can be repaired. Have a significant other bear witness to a (therapist supported) recounting of event. Provide psycho-education to the companion.
Section 17,18,19	Renewal & reconnection	Engaging in activities to meet value-based goals, making a longer term plan for life course that is consistent with the best parts of the self. Letter writing exercise that focuses on how one thinks about the event and its impact now. Reflect on progess made in treatment, highlighting meaningful changes or developments. Continued work on values and making a plan to live according to those values. Develop a plan if setbacks are experienced and how to reestablish more adaptive coping strategies.
Section 20	Check in - 1 month	Top up session, check in how patient is going, reinforce or support any aspects they are finding hard. Make referrals if necessary.
Section 21	Check in - 3 months	Follow up.

Appendix 2

Interview guide used with Stage 2 Leading Professionals

Professionals Interview Schedule

- Have you provided ongoing care, support or research with patients [or participants] who were exposed to morally injurious events?

- What might lead you to consider that a patient might be experiencing a moral injury?
  - What symptoms would you look for?

- What do you consider is different about patients presenting with moral injury related ill-health to those presenting with other mental health conditions?

- Has their morally injurious experience changed their daily functioning?
  - Has their morally injurious experience changed how they view themselves as a person? Why or why not?
  - Has the event impacted how patients make sense of life and its meaning?
  - Has it affected their spirituality or religious beliefs?
  - Has the event affected their relationships with others?
  - Has the event had any impact on their work?
  - Has the event impacted how theirs views of and their relationship with authority figures?
  - Has their experience changed how they care for themselves?
  - Has it impacted on the lives of their family and friends?

- How have you approached working with patients to address these issues?

- How does this approach compare to treatment for individuals with other trauma types?
  - What are the pros and cons of the approaches you have used?

- In your view, what advances have been made in our understanding of moral injury in recent years?
  - What research/literature/resource has been most helpful to you?

- What ways of treating moral injury-related ill-health are you aware of?
  - What are your views of these treatments?
  - Are these treatments well tolerated by patients? Why or why not?
  - Would it matter if treatment was delivered face to face or not? What might work best?

- What are some of the major challenges of working with patients to address symptoms following moral injury?
  - Typically, how many treatment sessions do they need? How does this compare to non-morally injured patients?
  - Which moral injury related symptoms are particularly challenging to treat? How do you address these?

- What is it like for you to provide treatment in cases for moral injury?
  - Is there any other support or training you would find helpful?

Appendix 3

Interview guide used with Stage 2 Veterans who reported experiencing PMIEs

Veteran Interview Schedule

- 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?
  - If multiple events, which experience did you find most distressing?

- Can you briefly describe this experience?
  - What happened?
  - What were your reactions at the time?

- How often do you think about the event now?
  - Are there any thoughts or feelings you have found difficult to cope with?

- Has this event changed the way you see yourself as a person?

- Has this event affected the way you interact with others?

- Has the event had any impact on your mental health or how you feel emotionally?

- Have you had formal mental health treatment or support for these difficulties?
  - When did you get treatment?
  - How long after the event?
  - What led to you seeking treatment for this problem?
  - What was the treatment like for you?
  - Do you think the treatment was effective?
  - How satisfied were you with this support?
  - Looking back, is there any advice, care or support that would've been helpful?
  - How did you hear about the service (e.g. referral)?

- What do you think are important features for psychological treatment following challenging military events?
  - Should treatment be face-to-face, or can it be delivered online?
  - What key issues should treatment address?
  - What treatments are you aware of that currently exist?
  - Do you think such treatments are effective? Why or why not?

Participant is shown R&R draft outline and given time to read it and ask questions.

- What do you think about the proposed manual?
  - What were your initial thoughts on reading it?

- How does it compare to the treatment you received or other treatments you are aware of?
  - What features are similar/different?

- Do you think there are any aspects missing from the manual?
  - Could any issues experienced by veterans go unaddressed?

- Are there any changes to the manual you think would be helpful?
  - What features would you alter? Why?

- How do you think patients who receive this type of treatment will respond?
  - Will their symptoms improve? Why or why not?

- What do you think about the length/number of treatments patients will receive?
  - Should more/fewer sessions be offered?

- Are there any other aspects of the manual you feel researchers ought to be aware of?

Appendix 4

Interview guide used with Stage 3 veteran patients receiving R&R at Combat Stress

Indicative guide for in-depth interviews with R&R patients

- How have you found getting mental health treatment from Combat Stress so far?
  - What made you want to seek help?
  - Were there any issues or concerns you were hoping treatment would help with?

- How did you find being offered the new treatment at CS?
  - What did you think about the treatment when the therapist first explained it to you?
  - What did you hope to get out of taking part in this treatment?
  - Did you have any concerns at this stage?
  - Was there anything you think could have been done to encourage you/others to get involved?
  - Was there any more information you would have liked to have had?

- How did you get on with the initial questionnaires and consent forms?
  - Was there anything that you found difficult in filling in the questionnaires/consent forms?
  - Was there anything that could've been made easier for you here?
  - Was there anything you feel you gained or learnt from filling in the questionnaires?

- What did you think about everything being online/remote?
  - How do you think this compares to a F2F treatment?

- What aspects of treatment have gone well?

- When do you find time to work through your homework?
  - What things help you to engage? What things can get in the way?

- Are there any changes to the manual you think would be helpful?
  - What features would you alter? Why?

- How do you feel about managing your emotional/psychological difficulties having started/done treatment?
  - Has your knowledge or confidence changed since accessing treatment?
  - Has there been any change in your family life since taking up the treatment?
  - Have you become aware of any new sources of support as a result of being part of the treatment?

- How does this treatment compare to treatments you have had previously or other treatments you are aware of?

- How do you feel about the number or length of sessions? Are there not enough or too many or just right?
  - How have you found the 1 month break? OR How do you feel about there being a 1 month break?

- In an ideal world, is there any other support or help you would've liked to receive?
  - Could anything have been made easier for you/ others to keep engaging with treatment?

- Have you spoken with other people about the treatment you've received?

- Is there anything we can do to make sure the treatments works well for other veterans in future?

Appendix 5

Interview guide used with Stage 3 therapist delivering R&R treatment at Combat Stress

Therapist Interview Schedule

- Can you describe the care you have delivered to veterans who were exposed to morally injurious events?

- What might lead you to consider that a veteran might be experiencing a moral injury?
  - What symptoms would you look for?
  - How do you determine whether a patient is improving with treatment?

- What are some of the major challenges of working with veterans to address symptoms following moral injury?

- How did you feel about delivering the R&R treatment manual to veterans who had experienced moral injury?
  - Were there any initial concerns/questions you had about the feasibility study?
  - Were these concerns/questions addressed?

- What did you initially think about the R&R manual?
  - What were your initial thoughts on delivering it?

- How does it compare to the support or treatment you delivered in the past or other support/ treatments you are aware of?
  - What features are similar/different?

- Do you think there are any aspects missing from the manual?
  - Are any issues experienced by morally injured veterans unaddressed?
  - Are any alternations needed to better fit veteran's needs?
  - Does the module address difficulties faced in veteran's personal and working lives? Why or why not?

- Are there any changes to the manual you think would be helpful?
  - What features would you alter? Why?

- Are there any particularly positive features to the manual?
  - Why do you like this aspect?
  - Could this feature improve veteran's recovery?

- How have patients who receive this treatment module responded?
  - Have their symptoms improved? Why or why not?

- What do you think about the length/number of treatments patients receive as part of this manual?
  - Should more/fewer sessions be offered? Why?

- What training or support did you have to deliver this manual?
  - Was there any other training or support you would have liked to receive?

- Are there any other aspects of the manual you feel researchers ought to be aware of?

- What is it like for you to provide R&R treatment in cases for moral injury?
  - Is there any other support or training you would find helpful?

Appendix 6

The design and validation of the Moral Injury Scale in the UK general population: MORIS

Authors: Williamson, Victoria[a,b], Murphy, Dominic[b,c], Leightley, Daniel[b], Ukoumunne, Obioha C.[d], Greenberg.,Neil[b]
Affiliations: [a]Department of Experimental Psychology, Anna Watts Building, University of Oxford, Oxford, OX2 6 GG; [b]Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, SE5 9RJ; [c]Research Department, Combat Stress, Leatherhead, Surrey; [d]NIHR ARC South West Peninsula, Department of Health and Community Sciences, Faculty of Health and Life Sciences, University of Exeter
Corresponding author: Dr Victoria Williamson; Victoria.williamson@kcl.ac.uk
Competing interests: DM is a trustee at the Forces in Mind Trust.
Acknowledgements: Obioha Ukoumunne was supported by the National Institute for Health and Care Research (NIHR) Applied Research Collaboration South West Peninsula. The NIHR had no role in the study design, collection, management, analysis or interpretation of data, writing of the report, or the decision to submit the report for publication. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care.
Word count: 5,257
Ethical approval: This study received ethical approval from King's College London Research Ethics Committee (HR-20/21-22837).
Funding: This study was funded by the Forces in Mind Trust, a funding scheme run by the Forces in Mind Trust using an endowment awarded by the National Lottery Community Fund.
Author contribution: VW collected, led the analysis of the data and writing up of the findings for publication. DL, DM and OCU provided expertise and guidance in conducting data analysis. All authors VW, DM, DL, OCU, NG contributed towards the writing of this manuscript. All authors reviewed and approved the manuscript prior to submission for publication.
Data availability: The data that support the findings of this study are available from the corresponding author, [VW], upon reasonable request.

Abstract

Objectives: Studies have found that moral injury (MI) can be easily missed in clinical assessments and most measures of MI have been developed for and with US military samples. As MI is increasingly recognised in non-military samples, existing scales may not be appropriate to civilian experiences.
Design: To design and validate the Moral Injury Scale (MORIS), a self-report measure of exposure to potentially morally injurious events (PMIEs), MI-related distress and risk/protective factors, in the UK general population using exploratory and confirmatory factor analysis.
Setting: UK general population.
Participants: We administered an initial set of 47 items to 670 participants and conducted exploratory factor analysis. The reduced MORIS was administered to an independent sample of 407 participants and confirmatory factor analysis was conducted.
Primary outcome measures: The validity and performance characteristics of the MORIS were assessed against validated measures of mental ill health. Receiver operating characteristic (ROC) curves were used to calculate a likely cut off score for detecting conditions that are associated with moral injury.
Results: Analysis yielded factors for assessing exposure to PMIEs; time since event; MI-related distress; and risk and protective factors. Good convergent validity was evidenced against the measure of MI and mental health symptoms. Confirmatory factor analysis demonstrated a good fit for the model. ROC analysis showed a cut off score of ≥12 (ROC 0.77; 95% CI 0.70 - 0.85) could be indicative of MI.

Conclusions: This study found that the MORIS is a valid assessment of MI and could be used to explore the severity of MI-related distress in the aftermath of trauma.
Data set information: please see data availability statement.
Trial registration number: N/A

Strengths and limitations

- This study included two large, independent samples representative of the UK general public to evaluate the MORIS.
- Given the recruitment approach used, it is possible there may be biases associated with a population that responds to studies hosted on recruitment platforms rather than random selection.
- It was beyond the scope of this study to translate the MORIS into non-English languages so the findings of this study cannot necessarily be generalised to non-English speaking UK samples.

Moral injury is increasingly recognised as a public health concern, affecting a range of professionals from healthcare workers, military personnel, veterinarians to first responders. Moral injury describes the intense negative reactions and distress experienced after actions, or the lack of them, which violate one's moral or ethical code (1,2). Potentially morally injurious events (PMIEs) are categorised as: acts of commission (e.g., such as a police officer unintentionally injuring/killing a civilian during an arrest); omission (e.g., military personnel being unable to help locals due to rules of engagement); and betrayal by trusted others (e.g., a healthcare worker being provided poor-quality safety equipment) (3). While most moral injury research conducted has been carried out in military samples, moral injury is not unique to any particular profession or occupation and has been found to be experienced by a range of populations (4–6).

Experiencing a moral injury can profoundly affect an individual's view of themselves, others and the world around them (2). Following PMIE exposure, individuals report experiencing intense feelings of shame, guilt & anger, as well as sadness, anxiety and disgust (1,7). Individuals also report a negative change in their own thoughts and beliefs (e.g. "I am a monster"), and often employ maladaptive coping strategies in an effort to manage their distress (e.g. self-harm, risk taking, substance misuse) (8). Moral injury itself is not a disorder or diagnosable, but these pernicious changes in beliefs & behaviours can lead to the development of moral injury-related mental disorders. Exposure to PMIEs has been found to be significantly associated with symptoms of post-traumatic stress disorder (PTSD), depression, anxiety, suicidality & alcohol misuse (4,9–11).

Despite the focus of the research community into moral injury in recent years (12), how moral injury and PMIEs are conceptually distinct from PTSD and criterion A events (i.e., 'exposure to actual or threatened death, serious injury, or sexual violence' (13)) remains subject to debate. Individuals who experience 'classically' traumatic events, involving threats to self or others, can present with symptoms of PTSD; however, it is not uncommon for them also to report symptoms characteristic of moral injury (i.e., shame, guilt, anger, worthlessness). It has been argued that there are some clear distinctions between PTSD and moral injury (1,14,15). Those experiencing symptoms following PMIEs often have increased negative cognitions relating to self, self-blame, sadness & increased re-experiencing symptoms compared to those who have experienced life-threat traumas (16). Those exposed to PMIEs also have increased suicidality and rumination (17,18). Large representative studies of US veterans find, after controlling for trauma history, psychiatric history & demographic characteristics, that people exposed to PMIEs are at increased risk of psychiatric symptoms than those not exposed (19).

Cases of moral injury have been found to be particularly challenging for clinicians to treat (20). Currently, no validated treatment for moral injury mental health difficulties exists and it is argued that existing trauma treatments may not adequately address the negative sequalae of those affected by PMIEs (21). Importantly, clinicians report that moral injury can be easily missed in clinical assessments (20) which can lead to inappropriate treatments being offered and poorer patient outcomes.

The majority of measures of moral injury have been developed for and with US military samples

(e.g. (22,23)). Several of these scales have then been later adapted for use in non-military samples (24,25). For example, the original military-focused Expressions of Moral Injury Scale (EMIS) was adapted for civilian use (EMIS-C) by generalising the language of included items (e.g. EMIS item 'My military experiences have taught me that it is only a matter of time before people will betray my trust' was replaced with 'My experiences have taught me that it is only a matter of time before people will betray my trust') (26,27).

Although the suitability of these adapted measures for measuring experiences and expressions of moral injury in civilian samples remains unclear. As moral injury is increasingly recognised in non-military samples, given the considerable differences that can exist between civilians and military personnel when considering PMIEs (e.g. the nature/frequency of challenging events they may be exposed to; the training received; responses to events; the psychological care available; etc), it is possible that existing scales may not be appropriate to civilian experiences (28). Moreover, existing scales often suffer from methodological problems, with single items asking about both exposure to PMIEs and the psychological impact of exposure which may conflate exposure with impact and introduce bias (29).

Moreover, existing measures of PTSD may not fully encapsulate the various types of PMIEs reported (e.g. perpetration, omission or betrayal events) or adequately assess guilt, shame, anger and other symptoms characteristic of moral injury. Finally, with many measures being developed in a US (military) context, whether they are acceptable and relevant to non-US populations is also unknown. In order to conduct high quality research into the experience and impact of moral injury, there is a need for reliable, valid assessments that measure both PMIE exposure and impact. Reliable assessment of PMIE exposure and associated psychological responses could help further our understanding of the development and maintenance of moral injury-related mental health difficulties and identify incident specific intervention targets.

Method

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. This study received ethical approval from King's College London Research Ethics Committee (HR-20/21-22837).

Participants

Participants were recruited from an online recruitment platform, Prolific (www.prolific.com), between January - August 2022. Prolific provides the option to recruit a sample nationally representative of the UK which is stratified by age, sex and ethnicity based on census data (see https://researcher-help.prolific.co/hc/en-gb/articles/360019236753-Representative-samples). Participation took on average nine minutes and participants were paid up to £8.83. Prior to participation, potential participants were provided with an information sheet which explained the aim of the study, what participating would involve, and research contact details should they have further questions. Given the sensitivity of the study, participants were not asked to provide any personally identifying information to take part. As such, written informed consent was not obtained to preserve anonymity. Participants were informed that as they were not identifiable from their responses, their data could not be withdrawn following participation. Participants were advised that they could stop participating at any time by closing their internet browser. Participants had to complete the following screening items:

- "I live in the UK";
- "I am aged 18 years or over";
- "I had a distressing experience (acting or witnessing) that has caused me to question the kind of person I am or the kind of world we live in."

These screening questions have been successfully used in previous studies of moral injury in UK military and non-military samples (6,9,30). Participants were recruited in two separate samples to conduct the exploratory and subsequent

confirmatory analyses which, for clarity, we refer to as Study 1 and Study 2. In Study 1, 670 participants were recruited. In Study 2, 413 participants were recruited. Participants in Study1 were not able to participate in Study 2 to ensure the samples were independent. Participant demographic information is provided in Table 1.

Table 1: Participant demographic characteristics.

Characteristic	Study 1 (N = 670)	Study 2 (N = 413)
Age, M (SD)	37.5 (12.2)	45.8 (16.1)
Female gender, n (%)	517 (77.7)	212 (52.0)
Education attainmenta		
School until 18 years	133 (19.9)	102 (25.2)
Further education	106 (15.8)	51 (12.6)
Higher education (BSc)	271 (40.5)	170 (42.0)
Masters/doctoral degree	160 (23.9)	82 (20.2)
Marital status		
Married/long term relationshipb	467 (70.0)	278 (68.8)
Served in the Armed Forces (%)	10 (1.5)	5 (1.2)
Time since PMIE eventc		
Less than 12 weeks ago	19 (2.8)	21 (5.3)
Less than 1 year ago	77 (11.5)	56 (14.1)
Between 2-5 years ago	221 (33.0)	125 (31.5)
More than 5 years ago	353 (52.7)	195 (49.1)
MIES score (M, SD)	29.7 (10.3)	31.0 (9.5)
Met likely diagnostic criteria n(%)		
PTSD	186 (27.8)	28 (6.9)
CMD	556 (83.2)	114 (28.2)
Alcohol misuse	232 (43.2)	146 (37.2)
Anger	261 (39.0)	78 (19.3)
Any disorder	489 (91.2)	271 (67.8)

Note. Any disorder = meets case criteria for likely PTSD, CMD, alcohol misuse and/or anger difficulties. PTSD = measured by PCL-6. CMD = common mental disorder, measured by the PHQ-4. Alcohol misuse = measured by AUDIT-C. Anger = measured by DAR-5. a = data available for n=405 participants in Study 2. b = data available for n=667 participants in Study 1. c = data available for n=397 participants in Study 2.

Development of the MORIS

The initial list of MORIS items were generated by reviewing both qualitative and quantitative moral injury literature (e.g. (9,30–34)), theoretical models of moral injury (e.g. (1,14,35,36)), existing measures of moral injury (e.g. (22,23,37–40)) and existing measures of post-trauma cognitions (e.g. (41,42)). This list was then subject to expert review. As the original item set (see Supplementary Material 1) was designed to be inclusive of a range of PMIEs and potential appraisals, the expert review primarily focused on consensus that appropriate items had been covered and that there was no avoidable repetition.

Item format

The original set of 47 items was divided into four sections: Section 1- exposure to PMIEs; Section 2 - perceived wrongness of and time since event; Section 3 - changes in psychological appraisals; Section 4 - risk/protective factors. The first exposure section consisted of 17 items, 16 of which were rated on a 2-point scale (1 – this has happened to me; 2 – this event still bothers me a lot now). Item 17 in Section 1 was an open response for "other challenging event not listed above".

In Section 2, perceived wrongness was measured with two items: 'How wrong do you think the event was?' with a 4-point Likert scale (1 – a little wrong; 2 – somewhat wrong; 3 – really wrong; 4 – completely wrong) and 'When did you first begin to feel that this event was wrong?; (1 – as it was happening; 2 – in the hours afterwards; 3 – over the first few days or weeks; 4 – months or more afterwards). In Section 2, time since event was rated on a 4-point Likert scale (1 – less than 12 weeks ago; 2 – less than 1 year ago; 3 – 2-5 years ago; 4 – more than 5 years ago).

In Section 3, changes in psychological appraisals consisted of 20 items, rated on a 5-point Likert scale (0 – Not at all; 1 – A little; 2 – Somewhat; 3 – A lot; 4 – Very much).

Section 4 contained 5 items relating to risk/protective factors and was measured on a 5-point Likert scale (0 – Not at all; 1 – A little; 2 – Somewhat; 3 – A lot ; 4 – Very much). Risk and protective items included those that could be considered adaptive (e.g. 'I felt able to talk to someone about how I felt following this experience(s)') and maladaptive (e.g. 'Experiences in my childhood (e.g. abuse, neglect) made the event harder to cope with').

Patient and Public Involvement: Patients and the public were not directly involved in the design or delivery of the MORIS or this study.

Validity measures

In addition to the MORIS, we administered other measures to assess convergent and criterion validity.

Moral Injury Event Scale (MIES). Exposure to PMIEs was also measured using a modified version of the 9-item Moral Injury Event Scale (MIES) (possible score range 9–54); with higher scores indicative of more event exposure (23). The MIES includes items relating to acts of perpetration, perceived transgressive acts of others, and betrayal by trusted others. While the MIES originally was designed for military samples, a modified version of MIES has been used previously in non-military samples (39,43). The modified MIES is identical to the version used in military samples except terms relating to 'fellow service members' are replaced with 'co-workers' and mention of the 'US military' is omitted. Previous studies have found the MIES to have suitable psychometric properties, with good internal consistency (3,44).

Probable PTSD. Probable PTSD was assessed via the PTSD checklist (PCL-6) (45). The PCL-6 is a well-established, six item measure with good psychometric properties (46). Participants were asked rate the degree to which they were bothered by symptoms related to a challenging/stressful experience in the past month on a 5-point (1 – Not at all, to 5 – Extremely) Likert scale. A cut off score on the PCL-6 of 17 or greater was used to indicate probable PTSD (47,48).

Common mental disorders (CMD). CMD (e.g. depression, anxiety) were assessed using the four item Patient Health Questionnaire (PHQ-4) (49). CMD were categorised as 0–2 (not present), 3–5 (mild), and ≥6 (moderate to severe) points. The PHQ-4 asks the following questions, over the last two weeks if one has been: (1) 'Feeling nervous, anxious or on edge?', (2) 'Not being able to stop or

control worrying?', (3) 'Feeling down, depressed or hopeless?', and (4) 'Little interest or pleasure in doing things?'. Questions were scored from 0 (Not at all) to 4 (Nearly every day). The PHQ-4 has strong reliability and internal reliability (50).

Alcohol misuse. Probable alcohol misuse was assessed using the AUDIT-C (51).The AUDIT-C has three items which are scored between 0 and 4, with a maximum total possible score of 12. For the AUDIT-C, the following cut points were used: non-drinking (score 0); low-level drinking (score 1 to 3); moderate-level drinking (score 4 to 7), and high-level drinking (score 8 to 12). A score of five or more for men and women is taken to indicate higher risk drinking (52). The AUDIT-C also has good psychometric properties and internal consistency (53,54).

Anger. We used the validated Dimension of Anger Reactions (DAR-5; (55,56)) to assess likely anger problems over the last four weeks. The DAR-5 scale is a five-item Likert scale ranging from 0 'not at all' to 4 'very much' (possible score range=0-20). A cut-off score of 12 or more was used to indicate likely anger problems. The DAR-5 has been found to have sound psychometric properties(57,58).

Functioning. In Study 2, the short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) was administered. The seven-item scale (items scores from 1 to 5) measures general mental wellbeing over the last two weeks. Scores range between 7-35 with higher scores indicative of more positive wellbeing. Raw SWEMWBS item-scores were summed and then converted to metric total score using the SWEMWBS conversion table (59). The SWEMWBS has been widely used and has good internal consistency (60,61).

Analysis

Descriptive statistics were reported as frequencies and percentages, means and standard deviations, or medians and interquartile ranges (IQR).

In Study 1, we excluded participants who completed the questionnaire too quickly (<180 seconds as median participation time was eight minutes) (n=126) and those with missing data on half or more of each section the MORIS (n=6). Participants with any missing data on the psychometric measures (e.g., PCL, DAR-5, etc) were also dropped (n=37). We did not input any missing data.

In Study 2, a similar process was followed. Participants who completed quickly (n=81) or had missing data on psychometric measures (MIES, PCL-6, DAR-5, PHQ-4) (n=32) were dropped. A proportion of data was missing on the AUDIT-C, possibly as this was a final measure of questionnaire set, and if participants completed item 1 of the AUDIT-C, the lowest possible score ('0') was imputed for items 2 and 3 of the scale (n=71) (AUDIT-C items are (1) 'how often do you have a drink containing alcohol'; 2) 'How many units of alcohol do you drink on a typical day when you are drinking?'; 3) 'How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?')

Study 1. We used factor analysis to reduce the number of items and explore the latent factor structure of the MORIS. A priori, we decided to conduct factor analysis separately on each of the four MORIS sections to index each separately as the sections measure distinct aspects of moral injury and PMIEs (e.g. 1. event, 2. perceived wrongness and time since event, 3. psychological impact, 4. risk/protective factors) and the response set differs across the sections (e.g. items have a 2-point scale in Section 1; a 4-point scale in Section 3, etc).

Item 17 ('Other challenging or upsetting event not listed above, if you marked 'other' please specify:') in Section 1 was removed from the analysis a priori as responses to this item were free text rather than 'this has happened to me' or 'this event still bothers me a lot now.'

An exploratory factor analysis (EFA) using principal axis factoring (PAF) was carried out to define the underlying latent factors (62–64). To confirm the appropriateness and feasibility of the analysis, Kaiser-Meyer-Olkin (KMO) measure was used as an indicator of sampling adequacy with index ranges greater than 0.5 considered suitable for analysis) and a signficant ($p<0.05$) Bartlett's test of sphericity was used to determine whether correlations between the included items were sufficiently large to use factor analysis (65).

The number of factors to retain was based on

several criteria: (a) a visual examination of the scree plot; (b) the parallel analysis approach; (c) considerations regarding the meaning and interpretability of the factor model. Items that loaded more than 0.5 on a primary factor and less than 0.3 on remaining factors were retained (66). Items that did not load more than 0.5 on a primary factor could be retained provided there was adequate discrepancy between primary and secondary factor loadings (66). These items required loadings of less than 0.3 on secondary factors and their inclusion had to improve the internal consistency and interpretability of the subscales. We also assessed individual items for face validity. Items that loaded onto a factor had to share conceptual meaning and items that loaded on different factors had to appear to measure different concepts (64,67).

The internal consistency of items for each factor was examined using Cronbach's Alpha, with the threshold of 0.6 used to signify acceptable reliability (68,69). Validity was examined based on MIES and psychometric data, using correlations to examine associations. Convergent validity was determined by examining correlations between the MORIS factors and MIES scores (n = 664). Criterion validity was examined by testing for correlations with PTSD, CMD and alcohol misuse symptoms.

Study 2. Following the reduction of the MORIS items following the steps above, we redistributed the shortened MORIS to a second, independent sample of participants representative of the UK general population. Psychometric data (e.g. PTSD, CMD, alcohol misuse) and MIES responses were also collected. We carried out confirmatory factor analysis (CFA) to verify the MORIS' latent structure. The best fitting model from the Study 1 EFA (after the removal of poorly loaded items) were subsequently tested using CFA.

Several measurements of goodness of fit were used to assess how well the proposed model fits the data. The Chi-squared statistic was used as a measure of fit between fitted covariance matrices and the sample covariance (70). A non-significant Chi-squared indicates that the observed and reproduced covariance matrices do not differ and therefore indicates little evidence of poor fit. Additionally, the comparative fit index (CFI) and the Tucker Lewis index (TLI) were used, with values >0.95 used to indicate a reasonably good fit between the model and the data. The standardized root mean square residual (SRMR) was used to reflect to discrepancy between observed and predicted covariances, with values <0.08 used to indicate good fit. Finally, the root mean square error of the approximation (RMSEA) (70) was used, with RMSEA values <0.05 taken to indicate a good model fit (71).

Examining efficiency of the MORIS for identifying likely moral injury

When a new measure is created, questions often arise about the level of agreement or concordance between the new and older scales. For example, is the prevalence of the condition the same regardless of the scale used? Is the level of association with other health conditions or symptoms the same? This matter is especially pressing as moral injury is not presently a diagnosable mental health disorder and existing scales, including the EMIS (22)and MIES (23), do not have an agreed 'cut off' score which indicates the presence or absence of moral injury. A score that supports decision making of clinicians and researchers in determining whether an individual is likely to be experiencing a moral injury would be very helpful in future treatment efforts.

Whether the shortened MORIS used in Study 2 would be as good at predicting caseness of likely mental disorders was examined. Specifically, with this final step of analysis, we aimed to compare the association of 'morally injured' case status on the shortened MORIS and MIES with symptoms of PTSD, common mental disorders, anger problems and alcohol misuse. Section 1 and Section 4 subscales of the MORIS were excluded from this predictive analysis as 'moral injury' refers to the distress experienced after PMIEs rather than exposure to events or risk/protective factors.

An optimal cut off score for the MORIS was calculated using the 'cutpt' Stata package (72) which enables cut-off point determination in line with the Youden index, closest-to-(0,1) criterion, and Liu's method (73). Using this approach, an optimal cut off point for the MORIS was estimated as this test finds the decision point on the ROC

curve closest to sensitivity and specificity = 1. As there is no formal cut off score for the MIES (rather a binary estimate has been used in previous studies (e.g.(74)), the cutpt package was run to estimate an optimal MORIS cut off score against the PCL-6 and PHQ-4 caseness as PTSD and CMD are most strongly and consistently associated with moral injury in previous studies (4,6,19,75).

To determine an appropriate cut off value, the MORIS was quantified using as criteria the area under the receiver operator characteristic (ROC) curve (AUC), sensitivity, specificity, positive and negative likelihood ratios and overall efficiency (proportion correctly classified). Prevalence of probable moral injury using a variety of cut-off scores on either scale was calculated and mismatches examined. Univariable logistic regression was used to assess the association between moral injury case status [predictor] and other mental disorders [outcome] (reporting odds ratios (ORs)). All analyses were carried out in STATA version 17.0.

Results

PAF: Factor analysis and item retention

Section 1 – PMIE exposure. The PMIE event exposure items were submitted to an exploratory factor analysis (EFA) (see Table 2). The Kaiser–Meyer–Olkin (KMO) measure illustrated the sampling adequacy for the analysis (KMO = .79) and Bartlett's test of sphericity [2(120) = 1228.2, p < .001] indicated that correlations between items were suitably large, confirming the appropriateness of the analysis.

An examination of the scree plot and parallel analysis suggested that Section 1 of the MORIS (PMIE exposure) best fit a two-factor solution. From items 1-16, eight were removed due to poor factor loadings. Four items (1, 5, 7, 12) were retained, although they had a primary factor loading of .4, as they had a loading of less than .3 on secondary factors and their retention improved the internal consistency and interpretability of the subscale. The EFA was rerun with the final seven items. The first factor explained 21.0% of

Table 2: PAF loadings of MORIS Section 1 PMIE exposure scale

ItemActs of omission/	Acts of betrayal commission	
1. The decisions I made, or did not make, led to other people/animals being killed or seriously injured	0.48	
5. I was told to behave in a way that I believed was wrong		0.44
7. I failed to do something important or make a decision and someone or an animal was harmed or killed as a result	0.48	
12. I did not have the supplies/equipment needed to get my job done safely		0.48
13. I was not able to ask those in authority/leaders for help if I had a problem/concern		0.63
14. I was not valued by more senior people in my organization		0.60
16. I have been betrayed or let down by colleagues/authority figure I once trusted		0.51

Note. Factor loadings less than 0.3 are suppressed.

the variance, with an additional 6.7% explained by the second. An examination of items loading on the factors indicated that the factors represent i. acts of commission/omission and ii. acts of betrayal. Internal consistency was low in the first factor – potentially due to insufficient items - and acceptable in the second (Cronbach's = 0.52 and 0.64, respectively).

Section 2 - Perceived wrongness of and time since event. The perceived wrongness items were submitted to an EFA. The KMO (0.54) and Bartlett's test [2(3) = 17.74, p < .001] suggested these items were unrelated and not suitable for factor analysis. As no currently existing scales of moral injury include an item measuring time since event (e.g. Currier et al., 2018; Nash et al., 2015), the decision was made to retain item 20 ('When did this event occur?').

Section 3 – Psychological impact. The psychological impact items were submitted to a PAF. The KMO (0.93) and Bartlett's test [2(210) = 6466.6, p < .001] confirmed the suitability of the data for EFA. A visual examination of the scree plot and parallel analysis suggested a single factor solution. Of the 20 items of the MORIS psychological impact subscale, ten were removed due to poor factor loadings and the EFA was re-run with these items removed. The final ten item scale was found to account for 43.0% of the total variance. The factor encompassed items relating to the constellation of symptoms characteristic of moral injury, including items of spiritual change, guilt, shame and anger, suggesting that this factor represents moral injury related distress (see Table 3). The internal consistency was strong (a=0.87).

Table 3: PAF loadings of MORIS Section 3 psychological impact scale

Item	Moral injury related distress
22. What happened has made me feel emotionally numb or dead inside	0.68
23. What happened has made me question my faith in my spiritual beliefs	0.50
24. Because of what happened, I don't know who I am anymore	0.77
28. Because of what happened, I doubt my ability to make right decisions again	0.66
29. I often think about how the event(s) could or should have happened differently	0.60
32. I am angry at myself	0.70
33. I get angry with others more easily since the event	0.63
35. When I think about what happened, I want to harm or punish myself	0.71
38. I feel so bad about what happened that sometimes I hide or withdraw from others	0.80
39. I feel I can never tell anyone what happened	0.51

Note. Factor loadings less than 0.3 are suppressed.

Section 4 – Risk and protective factors. The risk and protective factor items were submitted to an EFA. The KMO (0.72) and Bartlett's test [χ 2(15) = 346.4, p < .001]) confirmed the appropriateness of EFA. Visual examination of the scree plot and parallel analysis suggested a two-factor solution. Of the six items, no items required removal due to poor factor loadings (see Table 4). The first of the two factors accounted for 37.5% of the total variance, with 9.3% accounted for by the second factor. Examination of items loading on each factor suggested that the factors represent i. adequate support and ii. added stressors. Internal consistency was acceptable for the first factor but low for the second, again potentially due to limited factor items (α = 0.81 and 0.55, respectively).

Table 4: PAF loadings of MORIS Section 4 risk and protective factors scale

Item	Adequate support	Added stressors
42. I received appropriate training for the role(s) I was expected to carry out	0.83	
43. I was accurately informed about the role(s) I was expected to carry out	0.83	
44. I felt able to talk to someone about how I felt following this experience(s)	0.58	
45. I felt adequately prepared for how certain experiences in my role may make me feel	0.71	
46. Experiences in my childhood (e.g. abuse, neglect) made the event harder to cope with		0.53
47. I have had an additional stressful experience(s) since the event(s) that I found hard to cope with (e.g. serious illness, loss of loved one)		0.52

Note. Factor loadings less than 0.3 are suppressed.

Study 1 – convergent and criterion validity

Convergent validity of the MORIS was assessed against a measure of moral injury exposure (MIES). The correlation matrix is presented in Table 5. The total score on the MIES was significantly associated with the MORIS subscale factors, with the strongest associations found between the MIES and the Section 1 Betrayal subscale (r=0.41, p<0.001) and Section 3 Distress subscale (r=0.45, p<0.001). There was a negative association found between the MIES and Section 4 Adequate Support subscale (r=-0.27, p<0.001) which could possibly suggest a protective role of experiencing adequate support (e.g. appropriate training, social support) against moral injury. No significant association was found between the MIES and MORIS Section 2 Time Since Event (r=0.002, p>0.05).

Higher symptom scores for PTSD, CMD and anger were also significantly positively associated with higher levels of event exposure and distress on the MORIS. The MORIS subscale of Adequate Support (Section 4) was significantly negatively associated with PTSD (r=-0.14, p<0.05) and anger (r=-0.13, p<0.05) but not CMD or alcohol misuse. The subscale of Added Stressors (Section 4) was significantly positively associated with PTSD (r=0.48, p<0.001), CMD (r=0.16, p<0.01) and anger (r=0.17, p<0.01) (see Table 5).

Table 5: Bivariate correlations between MORIS subscales, MIES and psychometric outputs

	1	2	3	4	5	6	7	8	9	10
1. MORIS Section 1 – Commission/ Omission	-									
2. MORIS Section 1 – Betrayal	.08*									
3. MORIS Section 2 – Time since event	-0.02	-0.08								
4. MORIS Section 3 – Distress	0.22***	0.27***	0.02							
5. MORIS Section 4 – Adequate support	-0.05	-0.24***	0.01	-0.15**						
6. MORIS Section 4 – Added stressors	0.13*	0.15*	0.13*	0.52***	-0.08					
7. MIES	0.14***	0.41***	0.002	0.45***	-0.27***	0.28***				
8. PTSD	0.15***	0.24***	-0.11**	0.69***	-0.14*	0.48***	0.32***			
9. PHQ	0.10*	0.15**	-0.10*	0.37***	-0.09	0.16**	0.21***	0.44***		
10. AUDIT	0.09*	0.07	-0.02	0.10*	-0.09	0.03	0.11*	0.10*	-0.01	
11. DAR-5	0.10**	0.17***	-.11**	0.42***	-0.13*	0.17**	0.28***	0.48***	0.39***	0.10*

*Note. MIES, PTSD. PHQ, AUDIT, DAR-5 = reflects total scores on measures. ***=p<0.001; **=p<0.01; *=p<0.05.*

Study 2 – CFA

CFA was carried out on the Study 2 data set. Similar to the EFA, CFA was conducted separately on each of the MORIS subscales. The 'Acts of omission/commission' and 'Added stressors' factors were excluded from the CFA model a priori as they consisted of only 2 items each. This decision was made to avoid empirical under-identification (e.g., where the software will fail to yield a solution or will provide an improper solution) and is consistent with guidance that latent variables should be defined by a minimum of three indicators (71). Four items were ultimately excluded from the CFA due to poor loading – M14 ('I was not valued by more senior people in my organization'), M23 ('What happened has made me question my faith in my spiritual beliefs'), M32 ('I am angry at myself'), and M44 ('I felt able to talk to someone about how I felt following this experience(s)'). This decision was made to exclude poor loading items as a core objective of the MORIS factor analysis was to produce to brief scale with good validity.

The three-factor model with sufficient variables ('Distress', 'Betrayal' and 'Adequate support') was then evaluated using maximum likelihood estimation CFA (factor loadings reported in Figure 1). This model demonstrated good fit to the data as supported by the fit indices (see Table 6).

Distress and Betrayal subscales were positively associated (r=0.20), as were Betrayal and Support subscale (r=0.09) although these associations were small. The Distress and Support subscale were also negatively associated (r=-0.03).

Table 6: Summary of the CFA results

Model	χ^2	df	p	CFI	TLI	RMSEA	SRMR
Three Factor Model	126.36	90	0.007	0.98	0.97	0.032	0.06

Note. χ^2 – Chi-squared statistic. df – degrees of freedom. CFI = comparative fit index. TLI = Tucker Lewis Index. RMSEA = root mean square error of the approximation. SRMR = standardized root mean square residual.

Figure 1: Final Confirmatory Factor Analysis MORIS Model

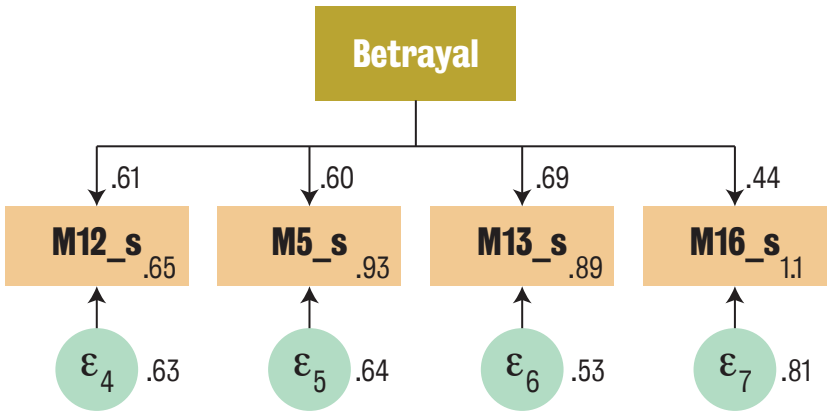
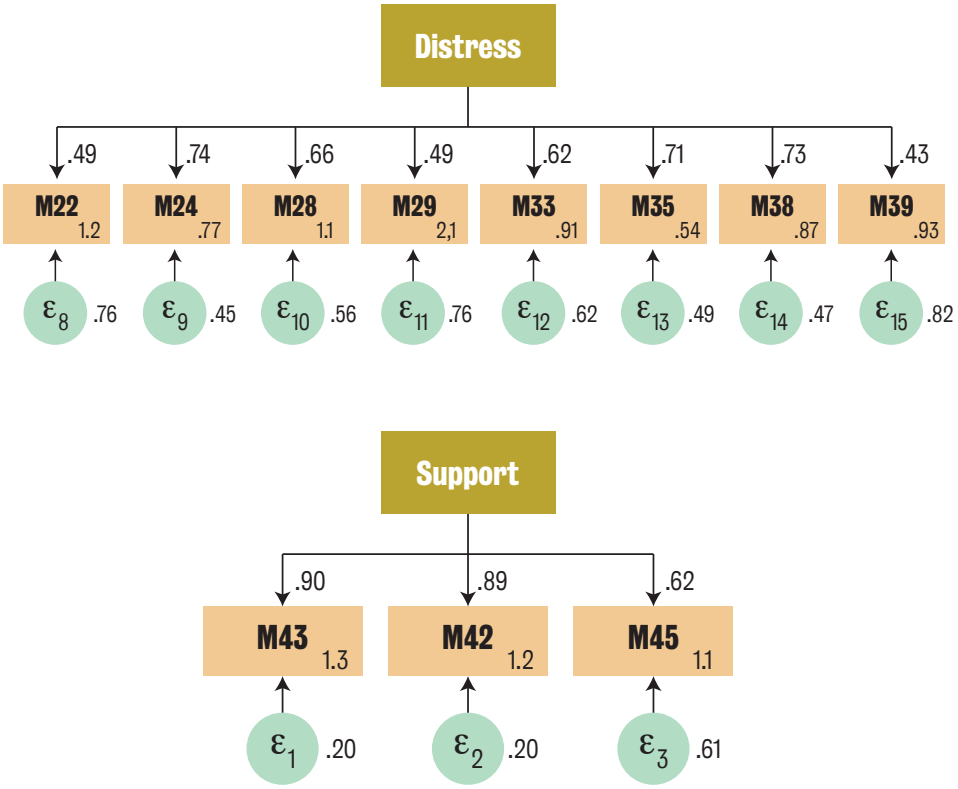


Figure 1 *continued*



Note. Standardized estimates reported. Betrayal = MORIS Section 1 subscale. Distress= MORIS Section 3 subscale. Support – MORIS Section 4 subscale.

The eight items of the MORIS Distress subscale were summed to create a total score reflecting moral injury distress (possible score range = 0-32). The relationship between the total scores on the MORIS Distress subscale, MIES and PCL-6, PHQ-4, SWEMBAS, AUDIT-C & DAR-5 were examined. Correlation coefficients and odds ratios (logistic regression) (see Table 7 & 8) indicate the MORIS Distress scale was more strongly associated with mental health and functional impairment outcomes compared to the MIES. Alcohol misuse was not significantly associated with either scale.

Predicting moral injury 'caseness'

To calculate potential cut off scores, using the cutpt Stata package, an optimal cut off point for the MORIS was estimated. The cutpt package was run to estimate an optimal MORIS cut off score against the PCL-6 and PHQ-4 caseness. Against PCL-6 caseness, a MORIS cut off score of 12.5 was recommended, while against the PHQ-4 a cut off score of 9.5 was recommended. Table 9 presents an abridged set of diagnostic accuracy data with the references PCL6 and PHQ-4 for the MORIS cut off scores of 6, 9, 12 and 21. MORIS scores of 12 and 21 demonstrated the best sensitivity, specificity and correctly classified cases when referenced against the PCL6 and PHQ-4. The AUC was strongest for a MORIS score of 12 when referenced against the PCL-6 (AUC 0.77), suggesting that a score of 12 or more may be indicative of moral injury. However, the AUC for these analyses were generally low.

Table 7: Bivariate correlations between MIES total score, MORIS Distress scale and psychometric outputs

	1	2	3	4	5	6
1. MIES	-					
2. MORIS Distress	0.45***					
3. PTSD	0.33***	0.65***				
4. PHQ	0.27***	0.53***	0.67***			
5. AUDIT	-0.03	0.09	0.13**	0.08		
6. DAR-5	0.32***	0.51***	0.64***	0.54***	0.12*	
7. SWEMBAS	-0.25***	-0.41***	-0.49***	-0.61***	-0.05	-0.48***

*Note. MIES, PTSD. PHQ, AUDIT, DAR-5, SWEMBAS= reflects total scores on measures. ***=p<0.001; **=p<0.01; *=p<0.05. MORIS distress = reflects total score on subscale.*

Table 8: Examining the relationship between mental health symptom cut off scores and the MORIS and MIES

Moral injury scale	PTSD case (95% CI)	CMD case (95% CI)	Alcohol misuse case (95% CI)	Anger (95% CI)
MORIS Distress AOR	4.36 (2.68; 7.08) p<0.001	2.22 (1.70; 2.90) p<0.001	1.20 (0.96; 1.51) p=0.12	2.48 (1.83; 3.36) p<0.001
MIES AOR	0.77 (0.48, 1.26) p=0.30	0.92 (0.71; 1.20) p=0.54	0.88 (0.70, 1.12) p=0.30	1.40 (1.02; 1.92) p=0.39

Note. Anger = cut off score for DAR-5. CI = confidence intervals. AOR = adjusted odds ratio; scores standardised by dividing scores by scale standard deviation. MORIS Distress and MIES= reflects total scores on measures.

Table 9: Properties of the MORIS for predicting probable PTSD and CMD

Probable moral injury identified by MORIS				
	AUC (95% CI)	Sensitivity	Specificity	Correctly classified
Probable PTSD identified by PCL6				
≥6	0.64 (0.60 - 0.68)	96.30%	31.87%	36.32%
≥9	0. 73 (0.68- 0.79)	92.59%	53.85%	56.52%
≥12	0.77 (0.70 - 0.85)	81.48%	73.08%	73.66%
≥21	0.64 (0.55 - 0.72)	29.63%	97.53%	92.84%
Probable CMD identified by PHQ-4				
≥6	0.60 (0.56 - 0.65)	84.55%	35.84%	49.61%
≥9	0.65 (0.60 - 0.70)	70.91%	58.78%	62.21%
≥12	0.66 (0.61 - 0.71)	53.64%	78.14%	71.21%
≥21	0.53 (0.50 - 0.56)	9.09%	97.49%	72.49%

a. AUC = area under the curve.

Discussion

A lack of empirically validated measurement tools has hampered robust conclusions about the experience and impact of moral injury in UK populations. In the current study we developed and validated the MORIS which includes subscales covering PMIE exposure, time since event, moral injury-related distress, and risk and protective factors. Our results indicate that the MORIS is a potentially valid measure for detecting moral injury in a UK population.

A 21-item scale, with four sections, was supported by factor analysis. Overall, the MORIS showed acceptable internal consistency and sections correlated with a standard measure of PMIE exposure on the MIES as well as psychometric measures of PTSD, CMD, and anger. This supports the suitability of the MORIS as this pattern is consistent with a growing body of international evidence which has also found a significant relationship between PMIEs and the development of mental health difficulties in a range of samples, including military personnel, healthcare workers, police, social workers and veterinarians (6,37,76–78). Statistically significant associations between the MIES and MORIS subscales and likely alcohol misuse were not consistently observed in the present study, with only the MORIS Section 1 subscale of commission or omission events significantly associated with greater alcohol misuse (Table 5). Several US studies have reported strong links between PMIE exposure and alcohol misuse (76,78); however, UK studies which used the EMIS (22) or the MIES (23) have not consistently observed this association (6,74,75). Additional studies are needed to clarify the relationship between experiencing moral injury and alcohol misuse to better understand this association and develop tailored support if necessary.

Analysis of Section three of the MORIS generated one subscale (Distress) reflecting symptoms characteristic of moral injury including guilt, shame, and anger. This subscale demonstrated good internal consistency. The MORIS Distress subscale was more strongly associated mental health outcomes of PTSD, CMD and anger compared to the MIES. This suggests that the MORIS is a more sensitive than the MIES when measuring moral injury-related mental health difficulties in a UK population.

We also examined potential cut off scores that could be used to indicate likely moral injury 'caseness'. Our findings suggest that scores on the MORIS Distress subscale ≥12 could be indicative of moral injury. This is consistent with a recent study of treatment seeking UK veterans (identified as having experienced moral injury by clinical care teams) who reported a mean of 17.6 (SD= 6.7) on the MORIS Distress subscale (Williamson et al., in prep). That said, this suggested MORIS Distress cut off score must be interpreted with caution given the modest AUC. Future evaluations of the MORIS are needed with larger samples of participants who have been identified as having (and not having) likely moral injury to determine a single best cut off value with high sensitivity, specificity and efficiency. It is possible that future studies could utilise the MORIS to explore the severity of moral injury-related distress as well prospective studies to examine the development of moral injury-related distress over time.

Our study has a number of limitations which should be considered. The associations between the MORIS subscales and psychometric measures supports the validity of the MORIS; however, using self-report to measure likely mental disorder caseness, rather than clinical interviews which are the gold standard, may have introduced bias. As current measures of moral injury (e.g. EMIS (22); MIES (23)) do not currently have an agreed cut off point, it was not possible to utilise these when determining a possible MORIS cut off score in the present study, instead measures of PTSD and CMD (strongly associated with post-PMIE outcomes (4,76)) were used. Additional research is needed which incorporates clinical assessment of the presence/absence of moral injury as well as likely mental disorders in future evaluations of the MORIS. Second, given the recruitment approach used, it is possible there may be biases associated with a population that responds to studies hosted on recruitment platforms such as Prolific rather than random selection. Third, despite using the same recruitment approach, the rates of likely mental disorders were considerably higher in Study 1 than Study 2. Nonetheless, the prevalence of likely mental disorders in Study 2 was broadly consistent with previous studies of mental disorder prevalence in the UK general population (79). Fourth, it should be noted that some factors – such as the Acts of Omission/Commission subscale (Section 1) - only included a small number of items and accounted for a small proportion of variance. As research in the field of moral injury expands, it is possible that other key concepts are identified which should be considered in future assessments. Finally, it was beyond the scope of this study to translate the MORIS into non-English languages so these findings of this study cannot necessarily be generalised to non-English speaking UK samples.

Conclusions

Despite these limitations, the findings of the present study indicate the utility of using the MORIS to measure moral injury. This study found that the MORIS is a reliable and valid assessment of moral injury. The MORIS captures a range of key components essential when considering the development and maintenance of moral injury regarding exposure to various PMIEs, moral injury-related distress symptoms and potential risk and protective factors. The MORIS can also be used to explore the severity of moral injury related distress and there is tentative evidence that a cut off score of 12 or greater could be used to suggest the presence of moral injury. In sum, the use of the MORIS may allow for a more robust exploration of how and when moral injury may develop in the aftermath of trauma.

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. 2009 Dec;29(8):695–706.
2. Williamson V, Murphy D, Phelps A, Forbes D, Greenberg N. Moral injury: the effect on mental health and implications for treatment. Lancet Psychiatry [Internet]. 2021 Jun 1 [cited 2021 Jul 16];8(6):453–5. Available from: http://www.thelancet.com/article/S2215036621001139/fulltext
3. 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
4. Williamson V, Stevelink SAM, Greenberg N. Occupational moral injury and mental health: Systematic review and meta-Analysis. British Journal of Psychiatry. 2018 Jun 1;212(6):339–46.
5. French L, Hanna P, Huckle C. "If I die, they do not care": U.K. National Health Service staff experiences of betrayal-based moral injury during COVID-19. Psychol Trauma [Internet]. 2021 Sep 13 [cited 2022 Jan 10]; Available from: https://psycnet.apa.org/psycarticles/2021-82683-001
6. Williamson V, Murphy D, Greenberg N. Experiences and impact of moral injury in U.K. veterinary professional wellbeing. Eur J Psychotraumatol [Internet]. 2022 Dec 31 [cited 2022 Apr 12];13(1). Available from: https://www.tandfonline.com/doi/full/10.1080/20008198.2022.2051351
7. 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
8. Williamson V, Murphy D, Stevelink SAM, Allen S, Jones E, Greenberg N. The impact of trauma exposure and moral injury on UK military veterans: a qualitative study. Eur J Psychotraumatol [Internet]. 2020 Dec 31 [cited 2020 Jan 17];11(1):1704554. Available from: https://www.tandfonline.com/doi/full/10.1080/20008198.2019.1704554
9. Williamson V, Murphy D, Stevelink SAM, Allen S, Jones E, Greenberg N. The impact of moral injury on the wellbeing of UK military veterans. BMC Psychol [Internet]. 2021 Dec 1 [cited 2021 Jun 28];9(1):1–7. Available from: https://doi.org/10.1186/s40359-021-00578-7
10. Battles AR, Bravo AJ, Kelley ML, White TD, Braitman AL, Hamrick HC. Moral injury and PTSD as mediators of the associations between morally injurious experiences and mental health and substance use. Traumatology (Tallahass Fla). 2018 Dec 1;24(4):246–54.
11. Ames D, Erickson Z, Nagy ;, Youssef A, Arnold I, Chaplain ;, et al. Moral Injury, Religiosity, and Suicide Risk in U.S. Veterans and Active Duty Military with PTSD Symptoms. Mil Med [Internet]. 2019 [cited 2020 Apr 28];184:271. Available from: https://academic.oup.com/milmed/article-abstract/184/3-4/e271/5038451
12. Williamson V, Murphy D, Castro C, Vermetten E, Jetly R, Greenberg N. Moral injury and the need to carry out ethically responsible research. Res Ethics. 2020;

13. Levin AP, Kleinman SB, Adler JS. DSM-5 and posttraumatic stress disorder. J Am Acad Psychiatry Law [Internet]. 2014 [cited 2016 Jul 28];42(2):146–58. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24986341

14. Litz BT, Kerig PK. Introduction to the Special Issue on Moral Injury: Conceptual Challenges, Methodological Issues, and Clinical Applications. J Trauma Stress. 2019 Jun 1;32(3):341–9.

15. Nash WP, Litz BT. Moral Injury: A Mechanism for War-Related Psychological Trauma in Military Family Members [Internet]. Vol. 16, Clinical Child and Family Psychology Review. Clin Child Fam Psychol Rev; 2013 [cited 2020 Aug 24]. p. 365–75. Available from: https://pubmed.ncbi.nlm.nih.gov/23852334/

16. Jordan AH, Eisen E, Bolton E, Nash WP, Litz BT. Distinguishing war-related PTSD resulting from perpetration-and betrayal-based morally injurious events. Psychol Trauma [Internet]. 2017 Nov 1 [cited 2020 Jul 9];9(6):627–34. Available from: /record/2017-00524-001

17. Bravo AJ, Kelley ML, Mason R, Ehlke SJ, Vinci C, Redman JC. Rumination as a Mediator of the Associations Between Moral Injury and Mental Health Problems in Combat-Wounded Veterans. Traumatology (Tallahass Fla) [Internet]. 2020 [cited 2022 Aug 4];26(1):52. Available from: /pmc/articles/PMC7449509/

18. Hamrick HC, Kelley ML, Bravo AJ. Morally Injurious Events, Moral Injury, and Suicidality among Recent-Era Veterans: The Moderating Effects of Rumination and Mindfulness. Mil Behav Health [Internet]. 2020 Jan 2 [cited 2023 Sep 26];8(1):109–20. Available from: https://www.tandfonline.com/doi/abs/10.1080/21635781.2019.1669509

19. Wisco BE, Marx BP, May CL, Martini B, Krystal JH, Southwick SM, et al. Moral injury in U.S. combat veterans: Results from the national health and resilience in veterans study. Depress Anxiety. 2017 Apr 1;34(4):340–7.

20. Williamson V, Murphy D, Stevelink SAM, Allen S, Jones E, Greenberg N. Delivering treatment to morally injured UK military personnel and Veterans: The clinician experience. Military Psychology [Internet]. 2021 [cited 2021 Jun 28];33(2):115–23. Available from: https://www.tandfonline.com/doi/abs/10.1080/08995605.2021.1897495

21. Steinmetz S, Gray M. Treatment for Distress Associated with Accurate Appraisals of Self-Blame for Moral Transgressions. Curr Psychiatry Rev [Internet]. 2015 Aug 5 [cited 2021 Jan 5];11(3):207–19. Available from: /record/2016-23266-007

22. 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

23. 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

24. Currier JM, Holland JM, Rojas-Flores L, Herrera S, Foy D. Morally injurious experiences and meaning in Salvadorian teachers exposed to violence. Psychol Trauma [Internet]. 2015 [cited 2017 Oct 25];7(1):24–33. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1037/a0034092

25. Lamb D, Greenberg N, Hotopf M, Raine R, Razavi R, Bhundia R, et al. NHS CHECK: protocol for a cohort study investigating the psychosocial impact of the COVID-19 pandemic on healthcare workers. BMJ Open [Internet]. 2021 [cited 2021 Sep 24];11:51687. Available from: http://bmjopen.bmj.com/

26. 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

27. Thomas V, Bizumic B, Cruwys T, Walsh E. Measuring Civilian Moral Injury: Adaptation and Validation of the Moral Injury Events Scale (Civilian) and Expressions of Moral Injury Scale (Civilian). Canberra; 2021 Oct.

28. Phelps AJ, Adler AB, Belanger SAH, Bennett C, Cramm H, Dell L, et al. Addressing moral injury in the military. BMJ Mil Health [Internet]. 2022 Jun 15 [cited 2022 Jun 23];e002128. Available from: https://militaryhealth.bmj.com/content/early/2022/06/14/bmjmilitary-2022-002128

29. Frankfurt S, Frazier P. A review of research on moral injury in combat veterans. Military Psychology. 2016 Sep 1;28(5):318–30.

30. Williamson V, Murphy D, Stevelink SAM, Allen S, Jones E, Greenberg N. The impact of trauma exposure and moral injury on UK military veterans: a qualitative study. Eur J Psychotraumatol [Internet]. 2020 Dec 31 [cited 2021 Oct 22];11(1). Available from: /pmc/articles/PMC6968592/

31. Schorr Y, Stein NR, Maguen S, Barnes J ben, Bosch J, Litz BT. Sources of moral injury among war veterans: A qualitative evaluation. J Clin Psychol [Internet]. 2018 Dec 1 [cited 2019 Jan 10];74(12):2203–18. Available from: http://doi.wiley.com/10.1002/jclp.22660

32. Papazoglou K, Chopko B. The Role of Moral Suffering (Moral Distress and Moral Injury) in Police Compassion Fatigue and PTSD: An Unexplored Topic. Front Psychol [Internet]. 2017 [cited 2019 Jun 21];8:1999. Available from: http://www.ncbi.nlm.nih.gov/pubmed/29187830

33. Currier JM, Holland JM, Malott J. Moral injury, meaning making, and mental health in returning veterans. J Clin Psychol. 2015 Mar 1;71(3):229–40.

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

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). 2011 Mar;17(1):8–13.

36. Atuel HR, Barr N, Jones E, Greenberg N, Williamson V, Schumacher MR, et al. Understanding moral injury from a character domain perspective. Journal of Theoretical and Philosophical Psychology. 2021 Apr 29;

37. Bryan CJ, Bryan ABO, 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. 2016 Oct 1;23(5):557–70.

38. Yeterian JD, Berke DS, Carney JR, McIntyre-Smith A, st. Cyr K, King L, et al. Defining and Measuring Moral Injury: Rationale, Design, and Preliminary Findings From the Moral Injury Outcome Scale Consortium. J Trauma Stress [Internet]. 2019 Jun 1 [cited 2022 May 26];32(3):363–72. Available from: https://pubmed.ncbi.nlm.nih.gov/30947372/

39. Nickerson A, Schnyder U, Bryant RA, Schick M, Mueller J, Morina N. Moral Injury in Traumatized Refugees. Psychother Psychosom [Internet]. 2015 Mar 19 [cited 2021 Oct 29];84(2):122–3. Available from: https://www.karger.com/Article/FullText/369353

40. Nieuwsma JA, Brancu M, Wortmann J, Smigelsky MA, King HA, Meador KG, et al. Screening for moral injury and comparatively evaluating moral injury measures in relation to mental illness symptomatology and diagnosis. Clin Psychol Psychother. 2021 Jan 1;28(1):239–50.

41. Foa E. PDS: Posttraumatic Stress Diagnostic Scale: manual. 1995 [cited 2016 May 26]; Available from: https://scholar.google.com/scholar_lookup?title=Posttraumatic%20Stress%20Diagnostic%20Scale%20Manual&author=EB%20Foa&publication_year=1995#0

42. Foa EB, Cashman L, Jaycox L, Perry K. The validation of a self-report measure of PTSD: The Posttraumatic Diagnostic Scale. Psychol Assess. 1997;9(4):445–451.

43. Haight W, Sugrue E, Calhoun M, Black J. "Basically, I look at it like combat": Reflections on moral injury by parents involved with child protection services. Child Youth Serv Rev. 2017 Nov 1;82:477–89.

44. Held P, Klassen BJ, Zou DS, Schroedter BS, Karnik NS, Pollack MH, et al. Negative Posttrauma Cognitions Mediate the Association Between Morally Injurious Events and Trauma-Related Psychopathology in Treatment-Seeking Veterans. J Trauma Stress. 2017 Dec 1;30(6):698–703.

45. Weathers FW, Litz BT, Herman DS, Huska J a., Keane TM. The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility. Paper presented at the Annual Meeting of International Society for Traumatic Stress Studies, San Antonio, TX, October, 1993 . 1993;

46. Lang AJ, Wilkins K, Roy-Byrne PP, Golinelli D, Chavira D, Sherbourne CE, et al. Abbreviated PTSD Checklist (PCL) as a guide to clinical response . [cited 2022 Aug 4]; Available from: www.sciencedirect.com

47. Sudom K. Evaluation of three abbreviated versions of the PTSD Checklist in Canadian Armed Forces personnel | Journal of Military, Veteran and Family Health. [cited 2023 Jan 25]; Available from: https://jmvfh.utpjournals.press/doi/pdf/10.3138/jmvfh-2019-0062

48. Han B, Wong EC, Mao Z, Meredith LS, Cassells A, Tobin JN. Validation of a Brief PTSD Screener for Underserved Patients in Federally Qualified Health Centers. Gen Hosp Psychiatry [Internet]. 2016 Jan 1 [cited 2023 Jan 25];38:84. Available from: /pmc/articles/PMC4698219/

49. K K, RL S, JB W, B L. An ultra-brief screening scale for anxiety and depression: the PHQ-4. Psychosomatics [Internet]. 2009 [cited 2021 Oct 29];50(6):613–21. Available from: https://pubmed.ncbi.nlm.nih.gov/19996233/

50. Khubchandani J, Brey R, Kotecki J, Kleinfelder JA, Anderson J. The Psychometric Properties of PHQ-4 Depression and Anxiety Screening Scale Among College Students. Arch Psychiatr Nurs. 2016 Aug 1;30(4):457–62.

51. Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG. AUDIT-The Alcohol Use Disorders Identification Test- Guidelines for use in primary care. World Health Organization. 2001.

52. AUDIT & AUDIT-C | Drink Talking Portal [Internet]. [cited 2023 Jan 25]. Available from: https://www.drinktalkingportal.co.uk/clinical-guidance/alcohol-abuse-screening/alcohol-audit-audit-c

53. Barry AE, Chaney BH, Stellefson ML, Dodd V. Evaluating the psychometric properties of the AUDIT-C among college students. https://doi.org/103109/146598912013856479 [Internet]. 2014 Feb 1 [cited 2022 Jan 29];20(1):1–5. Available from: https://www.tandfonline.com/doi/abs/10.3109/14659891.2013.856479

54. Jeong HS, Park S, Lim SM, Ma J, Kang I, Kim J, et al. Psychometric Properties of the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) in Public First Responders. https://doi.org/101080/1082608420161271986 [Internet]. 2017 Jul 3 [cited 2022 Jan 29];52(8):1069–75. Available from: https://www.tandfonline.com/doi/abs/10.1080/10826084.2016.1271986

55. UTILITY OF THE DIMENSIONS OF ANGER REACTIONS–5 (DAR 5) SCALE AS A BRIEF ANGER MEASURE - Forbes - 2014 - Depression and Anxiety - Wiley Online Library [Internet]. [cited 2020 Aug 13]. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/da.22148?casa_token=SnLkb_wHR18AAAAA%3AfFDfkVsV1NYM8zOZzr9udVaw__OWKK54liyQxtr0Q4TApvQxbgQShga7bysW8U-2BW-OhCcDEHMIa9o

56. Forbes D, Hawthorne G, Elliott P, McHugh T, Biddle D, Creamer M, et al. A concise measure of anger in combat-related posttraumatic stress disorder. J Trauma Stress. 2004 Jun;17(3):249–56.

57. Forbes D, Alkemade N, Mitchell D, Elhai JD, McHugh T, Bates G, et al. UTILITY OF THE DIMENSIONS OF ANGER REACTIONS-5 (DAR-5) SCALE AS A BRIEF ANGER MEASURE. Depress Anxiety [Internet]. 2014 Feb 1 [cited 2020 Aug 13];31(2):166–73. Available from: http://doi.wiley.com/10.1002/da.22148

58. Forbes D, Alkemade N, Hopcraft D, Hawthorne G, O'Halloran P, Elhai JD, et al. Evaluation of the Dimensions of Anger Reactions-5 (DAR-5) Scale in combat veterans with posttraumatic stress disorder. J Anxiety Disord. 2014 Dec 1;28(8):830–5.

59. Stewart-Brown S, Tennant A, Tennant R, Platt S, Parkinson J, Weich S. Internal construct validity of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): A Rasch analysis using data from the Scottish Health Education Population Survey. Health Qual Life Outcomes [Internet]. 2009 Feb 19 [cited 2023 Jan 16];7(1):1–8. Available from: https://hqlo.biomedcentral.com/articles/10.1186/1477-7525-7-15

60. Weich S, Stewart-Brown S, Parkinson J, Tennant R, Hiller L, Fishwick R, et al. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): development and UK validation. Health Qual Life Outcomes. 2007;5(1).

61. Stewart-Brown S, Tennant A, Tennant R, Platt S, Parkinson J, Weich S. Internal construct validity of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): A Rasch analysis using data from the Scottish Health Education Population Survey. Health Qual Life Outcomes [Internet]. 2009 Feb 19 [cited 2020 Sep 21];7(1):15. Available from: https://hqlo.biomedcentral.com/articles/10.1186/1477-7525-7-15

62. Fabrigar LR, Wegener DT, Maccallum RC, Strahan EJ. Evaluating the Use of Exploratory Factor Analysis in Psychological Research. Psychol Methods. 1999;4(3):272–99.

63. Widaman K. Common Factor Analysis Versus Principal Component Analysis: Differential Bias in Representing Model Parameters? Vol. 28, Multivariate Behavioral Research. Lawrence Erlbaum Associates, Inc.; 1993. p. 263–311.

64. Williams B, Onsman A, Brown T. Exploratory factor analysis: A five-step guide for novices. Journl of Emergency Primary Health Care. 2012;19(May):42–50.

65. Williams B, Onsman A, Brown T. Exploratory factor analysis: A five-step guide for novices. Journal of Emergency Primary Health Care. 2010;8(3).

66. Matsunaga M. How to factor-analyze your data right: Do's, don'ts, and how-to's. Int J Psychol Res (Medellin). 2011;

67. Horn JL. A rationale and test for the number of factors in factor analysis. Psychometrika [Internet]. 1965 Jun [cited 2016 Jul 22];30(2):179–85. Available from: http://link.springer.com/10.1007/BF02289447

68. Raharjanti NW, Wiguna T, Purwadianto A, Soemantri D, Indriatmi W, Poerwandari EK, et al. Translation, validity and reliability of decision style scale in forensic psychiatric setting in Indonesia. Heliyon. 2022;8(7).

69. Shi J, Mo X, Sun Z. Content validity index in scale development. Journal of Central South University (Medical Sciences). 2012;37(2).

70. Byrne BM. Factor Analytic Models: Viewing the Structure of an Assessment Instrument From Three Perspectives. J Pers Assess [Internet]. 2005 [cited 2023 Jan 25];85(1):17–32. Available from: https://www.tandfonline.com/action/journalInformation?journalCode=hjpa20

71. Brown T. Confirmatory Factor Analysis for Applied Research, Second Edition - Timothy A. Brown - Google Books [Internet]. 2nd ed. New York: Guilford Press; 2015 [cited 2023 Jan 25]. Available from: https://books.google.co.uk/books?hl=en&lr=&id=tTL2BQAAQBAJ&oi=fnd&pg=PP1&dq=brown+confirmatory+factor+analysis&ots=alVvsLVP5G&sig=6CQJiR_Kjx7twNSsQYFLX4URcYg#v=onepage&q=brown%20confirmatory%20factor%20analysis&f=false

72. Clayton P, Clayton, Phil. CUTPT: Stata module for empirical estimation of cutpoint for a diagnostic test. 2013 Oct 16 [cited 2023 Feb 1]; Available from: https://EconPapers.repec.org/RePEc:boc:bocode:s457719

73. Gerke O, Zapf A. Convergence Behavior of Optimal Cut-Off Points Derived from Receiver Operating Characteristics Curve Analysis: A Simulation Study. Mathematics [Internet]. 2022 Nov 1 [cited 2023 Sep 26];10(22):4206. Available from: https://www.mdpi.com/2227-7390/10/22/4206/htm

74. Williamson V, Lamb D, Hotopf M, Raine R, Stevelink S, Wessely S, et al. Moral injury and psychological wellbeing in UK healthcare staff. medRxiv [Internet]. 2022 Jun 16 [cited 2022 Jun 23];2022.06.16.22276476. Available from: https://www.medrxiv.org/content/10.1101/2022.06.16.22276476v1

75. Williamson V, Greenberg N, Murphy D. Predictors of moral injury in UK treatment seeking veterans. Child Abuse Negl [Internet]. 2021 Feb 1 [cited 2022 Jul 6];112. Available from: https://pubmed.ncbi.nlm.nih.gov/33360537/

76. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral Injury: An Integrative Review. J Trauma Stress. 2019 Jun 1;32(3):350–62.

77. Papazoglou K, Chopko B. The Role of Moral Suffering (Moral Distress and Moral Injury) in Police Compassion Fatigue and PTSD: An Unexplored Topic. Front Psychol [Internet]. 2017 Nov 15 [cited 2022 Aug 9];8(NOV). Available from: /pmc/articles/PMC5694767/

78. Battles AR, Kelley ML, Jinkerson JD, C. Hamrick H, F. Hollis B. Associations Among Exposure to Potentially Morally Injurious Experiences, Spiritual Injury, and Alcohol Use Among Combat Veterans. J Trauma Stress [Internet]. 2019 Jun 6 [cited 2020 Apr 28];32(3):405–13. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/jts.22404

79. Baker C. Mental health statistics: prevalence, services and funding in England [Internet]. London; 2021 Dec [cited 2023 Jan 25]. Available from: https://commonslibrary.parliament.uk/research-briefings/sn06988/

Appendix 7

Development of an intervention for moral injury-related mental health difficulties in UK military veterans: a feasibility pilot study protocol

Victoria Williamson[a], Dominic Murphy[b,c], Vicky Aldridge[c], Amanda Bonson[c], Danai Seforti, Neil Greenberg[b]

Affiliations: [a]Department of Experimental Psychology, Anna Watts Building, University of Oxford, Oxford, OX2 6 GG; [b]Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, SE5 9RJ; [c]Research Department, Combat Stress, Leatherhead, Surrey

Word count: 5870
Ethical approval: This study was approved by the King's College London's Research Ethics Committee (HR-20/21-20850).

Abstract

Background: Experiencing potentially morally injurious events (PMIEs) has been found to be significantly associated with poor mental health outcomes in military personnel/veterans. Currently no manualised treatment for moral injury-related mental health difficulties for UK veterans exists. This article describes the design, methods and expected data collection of the Restore & Rebuild (R&R) protocol, which aims to develop procedures to treat moral injury related mental health informed by a codesign approach.

Methods: The study consists of three main stages. First, a systematic review will be conducted to understand the best treatments for the symptoms central to moral injury-related mental ill health (stage 1). Then the R&R manual will be co-designed with the support of UK veteran participants with lived experience of PMIEs as well as key stakeholders who have experience of supporting moral injury affected individuals (stage 2). The final stage of this study is to conduct a pilot study to explore the feasibility and acceptability of the R&R manual (stage 3).

Results: Qualitative data will be analysed using thematic analysis.

Conclusions: This study was approved by the King's College London's Research Ethics Committee (HR-20/21-20850). The findings will be disseminated in several ways, including publication in academic journals, a free training event and presentation at conferences. By providing information on veteran, stakeholder and clinician experiences, we anticipate that the findings will not only inform the development of an acceptable evidence-based approach for treating moral injury-related mental health problems, but they may also help to inform broader approaches to providing care to trauma exposed military veterans.

Highlights

No manualised treatment for UK veterans with moral injury-related mental health difficulties currently exists.

This protocol outlines the co-design process of the Restore & Rebuild (R&R) treatment.

R&R will be informed by a comprehensive review of existing research, interviews with international stakeholders, interviews with UK veterans & feedback from veteran patients who receive R&R.

Introduction

Moral injury may follow events which greatly transgress from one's deeply held moral and ethical belief systems and frequently comprises of feelings of guilt, shame, disillusionment and anger [12,37]. Potentially morally injurious events (PMIEs) can be categorised into three distinct event types: acts of commission, omission or betrayal by a trusted other [1]. While it has been recognised that moral injury is experienced in civilian settings, currently the majority of literature on moral injury stems from experiences of military personnel [9,38]. In military personnel and veterans, an example of an act of commission could be guiding a bomb to a location which unintentionally leads to the

wounding or killing of civilians in combat; or having to make clinical decisions with limited resources in a deployment theatre which leads to some patients dying who could have otherwise survived. An act of omission in a military context may be not being able to feed starving local children or protect them from violence due to rules of engagement. Finally, a PMIE involving betrayal may be experienced when a veteran perceives their injury results from being provided with inadequate battlefield safety equipment or has been mistreated historically under policies that have now changed, such as being discharged for being gay or pregnant.

Moral injury may have profound effects on an individual's view of themselves and others, commonly describing a loss of identity or sense of self, as well as a mistrust of others, with a worldview they can no longer make sense of [4,39] After experiencing PMIEs, people may question their identity in relation to previously held 'just-world' beliefs about good and bad people and how they define themselves within these measures [4,39]. The emotions described most frequently by veterans and other professionals are shame, guilt and anger as well as sadness, anxiety and disgust [3,40]. Moral injury has subsequently been significantly associated with symptoms of PTSD, depression, anxiety, [38,41] increased suicidality [7,38,42] and alcohol misuse [6,10]. Furthermore, exposure to PMIE can significantly impact the family of the veteran and their occupational functioning; veterans describe withdrawal from loved ones, avoidance of disclosing the event, increased risk-taking behaviours and distrust of authority leading to wider social difficulties such as workplace relationships [2]. Here, veterans described feelings of shame as being a barrier to relationships with their loved ones as well as feelings of guilt connecting with their family who are safe and healthy after witnessing devastation of families during deployment [2].

While individuals who experience what appear to be classically traumatic events, involving threats to self or others, may present with symptoms of posttraumatic stress disorder (PTSD), it is not uncommon for them also to report symptoms characteristic of moral injury (ie shame, guilt, worthlessness) if clinicians ask about them [34]. However, there are some clear distinctions between PTSD and moral injury [43]. Those experiencing symptoms of moral-injury related trauma tend to have increased negative cognitions relating to self, self-blame, sadness and increased re-experiencing symptoms compared to those who have experienced life-threat traumas [44,45]. Those who have been exposed to PMIEs also have been found to have increased suicidality and rumination [6] in comparison to veterans without PMIE exposure. Moreover, large national studies of US veterans find, after controlling for trauma history, psychiatric history & demographic characteristics, those exposed to PMIEs are at increased risk of psychiatric symptoms than those not exposed [46].

Cases of mental illness associated with moral injury can be challenging for clinical care teams to treat. Currently no manualised treatment for moral injury-related mental health difficulties exists and clinicians have reported considerable uncertainty about the best approach for managing patient symptoms [34,47,48]. For example, it has been argued that when exposure-based PTSD treatments are applied to those who have experienced PMIEs, it may be unhelpful – or even harmful – if insufficient attention is paid to the emotional processing of patient's symptoms of shame and guilt [49,50]. Equally, many evidence-based approaches for PTSD (e.g. trauma-focused CBT) utilise cognitive restructuring to update a patient's erroneous, maladaptive or distorted appraisals and replace them with more adaptive beliefs about the self or event. However, this may not be effective or appropriate in cases of moral injury where a patient's distress arises from PMIEs, including acts of perpetration, where appraisals of blame may be accurate or appropriate [50]. Finally, recent studies have found evidence of increased moral-injury related difficulties (e.g. shame, guilt, anger) amongst those who met criteria for Complex PTSD (CPTSD) exposed to PMIEs [5], with CPTSD presentations being associated with poorer treatment outcomes [51]. Taken together, these findings highlight a clinical need for a manualised treatment that has been developed for the distinct needs of those who have experienced PMIEs, which may not currently be being met through existing PTSD treatment approaches.

The lack of a manualised treatment, lower clinician confidence in treating cases of moral

injury [32,34,52] and the significant associations found between PMIE exposure and suicidality suggests that moral injury may represent an important public health concern. Whilst there is some early evidence of potential treatments for moral injury related mental health difficulties in the USA, such as 'The Impact of Killing' treatment [22,40]. This treatment is thought to be beneficial by helping veterans to acknowledge their distress and increase feelings of acceptance and forgiveness, whilst also addressing spiritual dimensions [22,40]. However, "Impact of Killing" focuses primarily on acts of perpetration (i.e. killing in war) and wouldn't target the range of PMIEs that UK veterans have been found to be exposed to (i.e. acts of omission or betrayal). Another proposed treatment, Adaptive Disclosure [53] has also been developed to treat moral injury in US veterans which considers a wider range of PMIEs. Evidence suggests that Adaptive Disclosure can be effective for those who suffer from MI-related difficulties [54], but this treatment was developed for, and currently has only been delivered to small numbers of US military populations [21]. Studies have shown there are key differences in trauma exposure and resultant mental health difficulties between UK and US militaries [23,55–57]. US and UK troops can have different approaches to how they conduct themselves on deployment [23,56] making translating a US approach to a UK context challenging, suggesting that a treatment which considers the needs of UK personnel/veterans could be beneficial.

Developing a treatment for UK veterans who have experienced moral injury that is acceptable and well tolerated represents a number of challenges. First, the very nature of PMIEs and resulting symptoms of shame and guilt may make accessing and engaging in treatment particularly challenging for patients. UK veterans also have higher rates of treatment drop out, lower engagement and higher rates of relapse compared to the general population rates [24] . A frequently reported reason for veteran treatment drop-out is a belief that their unique military experiences and trauma exposure cannot be understood by a civilian treatment centre [31] .

One approach often used in healthcare service design and development is 'codesign', where the lived experiences and knowledge of service users themselves are incorporated to enhance the quality and experiences of care. Codesign aims to develop a detailed understanding of how key stakeholders and service users perceive and experience the look, feel, processes and structures of a service [25,26]. By engaging stakeholders and service users in codesigning a service, this is argued to result in better care and improved service performance by emphasising individual's subjective experiences at various stages in the care pathway which, in turn, may lead to improvements in health outcomes and more efficient use of limited healthcare resources [25,26]. Given the increased awareness of the exposure and deleterious impact experiences of PMIE can have on veteran wellbeing, an acceptable treatment that helps veterans process and manage symptoms characteristic of moral injury, improves daily functioning and repairs veterans' relationships with themselves and others is urgently needed. The Rebuild and Restore (R&R) study will develop procedures to treat moral injury related mental health informed by a codesign approach. This article describes the R&R codesign protocol. Data collection for this study will take place between October 2021 and November 2022. The codesigned procedures will be evaluated in a subsequent feasibility pilot study and, if indicated, a randomised control trial.

Method

This protocol and its associated procedures were approved by the King's College London Research Ethics Committee (HR-20/21-20850).

Study design

The purpose of this project will be to develop a manualised treatment for UK veterans experiencing moral injury-related mental ill health characterised as a 'moral injury' following exposure to a PMIE. The project will have three main stages. The first of these is to conduct a systematic review to understand the best treatments for the symptoms central to moral injury-related mental ill health. The second stage is to co-design the intervention with the support of veteran participants with lived experience of PMIEs as well as key stakeholders, including clinicians and members of the clergy who have been involved with supporting moral

injury affected individuals. The final stage of this study will be to conduct a pilot study to explore the feasibility and acceptability of the intervention we developed (see Figure 1).

Several of the key elements of the treatment will be specified in advance of the codesign work based on the existing empirical literature on moral injury and consultation with clinicians working at a national mental health charity in the UK that provides clinical services to veterans with complex mental health needs (Combat Stress [58]). Specifically, it was pre-specified that veteran exposure to PMIE would be assessed by screening questionnaires and by clinicians conducting the veteran patient's initial assessment, which takes place when a patient is referred for psychological support. As the trial will be run during the course of COVID-19 social distancing restrictions, it was prespecified that treatment would take place with a therapist on a one-to-one basis using an online video consultation platform (i.e. MS Teams). The one-to-one online method of delivery was agreed as it has the potential to overcome many of the barriers to care detailed above, such as veterans' feelings of shame and guilt surrounding the PMIE which might potentially prevent disclosure and discussion in a group therapy setting. It was also prespecified that the therapist will be a CBT practitioner. CBT practitioners are postgraduate psychological therapists who have received specific (12 months) training in the delivery of psychological therapies to patients who have difficulties with anxiety, depression, PTSD and suicidality. The therapist will be based within a mental health setting (Combat Stress) where they can offer rapid access to other manualised psychological therapies and have access to an interdisciplinary team, should the developed R&R manual prove ineffective. Participants will then be followed up three months after completing treatment to monitor treatment outcomes.

In parallel to this research, we are working on refining a measure for screening for moral injury event exposure and event-related distress (Moral Injury scale [MORIS], [8] In the interim, to screen veteran patients for PMIE exposure and associated distress, exposure will be determined via clinician rating during the patient's initial assessment for treatment at Combat Stress. Following a detailed clinical assessment, the details of veterans who express symptoms of moral injury related mental health difficulties will be forwarded onto treatment therapist for review. Following review of the completed assessment, the therapist will contact the veteran to discuss the pilot and through discussion of moral injury, will obtain confirmation from the veteran that moral injury appears to be their main presenting difficulty. Following this screening outcome measures will be sent to the veteran including validated questionnaire measure of military moral injury (Expressions of Moral Injury measure (EMIS, [77]). This approach was based on feedback from Combat Stress that the use of questionnaires and clinician assessment is standard practice on referral to Combat Stress and would fit well with their existing procedures.

We will use a mixed-method codesign process to determine what aspects the intervention treatment manual should include, how the treatment should be presented to prospective patients, and by whom, and to address any important considerations to optimise accessibility of, and engagement with the treatment.

The codesign process of the treatment manual will consist of three stages (see Figure 1). Stage 1 will involve an initial systematic review of the existing literature about effective treatment approaches for managing core symptoms thought to be associated with PMIE exposure, namely guilt, shame and anger (Seforti et al., under review). This review will be followed by scoping interviews with leading world expert stakeholders to explore their experience and beliefs about treating moral injury-related distress (Stage 2). The stakeholder interviews, coupled with the results of the systematic review, will inform the development of the initial core features of the manual (Stage 2). Interviews will also be conducted with UK veterans who experienced PMIEs, with their feedback sought on the proposed core features of the manual and how it compares to their previous experiences of treatment (Stage 2). The manual will be further revised and refined following veterans' feedback (Stage 2) and then delivered to veteran patients who are experiencing moral injury-related distress at Combat Stress (Stage 3). Psychological outcome measures will be administered pre/post treatment, as well as at multiple time points throughout

the treatment, to assess the effectiveness of the developed treatment manual in reducing veteran symptoms of PTSD, depression, alcohol misuse and expressions of moral injury (e.g. symptoms of guilt, shame, anger). These veteran patients will also be invited to provide their feedback on their experience of receiving the developed treatment with further amendments made to the manual where necessary (Stage 3). Feedback from any veteran patients who drop out of treatment will also be sought to ensure any barriers to engagement are captured (Stage 3). The therapist who delivers the treatment manual will also be interviewed about their views of the manual in the first six months of the trial and on trial completion (Stage 3).

Patient and Public Involvement and Engagement (PPIE)

Involvement from veterans, clinicians, leading experts in the field of moral injury and wider stakeholders informed the development of this protocol, the prespecified elements of the pathway, and will contribute throughout the delivery of the codesign project. At the protocol development stage, consultation was carried out with veterans with lived experience, leading experts and representatives from key policy and practitioner organisations. Examples of decisions that were made on the basis of this consultation include specifically focusing recruitment on veterans who were seeking psychological treatment from Combat Stress on the basis that Combat Stress is a well-established organisation for providing mental health treatment to trauma exposed veterans, and this setting will allow for rapid delivery of alternative validated treatments should the developed treatment be poorly tolerated by patients.

Throughout the codesign process, we will conduct PPIE and consult with external stakeholders in the following ways: (1) five clinical psychologists and one psychiatrist with experience of treating military and civilian patients exposed to PMIEs, and two chaplains who provide pastoral support to the UK AF, who are independent from the research team will contribute to the manual development decisions made at a strategic level. (2) This dedicated stakeholder group will meet regularly to review manual procedures data and to make decisions to address how to solve key issues and manage potentially conflicting points of view that have emerged through the codesign process.

Codesign participants

Participants will include leading professional stakeholders in the field of moral injury (Stage 2), UK AF veteran participants (Stage 2), and veteran patients who will receive the developed treatment from Combat Stress (Stage 3). Expected recruitment numbers for each group are detailed in Table 1 and final numbers will be informed by assessing the range of views represented in the sample and the data provided by participants.

Table 1. Recruitment estimates

	Expert professional stakeholders	Veteran participants	Veteran patients	Therapist
Stage 1. Exploration of existing evidence				
Stage 2. Development and refinement of core treatment features	15	20		
Stage 3. Evaluating the treatment and treatment acceptability			20	1

Note. The veteran participants are participants who were interviewed about their views on the treatment features that had been developed in Stage 2. These participants will not be offered the developed treatment from Combat Stress (Stage 3).

Participant recruitment and inclusion/exclusion criteria

Stage One. As Stage one consists of a systematic review, no participants will be recruited for this stage of the project.

Stage Two. To recruit expert professional stakeholders with a wide range of perspectives to Stage two, we will circulate study advertisements within organisations that provide mental health treatment to UK AF personnel/veterans, as well as via mailing lists and social media. Contact details of leading professionals in the field of moral injury will be sought from relevant moral injury publications, with emails sent inviting the individual for an interview. Participating expert professional stakeholders will also be asked to share the study with potentially eligible colleagues. The 15 expert professional stakeholders will be eligible to participate if they have experience of either providing clinical treatment or another form of support (e.g. chaplaincy support) to service personnel, veterans or civilians who have experienced moral injury. Alternatively, expert professional stakeholders must have experience of carrying out evidence-based moral injury research published in academic journals. No limitation on expert professional stakeholder eligibility will be imposed according to demographic characteristics (e.g. gender, age, etc.) or professional grade, rank or qualification (e.g. PhD, clinical psychologist, psychiatrist, etc.) will be imposed. This inclusive strategy will ensure we collect rich data from a range of professionals with diverse knowledge of moral injury and military mental health.

To recruit UK AF veterans to Stage two interviews, a similar process will be followed in that study advertisements will be shared via mailing lists, social media and in veteran-affiliated newsletters. Participating veterans in Stage two will also be asked to share the study with potentially eligible veterans. Veterans will be eligible to participate if they are UK AF veterans, with self-report questions administered in an attempt to ensure this is the case. Self-report questions will also be issued to examine whether UK AF veterans experienced military-related moral injury (e.g. "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?") as well as a standardised questionnaire measure of moral injury (see psychometric assessments section below). The inclusion of veterans who self-report experiencing a moral injury will ensure that the information they provide will meaningfully inform the moral injury treatment manual development. Participants will not be excluded by self-reported demographic characteristics (e.g. gender, age, rank). Further, we will not restrict participation by self-reported deployment location or AF service branch. We will exclude veteran participants who are not aged 18 years or more, who do not self-report experiencing a moral injury; have speech or hearing difficulties or are unwilling to provide informed consent.

All participants in Stage two will be required to give verbal (audio-recorded) consent.

Stage Three. To recruit veteran patients (Stage three) to the pilot of the treatment manual, veterans who have expressed moral injury as their main presenting difficulty during their clinical assessment will have their details forwarded onto the pilot therapist for further screening. Following the screening of assessment notes, the therapist will conduct a screening call with the veteran to discuss moral injury, the veterans' current difficulties and the treatment pilot. In doing so, confirmation of treatment suitability can be obtained and initial potential barriers to treatment can be addressed. A minimum of 20 veteran patients will be recruited to receive the developed treatment manual. To receive the treatment, participants must be UK AF veterans who are engaged with the mental health charity for treatment. Participant moral injury will be determined via clinician rating as well as a questionnaire measure of moral injury (EMIS; [77]). In line with inclusion/exclusion criteria for veterans in Stage two, veteran patients in Stage three will not be excluded by self-reported demographic criteria (e.g. gender, rank, age), AF branch or deployment location. Veteran patients will be excluded if they are not aged 18 years or more; do not have moral injury-related mental health problems as determined by their assessing clinician; have speech or hearing difficulties; are not proficient in English; or are unwilling to provide informed consent. Veteran patients will also be excluded if they have active self-harm or

suicidal ideation; if they completed an alternative treatment within the last three months; if they have planned concurrent additional treatment; severe psychotic disorder, dissociative identity or other severe mental health disorder (identified by previous diagnosis); serious cognitive impairment; concurrent significant life stressors that impairs ability to engage in therapy at this time (i.e. homelessness, currently in court case etc.); or current alcohol or drug abuse disorder.

To recruit veteran patients to the acceptability interviews (Stage three), veteran patients will be contacted at various stages of the treatment process and invited to an interview about their experiences of treatment. For example, up to 10 patients will be recruited to interviews within their first ten sessions of treatment. Veteran patients will be interviewed by a member of the research team not affiliated with Combat Stress and informed that the information they provide will be held confidentially and will not be reported back to the Combat Stress therapist unless the patient disclosed a risk of harming themselves or others. All veteran patients will provide written consent prior to participation in the trial and study interviews.

Procedure

We will collect data and analyse at three stages to inform the treatment manual development. We will follow the Medical Research Council's guidance on the development of complex interventions [59,60].

Stage One. In line with MRC guidance for complex intervention development [59,60] we will begin by reviewing published evidence to identify existing interventions for the core symptoms associated with experiences of PMIEs, specifically guilt, shame and anger. This will offer insight into existing effective – as well as ineffective – interventions. The review will provide an understanding of what causal factors or existing intervention components that have the greatest scope for producing patient symptom change and provide an evidence base for intervention components that may be included in the developed treatment manual [60].

Stage Two. Building on the results of the Stage 1 systematic review, we will conduct one-to-one interviews with leading professional stakeholders in the field of moral injury. These interviews will generate insight about the content, format and delivery of the treatment manual. Interviews will explore participants views about: the core challenges faced in providing support or treatment to individuals with moral injury-related mental health problems; the support or treatments currently available in cases of moral injury; and features of existing support or treatments that may help or hinder psychological recovery. Interviews will be conducted remotely via telephone or video conferencing (e.g. MS Teams), audio-recorded and subsequently transcribed verbatim. These data will be used to develop a detailed prototype of the manual to be developed further and tested.

One-to-one in-depth interviews will also be conducted with veterans who have experienced military-related PMIEs. Interview questions will draw on questioning techniques informed by the Critical Incident Approach [61] to explore veterans' perceptions of the psychological difficulties faced by those who experience PMIEs; features of previous treatments that have helped/hindered their recovery; and aspects of the developed manual that may facilitate or inhibit a positive experience or which might have been overlooked by the research team altogether. During the interview, veteran participants will be shown a visual representation of different aspects of the manual's proposed core components, developed from the findings of Stage 1 and the interviews conducted with professional stakeholders. Veteran participants will be asked to discuss their thoughts, feelings and concerns with questions including 'What would be the best way to do this?', 'What might need to be done to support this part happening?', 'and 'Do you have any concerns about this part of the treatment?'. Visual representations of the manual aspects will be shown to participants via screenshare (e.g. MS Teams) or sent via email/post for telephone interviews. Interviews will be audio-recorded and transcribed verbatim. Following an iterative process, these data will be used to refine and optimise the initial manual prototype. The dedicated stakeholder group (see PPIE section above) will be consulted at key decision-making points in the process to generate solutions to problems raised or inconsistent messages elicited from the Stage two interviews.

Stage Three. The CBT therapist will receive training in the concept of moral injury, PMIEs and delivering the treatment manual prototype developed across Stages one and two. The manual will be delivered to eligible veterans seeking mental health treatment following PMIEs at Combat Stress. The therapist will coordinate recruitment efforts, such as circulating study information at weekly Combat Stress Inter-disciplinary Team (MDT) meetings. Treatment delivery will be closely monitored for manual adherence during clinical supervision.

Psychometric assessments. During Stage three, we will quantitatively examine manual treatment outcomes, including the proportion of veteran patients who screen as eligible for the treatment, the number of eligible veteran patients who take up the treatment, the number of veteran patients who withdraw and symptom improvement rates. Therapist time required for treatment sessions will also be measured for cost effectiveness.

To measure if treatment benefits are maintained over time, patients will be followed up at three-months post-treatment. To ensure no patient gets significantly worse during the treatment, we will record patient scores on the Short-Form PCL-5 [138] and the Clinical Global Impression rating [139] at the start of every session. Patients will also be asked to complete the PCL-5 [138] measuring symptoms of PTSD, the AUDIT [81] measuring alcohol intake, the MORIS [8] and EMIS[77] measuring moral injury exposure and related symptoms and the PHQ-9 [82] (see Table 2).

Qualitative assessments. To understand how acceptable and well tolerated the administered treatment manual is, qualitative interviews will be conducted with veteran patients and the therapist. We will carry out interviews with participating veteran patients who engaged with and completed the treatment sessions, and with any patients who withdraw. Veteran patients will be interviewed at varying points of treatment, with some interviewed early on during the treatment process, others midway through or at the end of treatment, others post-treatment at the three month follow up. Interviews will focus on how the treatment was experienced, what aspects work well, and what patients found both helpful and challenging. The therapist will be interviewed about their experience of delivering the manual in the first six months of manual delivery, as well as at the end of treatment. These data will provide an in-depth understanding of the context in which the manual will operate,

Table 2: Pre/post treatment psychometric measures

Measures	Baseline	Session 19	Post-treatment	3-months post-treatment	Every session
PCL-5	X	X	X	X	
AUDIT	X		X	X	
MORIS	X		X	X	
EMIS	X		X	X	
PHQ-9	X	X	X	X	
Short-Form PCL-5					X
CGI					X

Note. PCL-5= PTSD Checklist for DSM-5 (PCL-5) with Criterion A [138] , AUDIT= Alcohol Use Disorders Identification Test [81] , MORIS= Moral Injury Scale [8] EMIS = expressions of moral injury [77], PHQ-9= Patient Health Questionnaire [140], CGI= Clinical Global Impressions rating [139]

the needs which have been met (or not) by the developed manual prototype, as well any unintended consequences or potential harms, and will be used to further refine the manual.

Data analysis

Quantitative data analysis. In Stage three, demographic characteristics and military history will be explored. Random slope non-linear growth models with a fixed coefficient of time squared will be fitted to explore the longitudinal health and functional impairment data collected at pre-treatment, end of treatment and three-month follow-up. These analyses will be repeated and adjusted for socio-demographic characteristics. The final stage of the analysis assessed whether the secondary outcomes collected at pre-treatment are predictors of PTSD (PCL-5) [138]and moral injury (EMIS) [77] severity scores at three-month follow-up. This will be done by fitting multivariate linear regression models to assess for predictors in changes between pre-treatment and three-month follow-up PCL-5 and EMIS scores.

Qualitative data analysis. Interviews (Stages 2 and 3) will be analysed using two procedures: 'fast and direct' and 'in-depth and detailed'. The 'fast and direct' analysis will use written summaries of the interviews to collate core themes and provide readily understandable feedback about the manual. This approach will provide immediate feedback about the manual. The 'in-depth and detailed' analysis will utilise a thematic analysis approach [28]where interview data are preliminary coded using an inductive 'bottom up' approach. The 'in-depth and detailed' analysis process will provide nuanced feedback about the acceptability and feasibility of the manual to fine-tune the final iteration. This analysis will capture areas of disagreement that may be missed in the 'fast and direct' analysis. Credibility will be checked via analytic triangulation using reflective discussions with co-authors.

Ethics and dissemination

This study has received ethical approval from King's College London Research Ethics Committee (HR-20/21-20850). There are a number of ethical concerns that have been considered when developing the study protocol. Firstly, the potential for this novel treatment to cause further psychological distress and a worsening of symptoms. During treatment sessions participants will be required to recount and focus on PMIEs from their time in the military. Finding ways to successfully approach these events and manage the associated distress is a key feature of the protocol, but this could also potentially be detrimental for participants [49]. Whilst the treatment manual has been developed collaboratively with experts, veterans and taking into account previous research and findings, it has not been previously delivered to a clinical population. To address this concern, throughout the delivery of the R&R treatment, the emerging data will be closely monitored by the study team. The therapist will also receive close clinical supervision and have the support of a multi-disciplinary team of clinicians, experienced in working with military veterans, who can quickly provide alternative treatment options if necessary.

There is also the possibility that participants may disclose events that are illegal or violate the military rules of engagement. In such circumstances these events may require confidentiality to be breached and events reported accordingly to the relevant authorities. To mitigate against any potential harm or distress this could cause, all participants will be fully informed of the therapist's need to disclose any illegality prior to participating. The therapist will also have full access to an experienced clinical team and supervisor to discuss any potential disclosures [47].

The results of the study are expected to have national and international interest for researchers, professionals and clinicians who work with veterans and other groups known to be vulnerable to moral injury. The findings will be disseminated via a free event which will be made available to all relevant stakeholders and UK clinicians delivering trauma-related psychological treatment. This event will be delivered in collaboration with the UK Psychological Trauma Society (UK PTS). The study may also lead to a further randomised control trial, should this be indicated by the findings.

Discussion

It has been identified that exposure to PMIEs can have a profound impact on mental health

[9,36]. The cost of moral injury is often seen in the impact it has not only on veterans, but also on the wider family unit, as occupational functioning declines and observable increased risk-taking and wider social difficulties are evident [2,3]. Those with a moral injury may present with changes to how they view themselves, the world and others, and report intense emotions such as shame, guilt, anger, sadness, and disgust [4]. Developing moral injuries is significantly associated with psychiatric comorbidities including PTSD, depression, anxiety, increased suicidality and alcohol misuse [5–7]. It therefore presents as an important public health concern.

Currently there is no manualised treatment for moral injury and its related mental health difficulties. Clinicians working in the field report a lack of confidence and uncertainty in treating individuals with this presentation [34,50]. It is unclear whether existing treatments for PTSD, which commonly draw on CBT principles and techniques, are effective; particularly where the PMIE is an act of perpetration and appraisals of blame may be accurate [50] . Recent studies found evidence for increased moral injury-related symptoms in those with CPTSD, a clinical group associated with poorer treatment outcomes [5], which may help to further explain the difficulty care teams report when applying existing therapeutic methods. Where the needs of veterans presenting with moral injury may not be being met through existing PTSD treatment approaches, an effective manualised treatment for moral injury is clearly needed.

To address this gap, the aim of the present article is to detail the protocol for the development of a manualised treatment for UK veterans with psychological distress characterised as moral injury. Previously developed treatments for moral injury have focused on US military populations [22,54] which have been shown to differ from UK personnel in terms of trauma exposure and resulting mental health problems [23], highlighting the potential benefit of developing a treatment specifically with UK personnel/veterans. The codesign approach to this study is a strength that will allow for a detailed understanding of the presenting difficulties of UK veterans, who are experiencing mental health problems because of PMIEs, to be incorporated into the development and delivery of the treatment. This may help to reduce the associated difficulties this population face when trying to engage with mental health treatment, that commonly results in lower engagement and high drop-out rates [24,31]. The study will lead to the development of the first manualised moral injury treatment for a UK veteran population that has been codesigned with the intended clinical population and stakeholders in an effort to overcome these barriers.

There are several limitations to this study protocol which need to be considered. Most prominent is the difficulty that is widely faced when assessing for and measuring moral injury. Currently there is no validated screening measure for moral injury related distress and/or associated cut off scores for clinical presentations for UK military veterans. This study will therefore rely on the clinical judgement of both the assessing clinician and treating therapist to determine that moral injury is the primary presenting difficulty. This may impact on the reliability during the pilot phase of the study.

The sample will be recruited from a national mental health charity in the UK and participants are required to volunteer to this novel study and 'opt in' to provide consent. As such, the views of a more diverse population may not be captured, and the sample may not be representative of all veterans who have a moral injury related mental health difficulty. This could limit the generalisability of the findings. Recruiting through a mental health charity does however bring with it the benefit of being able to validate the mental health status of participants. All participants will have been assessed by experienced clinicians in the field of veteran mental health and considered to have mental health difficulties pertaining to experiences during their military service which will improve the validity of the sample.

A final consideration is the method of treatment delivery. Delivering the treatment through an online video consultation platform may inadvertently exclude individuals who would have otherwise taken part. Whilst this decision is preferable during the COVID-19 pandemic and social distancing restrictions, individuals without internet access and a method of conducting video calls may not

be able to take part due to the method of delivery. With these potential limitations in mind, it is our intention that this study will collaboratively create a manualised treatment to care for veterans who have psychological problems following experiences of military related PMIEs, informed by veterans themselves, clinicians, chaplains and other stakeholders, that will ultimately improve access to effective treatment and support.

Funding: Forces in Mind Trust.
Conflicts of Interest: DM is a trustee at The Forces in Mind Trust (the funders of this project). Authors have no conflicts of interest to declare.
Data availability: No data are available.

References

1 Bryan CJ, Bryan AO, Anestis MD, et al. Measuring Moral Injury: Psychometric Properties of the Moral Injury Events Scale in Two Military Samples. Assessment 2016;23:557–70. doi:10.1177/1073191115590855

2 Williamson V, Murphy D, Stevelink SA, et al. Family and occupational functioning following military trauma exposure and moral injury. BMJ Mil Health Published Online First: 31 March 2021. doi:10.1136/BMJMILITARY-2020-001770

3 Williamson V, Murphy D, Stevelink SAM, et al. The impact of trauma exposure and moral injury on UK military veterans: a qualitative study. Eur J Psychotraumatol 2020;11:1704554. doi:10.1080/20008198.2019.1704554

4 Yeterian JD, Berke DS, Carney JR, et al. Defining and Measuring Moral Injury: Rationale, Design, and Preliminary Findings From the Moral Injury Outcome Scale Consortium. J Trauma Stress 2019;32:363–72. doi:10.1002/JTS.22380

5 Currier JM, Foster JD, Karatzias T, et al. Moral injury and ICD-11 complex PTSD (CPTSD) symptoms among treatment-seeking veterans in the United Kingdom. Psychol Trauma 2021;13:417–21. doi:10.1037/TRA0000921

6 Hamrick HC, Kelley ML, Bravo AJ. Military Behavioral Health Morally Injurious Events, Moral Injury, and Suicidality among Recent-Era Veterans: The Moderating Effects of Rumination and Mindfulness Morally Injurious Events, Moral Injury, and Suicidality among Recent-Era Veterans: The Moderating Effects of Rumination and Mindfulness. Behavioral Health 2019;8:109–20. doi:10.1080/21635781.2019.1669509

7 Bryan CJ, Bryan ABO, Roberge E, et al. Moral injury, posttraumatic stress disorder, and suicidal behavior among national guard personnel. Psychol Trauma 2018;10:36–45. doi:10.1037/TRA0000290

8 Williamson V, Murphy D, Stevelink SA, et al. Experiences of moral injury in UK military veterans. London: 2020.

9 Griffin BJ, Purcell N, Burkman K, et al. Moral Injury: An Integrative Review. J Trauma Stress 2019;32:350–62. doi:10.1002/JTS.22362

10 Battles AR, Kelley ML, Jinkerson JD, et al. Associations Among Exposure to Potentially Morally Injurious Experiences, Spiritual Injury, and Alcohol Use Among Combat Veterans. J Trauma Stress 2019;32:405–13. doi:10.1002/jts.22404

11 Bonson A, Murphy D, Aldridge V, et al. Conceptualization of moral injury: A socio-cognitive perspective. J Mil Veteran Fam Health Published Online First: 2023. doi:10.3138/jmvfh-2022-0034

12 Atuel HR, Barr N, Jones E, et al. Understanding moral injury from a character domain perspective. Journal of Theoretical and Philosophical Psychology Published Online First: 29 April 2021. doi:10.1037/teo0000161

13 Richardson NM, Lamson AL, Smith M, et al. Defining Moral Injury Among Military Populations: A Systematic Review. J Trauma Stress 2020;33:575–86. doi:10.1002/jts.22553

14 Litz BT, Stein N, Delaney E, et al. Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. Clin Psychol Rev 2009;29:695–706. doi:10.1016/J.CPR.2009.07.003

15 Currier JM, Farnsworth JK, Drescher KD, et al. Development and evaluation of the Expressions of Moral Injury Scale-Military Version. Clin Psychol Psychother 2018;25:474–88. doi:10.1002/cpp.2170

16 Komarovskaya I, Maguen S, McCaslin SE, et al. The impact of killing and injuring others on mental health symptoms among police officers. J Psychiatr Res 2011;45:1332–6. doi:10.1016/j.jpsychires.2011.05.004

17 Feinstein A, Pavisian B, Storm H. Journalists covering the refugee and migration crisis are affected by moral injury not PTSD. JRSM Open 2018;9:2054270418759010. doi:10.1177/2054270418759010

18 Backholm K, Idås T. Ethical Dilemmas, Work-Related Guilt, and Posttraumatic Stress Reactions of News Journalists Covering the Terror Attack in Norway in 2011. J Trauma Stress 2015;28:142–8. doi:10.1002/jts.22001

19 Čartolovni A, Stolt M, Scott PA, et al. Moral injury in healthcare professionals: A scoping review and discussion. Nurs Ethics 2021;28:590–602. doi:10.1177/0969733020966776

20 Williamson V, Lamb D, Hotopf M, et al. Moral injury and psychological wellbeing in UK healthcare staff. medRxiv 2022;:2022.06.16.22276476. doi:10.1101/2022.06.16.22276476

21 Gray MJ, Schorr Y, Nash W, et al. Adaptive Disclosure: An Open Trial of a Novel Exposure-Based Intervention for Service Members With Combat-Related Psychological Stress Injuries. Behav Ther 2012;43:407–15. doi:10.1016/J.BETH.2011.09.001

22 Maguen S, Burkman K, Madden E, et al. Impact of Killing in War: A Randomized, Controlled Pilot Trial. J Clin Psychol 2017;73:997–1012. doi:10.1002/jclp.22471

23 Sundin J, Herrell RK, Hoge CW, et al. Mental health outcomes in US and UK military personnel returning from Iraq. The British Journal of Psychiatry Published Online First: 2014.http://bjp.rcpsych.org/content/early/2014/01/02/bjp.bp.113.129569.short (accessed 10 May 2017).

24 Kitchiner NJ, Roberts NP, Wilcox D, et al. Systematic review and meta-analyses of psychosocial interventions for veterans of the military. Eur J Psychotraumatol 2012;3. doi:10.3402/EJPT.V3I0.19267

25 Boyd H, McKernon S, Mullin B, et al. Improving healthcare through the use of co-design. New Zealand Medical Journal 2012;125.https://www.nzma.org.nz/journal-articles/improving-healthcare-through-the-use-of-co-design (accessed 15 Sep 2020).

26 DIMOPOULOS-BICK, DAWDA P, MAHER L, et al. Experience-Based Co-Design: Tackling common challenges | The Journal of Health Design. Journal of Health Design 2019;3:86–93.https://www.journalofhealthdesign.com/JHD/article/view/46 (accessed 15 Sep 2020).

27 Serfioti D, Murphy D, Greenberg N, et al. Effectiveness of treatments for symptoms of post-trauma related guilt, shame and anger in military and civilian populations: a systematic review. BMJ Mil Health 2022;:e002155. doi:10.1136/military-2022-002155

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

29 CW H, SH G, JL A, et al. PTSD treatment for soldiers after combat deployment: Low utilization of mental health care and reasons for dropout. Psychiatric Services 2014;65.

30 Edwards-Stewart A, Smolenski DJ, Bush NE, et al. Posttraumatic Stress Disorder Treatment Dropout Among Military and Veteran Populations: A Systematic Review and Meta-Analysis. J Trauma Stress 2021;34. doi:10.1002/jts.22653

31 Weiss E, Coll J. The Influence of Military Culture and Veteran Worldviews on Mental Health Treatment: Practice Implications for Combat Veteran Help-seeking and Wellness. International Journal of Health, Wellness & Society Published Online First: 1 January 2011.https://pdxscholar.library.pdx.edu/socwork_fac/403 (accessed 26 May 2022).

32 Phelps AJ, Adler AB, Belanger SAH, et al. Addressing moral injury in the military. BMJ Mil Health 2022;:e002128. doi:10.1136/BMJMILITARY-2022-002128

33 Nash WP, Litz BT. Moral Injury: A Mechanism for War-Related Psychological Trauma in Military Family Members. Clin Child Fam Psychol Rev. 2013;16:365–75. doi:10.1007/s10567-013-0146-y

34 Williamson V, Murphy D, Stevelink SAM, et al. Delivering treatment to morally injured UK military personnel and Veterans: The clinician experience. Military Psychology 2021;33:115–23. doi:10.1080/08995605.2021.1897495

35 Williamson V, Murphy D, Stevelink SAM, et al. Family and occupational functioning following military trauma exposure and moral injury. J Affect Disord

36 Williamson V, Murphy D, Stevelink SAM, et al. The impact of moral injury on the wellbeing of UK military veterans. BMC Psychol 2021;9:1–7. doi:10.1186/s40359-021-00578-7

37 Williamson V, Murphy D, Phelps A, et al. Moral injury: the effect on mental health and implications for treatment. Lancet Psychiatry 2021;8:453–5. doi:10.1016/S2215-0366(21)00113-9

38 Williamson V, Stevelink SAM, Greenberg N. Occupational moral injury and mental health: Systematic review and meta-Analysis. British Journal of Psychiatry 2018;212:339–46. doi:10.1192/BJP.2018.55

39 Farnsworth JK. Is and Ought: Descriptive and Prescriptive Cognitions in Military-Related Moral Injury. J Trauma Stress 2019;32:373–81. doi:10.1002/JTS.22356

40 Purcell N, Burkman K, Keyser J, et al. Healing from Moral Injury: A Qualitative Evaluation of the Impact of Killing Treatment for Combat Veterans. J Aggress Maltreat Trauma 2018;27:645–73. doi:10.1080/10926771.2018.1463582

41 Battles AR, Bravo AJ, Kelley ML, et al. Moral injury and PTSD as mediators of the associations between morally injurious experiences and mental health and substance use. Traumatology (Tallahass Fla) 2018;24:246–54. doi:10.1037/trm0000153

42 Ames D, Erickson Z, Nagy ;, et al. Moral Injury, Religiosity, and Suicide Risk in U.S. Veterans and Active Duty Military with PTSD Symptoms. Mil Med 2019;184:271. doi:10.1093/milmed/usy148

43 Barnes HA, Hurley RA, Taber KH. Moral Injury and PTSD: Often Co-Occurring Yet Mechanistically Different. J Neuropsychiatry Clin Neurosci 2019;31:A4-103. doi:10.1176/APPI.NEUROPSYCH.19020036

44 Litz BT, Contractor AA, Rhodes C, et al. Distinct Trauma Types in Military Service Members Seeking Treatment for Posttraumatic Stress Disorder. J Trauma Stress 2018;31:286–95. doi:10.1002/jts.22276

45 Barnes HA, Hurley RA, Taber KH. Moral injury and PTSD: Often co-occurring yet mechanistically different. Journal of Neuropsychiatry and Clinical Neurosciences 2019;31:A4-103. doi:10.1176/APPI.NEUROPSYCH.19020036/ASSET/IMAGES/LARGE/APPI.NEUROPSYCH.19020036F3.JPEG

46 Wisco BE, Marx BP, May CL, et al. Moral injury in U.S. combat veterans: Results from the national health and resilience in veterans study. Depress Anxiety 2017;34:340–7. doi:10.1002/DA.22614

47 Williamson V, Murphy D, Stevelink SAM, et al. Confidentiality and psychological treatment of moral injury: The elephant in the room. BMJ Mil Health Published Online First: 13 July 2020. doi:10.1136/bmjmilitary-2020-001534

48 Currier JM, Drescher KD, Nieuwsma J. Future directions for addressing moral injury in clinical practice: Concluding comments. Addressing moral injury in clinical practice 2020;:261–71. doi:10.1037/0000204-015

49 Maguen S, Burkman K. Combat-Related Killing: Expanding Evidence-Based Treatments for PTSD. Cogn Behav Pract 2013;20:476–9. doi:10.1016/J.CBPRA.2013.05.003

50 Steinmetz S, Gray M. Treatment for Distress Associated with Accurate Appraisals of Self-Blame for Moral Transgressions. Curr Psychiatry Rev 2015;11:207–19. doi:10.2174/1573400511666150629105709

51 Lonergan M. Cognitive behavioral therapy for PTSD: The role of complex PTSD on treatment outcome. J Aggress Maltreat Trauma 2014;23:494–512. doi:10.1080/10926771.2014.904467

52 Williamson V, Greenberg N, Murphy D. Moral injury in UK armed forces veterans: a qualitative study. Eur J Psychotraumatol 2019;10:1562842. doi:10.1080/20008198.2018.1562842

53 Gray MJ, Schorr Y, Nash W, et al. Adaptive Disclosure: An Open Trial of a Novel Exposure-Based Intervention for Service Members With Combat-Related Psychological Stress Injuries. Behav Ther 2012;43:407–15. doi:10.1016/J.BETH.2011.09.001

54 Litz BT, Lebowitz L, Gray MJ, et al. Adaptive disclosure : a new treatment for military trauma, loss, and moral injury. New York: : The Guildford Press 2017. 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%20Disclosure%3B%20Litz%20et%20al.%2C%202017&f=false

55 Malcolm E, Stevelink SAM, Fear NT. Care pathways for UK and US service personnel who are visually impaired. J R Army Med Corps 2015;161:116–20. doi:10.1136/jramc-2014-000265

56 Fear NT, Jones M, Murphy D, et al. What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study. The Lancet 2010;375:1783–97. doi:10.1016/S0140-6736(10)60672-1

57 Castro C, Hall JK. Post-traumatic stress disorder in UK and US forces deployed to Iraq Cite this paper. www.thelancet.com (accessed 22 Sep 2022).

58 Combat Stress. Mental health services for veterans | Combat Stress. 2022.https://combatstress.org.uk/ (accessed 23 Sep 2022).

59 Craig P, Dieppe P, Macintyre S, et al. Developing and evaluating complex interventions: The new Medical Research Council guidance. BMJ 2008;337:979–83. doi:10.1136/bmj.a1655

60 O'cathain A, Croot L, Duncan E, et al. Guidance on how to develop complex interventions to improve health and healthcare Communication. doi:10.1136/bmjopen-2019-029954

61 Butterfield LD, Borgen WA, Amundson NE, et al. Fifty years of the critical incident technique: 1954-2004 and beyond. Qualitative Research 2005;5:475–97. doi:10.1177/1468794105056924

62 Hennink MM, Kaiser BN, Marconi VC. Code Saturation Versus Meaning Saturation. Qual Health Res 2017;27:591–608. doi:10.1177/1049732316665344

63 Morse JM. Critical Analysis of Strategies for Determining Rigor in Qualitative Inquiry. Qual Health Res 2015;25:1212–22. doi:10.1177/1049732315588501

64 Koenig HG, Youssef NA, Pearce M. Assessment of moral injury in veterans and active duty military personnel with PTSD: A review. Front Psychiatry. 2019;10. doi:10.3389/fpsyt.2019.00443

65 Kinghorn W. Challenging the hegemony of the symptom: Reclaiming context in PTSD and moral injury. Journal of Medicine and Philosophy (United Kingdom). 2020;45. doi:10.1093/jmp/jhaa023

66 Nwoye A. Decolonizing moral injury studies and treatment approaches: An Africentric perspective. Theory Psychol 2021;31. doi:10.1177/09593543211027228

67 Worthington EL, Langberg D. Religious considerations and self-forgiveness in treating complex trauma and moral injury in present and former soldiers. J Psychol Theol 2012;40. doi:10.1177/009164711204000403

68 Frankfurt S, Frazier P. A review of research on moral injury in combat veterans. Military Psychology 2016;28:318–30. doi:10.1037/MIL0000132

69 Carey LB, Hodgson TJ. Chaplaincy, Spiritual Care and Moral Injury: Considerations Regarding Screening and Treatment. Front Psychiatry 2018;9:619. doi:10.3389/fpsyt.2018.00619

70 Doehring C. Military Moral Injury: An Evidence-Based and Intercultural Approach to Spiritual Care. Pastoral Psychol 2019;68. doi:10.1007/s11089-018-0813-5

71 Compton MT, Shim RS. The Social Determinants of Mental Health CLINICAL SYNTHESIS. Focus (Madison) 2015;13.

72 Alizioti A, Lyrakos G. Measuring the effectiveness of psychoeducation on adherence, depression, anxiety and stress among patients with diagnosis of schizophrenia. a control trial. Current Psychology 2021;40. doi:10.1007/s12144-019-00255-4

73 Serfioti D, Murphy D, Greenberg N, et al. Effectiveness of treatments for symptoms of post-trauma related guilt, shame and anger in military and civilian populations: a systematic review. BMJ Mil Health Published Online First: 28 November 2022. doi:10.1136/MILITARY-2022-002155

74 Drescher KD, Foy DW, Kelly C, et al. An exploration of the viability and usefulness of the construct of moral injury in war veterans. Traumatology (Tallahass Fla) 2011;17:8–13. doi:10.1177/1534765610395615

75 Victoria Williamson, Murphy D, Stevelink S, et al. Delivering treatment to morally injured UK military personnel and veterans: The clinician experience. British Journal of Psychiatry

76 Allen S, Williamson V, Stevelink SA, et al. The impact of moral injury on beliefs and behaviours: A systematic review. London: 2020.

77 Currier JM, Holland JM, Drescher K, et al. Initial Psychometric Evaluation of the Moral Injury Questionnaire-Military Version. Clin Psychol Psychother 2015;22:54–63. doi:10.1002/cpp.1866

78 Weathers FW, Litz BT, Herman DS, et al. The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility. Paper presented at the Annual Meeting of International Society for Traumatic Stress Studies, San Antonio, TX, October, 1993 1993.

79 Bovin MJ, Marx BP, Weathers FW, et al. Psychometric properties of the PTSD checklist for diagnostic and statistical manual of mental disorders-fifth edition (PCL-5) in veterans. Psychol Assess 2016;28:1379–91. doi:10.1037/PAS0000254

80 Forkus SR, Raudales AM, Rafiuddin HS, et al. The Posttraumatic Stress Disorder (PTSD) Checklist for DSM–5: A Systematic Review of Existing Psychometric Evidence. Clinical Psychology: Science and Practice Published Online First: 2022. doi:10.1037/CPS0000111

81 Babor TF, Higgins-Biddle JC, Saunders JB, et al. AUDIT-The Alcohol Use Disorders Identification Test-Guidelines for use in primary care. 2001. doi:10.1177/0269881110393051

82 Kroenke K, Spitzer RL, Williams JBW. The PHQ-9. J Gen Intern Med 2001;16:606–13. doi:10.1046/j.1525-1497.2001.016009606.x

83 Manea L, Gilbody S, McMillan D. Optimal cut-off score for diagnosing depression with the Patient Health Questionnaire (PHQ-9): A meta-analysis. CMAJ Canadian Medical Association Journal 2012;184. doi:10.1503/cmaj.110829

84 Hull and East Yorkshire Hospitals NHS Trust. A Handbook for Researchers involved in Non-CTIMP studies . 2015.

85 Schorr Y, Stein NR, Maguen S, et al. Sources of moral injury among war veterans: A qualitative evaluation. J Clin Psychol 2018;74:2203–18. doi:10.1002/JCLP.22660

86 Williamson V, Murphy D, Stevelink SAM, et al. The impact of trauma exposure and moral injury on UK military veterans: a qualitative study. Eur J Psychotraumatol 2020;11. doi:10.1080/20008198.2019.1704554

87 Williamson V, Larkin M, Reardon T, et al. Codesign and development of a primary school based pathway for child anxiety screening and intervention delivery: a protocol, mixed-methods feasibility study. BMJ Open 2021;11:e044852. doi:10.1136/BMJOPEN-2020-044852

88 Campbell KA, Orr E, Durepos P, et al. Reflexive thematic analysis for applied qualitative health research. Qualitative Report 2021;26. doi:10.46743/2160-3715/2021.5010

89 Weathers FW, Bovin MJ, Lee DJ, et al. The clinician-administered ptsd scale for DSM-5 (CAPS-5): Development and initial psychometric evaluation in military veterans. Psychol Assess 2018;30:383–95. doi:10.1037/PAS0000486

90 Bonson A, Murphy D, Aldridge V, et al. Veterans' experiences of moral injury, treatment and recommendations for future support. BMJ Mil Health 2023;:e002332. doi:10.1136/MILITARY-2022-002332

91 Kubany ES, Haynes SN, Abueg FR, et al. Development and validation of the Trauma-Related Guilt Inventory (TRGI). Psychol Assess 1996;8. doi:10.1037//1040-3590.8.4.428

92 French L, Hanna P, Huckle C. "If I die, they do not care": U.K. National Health Service staff experiences of betrayal-based moral injury during COVID-19. Psychol Trauma Published Online First: 13 September 2021. doi:10.1037/TRA0001134

93 Williamson V, Murphy D, Greenberg N. Experiences and impact of moral injury in U.K. veterinary professional wellbeing. Eur J Psychotraumatol 2022;13. doi:10.1080/20008198.2022.2051351

94 Williamson V, Murphy D, Castro C, et al. Moral injury and the need to carry out ethically responsible research. Res Ethics Published Online First: 2020. doi:10.1177/1747016120969743

95 Levin AP, Kleinman SB, Adler JS. DSM-5 and posttraumatic stress disorder. J Am Acad Psychiatry Law 2014;42:146–58.http://www.ncbi.nlm.nih.gov/pubmed/24986341 (accessed 28 Jul 2016).

96 Jordan AH, Eisen E, Bolton E, et al. Distinguishing war-related PTSD resulting from perpetration-and betrayal-based morally injurious events. Psychol Trauma 2017;9:627–34. doi:10.1037/tra0000249

97 Bravo AJ, Kelley ML, Mason R, et al. Rumination as a Mediator of the Associations Between Moral Injury and Mental Health Problems in Combat-Wounded Veterans. Traumatology (Tallahass Fla) 2020;26:52. doi:10.1037/TRM0000198

98 Nash WP, Marino Carper TL, Mills MA, et al. Psychometric Evaluation of the Moral Injury Events Scale. Mil Med 2013;178:646–52. doi:10.7205/MILMED-D-13-00017

99 Currier JM, Holland JM, Rojas-Flores L, et al. Morally injurious experiences and meaning in Salvadorian teachers exposed to violence. Psychol Trauma 2015;7:24–33. doi:10.1037/a0034092

100 Lamb D, Greenberg N, Hotopf M, et al. NHS CHECK: protocol for a cohort study investigating the psychosocial impact of the COVID-19 pandemic on healthcare workers. BMJ Open 2021;11:51687. doi:10.1136/bmjopen-2021-051687

101 Schorr Y, Stein NR, Maguen S, et al. Sources of moral injury among war veterans: A qualitative evaluation. J Clin Psychol 2018;74:2203–18. doi:10.1002/jclp.22660

102 Papazoglou K, Chopko B. The Role of Moral Suffering (Moral Distress and Moral Injury) in Police Compassion Fatigue and PTSD: An Unexplored Topic. Front Psychol 2017;8:1999. doi:10.3389/fpsyg.2017.01999

103 Currier JM, Holland JM, Malott J. Moral injury, meaning making, and mental health in returning veterans. J Clin Psychol 2015;71:229–40. doi:10.1002/jclp.22134

104 Jinkerson JD. Defining and Assessing Moral Injury: A Syndrome Perspective. Traumatology (Tallahass Fla);22:122–30. doi:10.1037/trm0000069

105 Litz BT, Kerig PK. Introduction to the Special Issue on Moral Injury: Conceptual Challenges, Methodological Issues, and Clinical Applications. J Trauma Stress 2019;32:341–9. doi:10.1002/JTS.22405

106 Drescher KD, Foy DW, Kelly C, et al. An exploration of the viability and usefulness of the construct of moral injury in war veterans. Traumatology (Tallahass Fla) 2011;17:8–13. doi:10.1177/1534765610395615

107 Bryan CJ, Bryan ABO, Anestis MD, et al. Measuring Moral Injury: Psychometric Properties of the Moral Injury Events Scale in Two Military Samples. Assessment 2016;23:557–70. doi:10.1177/1073191115590855

108 Nickerson A, Schnyder U, Bryant RA, et al. Moral Injury in Traumatized Refugees. Psychother Psychosom 2015;84:122–3. doi:10.1159/000369353

109 Nieuwsma JA, Brancu M, Wortmann J, et al. Screening for moral injury and comparatively evaluating moral injury measures in relation to mental illness symptomatology and diagnosis. Clin Psychol Psychother 2021;28:239–50. doi:10.1002/CPP.2503

110 Foa E. PDS: Posttraumatic Stress Diagnostic Scale: manual. Published Online First: 1995.https://scholar.google.com/scholar_lookup?title=Posttraumatic%20Stress%20Diagnostic%20Scale%20Manual&author=EB%20Foa&publication_year=1995#0 (accessed 26 May 2016).

111 Foa EB, Cashman L, Jaycox L, et al. The validation of a self-report measure of PTSD: The Posttraumatic Diagnostic Scale. Psychol Assess 1997;9:445–451.

112 Murphy D, Shevlin M, Pearson E, et al. A validation study of the International Trauma Questionnaire to assess post-traumatic stress disorder in treatment-seeking veterans. British Journal of Psychiatry 2020;216:132–7. doi:10.1192/bjp.2020.9

113 Haight W, Sugrue E, Calhoun M, et al. "Basically, I look at it like combat": Reflections on moral injury by parents involved with child protection services. Child Youth Serv Rev 2017;82:477–89. doi:10.1016/J.CHILDYOUTH.2017.10.009

114 Held P, Klassen BJ, Zou DS, et al. Negative Posttrauma Cognitions Mediate the Association Between Morally Injurious Events and Trauma-Related Psychopathology in Treatment-Seeking Veterans. J Trauma Stress 2017;30:698–703. doi:10.1002/JTS.22234

115 Lang AJ, Wilkins K, Roy-Byrne PP, et al. Abbreviated PTSD Checklist (PCL) as a guide to clinical response . doi:10.1016/j.genhosppsych.2012.02.003

116 Sudom K. Evaluation of three abbreviated versions of the PTSD Checklist in Canadian Armed Forces personnel | Journal of Military, Veteran and Family Health. doi:10.3138/jmvfh-2019-0062

117 Han B, Wong EC, Mao Z, et al. Validation of a Brief PTSD Screener for Underserved Patients in Federally Qualified Health Centers. Gen Hosp Psychiatry 2016;38:84. doi:10.1016/J.GENHOSPPSYCH.2015.07.009

118 K K, RL S, JB W, et al. An ultra-brief screening scale for anxiety and depression: the PHQ-4. Psychosomatics 2009;50:613–21. doi:10.1176/APPI.PSY.50.6.613

119 Khubchandani J, Brey R, Kotecki J, et al. The Psychometric Properties of PHQ-4 Depression and Anxiety Screening Scale Among College Students. Arch Psychiatr Nurs 2016;30:457–62. doi:10.1016/J.APNU.2016.01.014

120 AUDIT & AUDIT-C | Drink Talking Portal. https://www.drinktalkingportal.co.uk/clinical-guidance/alcohol-abuse-screening/alcohol-audit-audit-c (accessed 25 Jan 2023).

121 Barry AE, Chaney BH, Stellefson ML, et al. Evaluating the psychometric properties of the AUDIT-C among college students. https://doi.org/103109/146598912013856479 2014;20:1–5. doi:10.3109/14659891.2013.856479

122 Jeong HS, Park S, Lim SM, et al. Psychometric Properties of the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) in Public First Responders. https://doi.org/101080/1082608420161271986 2017;52:1069–75. doi:10.1080/10826084.2016.1271986

123 UTILITY OF THE DIMENSIONS OF ANGER REACTIONS–5 (DAR 5) SCALE AS A BRIEF ANGER MEASURE - Forbes - 2014 - Depression and Anxiety - Wiley Online Library. https://onlinelibrary.wiley.com/doi/full/10.1002/da.22148?casa_token=SnLkb_wHR18AAAAA%3AfFDfkVsV1NYM8zOZzr9udVaw__OWKK54liyQxtr0Q4TApvQxbgQShga7bysW8U-2BW-OhCcDEHMIa9o (accessed 13 Aug 2020).

124 Forbes D, Hawthorne G, Elliott P, et al. A concise measure of anger in combat-related posttraumatic stress disorder. J Trauma Stress 2004;17:249–56. doi:10.1023/B:JOTS.0000029268.22161.bd

125 Stewart-Brown S, Tennant A, Tennant R, et al. Internal construct validity of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): A Rasch analysis using data from the Scottish Health Education Population Survey. Health Qual Life Outcomes 2009;7:1–8. doi:10.1186/1477-7525-7-15/TABLES/3

126 Fabrigar LR, Wegener DT, Maccallum RC, et al. Evaluating the Use of Exploratory Factor Analysis in Psychological Research. Psychol Methods 1999;4:272–99.

127 Widaman K. Common Factor Analysis Versus Principal Component Analysis: Differential Bias in Representing Model Parameters? Multivariate Behav Res. 1993;28:263–311. doi:10.1207/s15327906mbr2803_1

128 Williams B, Onsman A, Brown T. Exploratory factor analysis: A five-step guide for novices. Journl of Emergency Primary Health Care 2012;19:42–50. doi:10.1080/09585190701763982

129 Matsunaga M. How to factor-analyze your data right: Do's, don'ts, and how-to's. Int J Psychol Res (Medellin) Published Online First: 2011. doi:10.4090/juee.2008.v2n2.033040

130 Horn JL. A rationale and test for the number of factors in factor analysis. Psychometrika 1965;30:179–85. doi:10.1007/BF02289447

131 Byrne BM. Factor Analytic Models: Viewing the Structure of an Assessment Instrument From Three Perspectives. J Pers Assess 2005;85:17–32. doi:10.1207/s15327752jpa8501_02

132 Brown T. Confirmatory Factor Analysis for Applied Research, Second Edition - Timothy A. Brown - Google Books. 2nd ed. New York: : Guilford Press 2015. https://books.google.co.uk/books?hl=en&lr=&id=tTL2BQAAQBAJ&oi=fnd&pg=PP1&dq=brown+confirmatory+factor+analysis&ots=alVvsLVP5G&sig=6CQJiR_Kjx7twNSsQYFLX4URcYg#v=onepage&q=brown%20confirmatory%20factor%20analysis&f=false (accessed 25 Jan 2023).

133 Singh G. Determination of Cutoff Score for a Diagnostic Test. Internet Journal of Laboratory Medicine Published Online First: 2007.https://www.researchgate.net/publication/289368035_Determination_of_Cutoff_Score_for_a_Diagnostic_Test (accessed 19 Dec 2022).

134 Clayton P, Clayton, Phil. CUTPT: Stata module for empirical estimation of cutpoint for a diagnostic test. Published Online First: 16 October 2013.https://EconPapers.repec.org/RePEc:boc:bocode:s457719 (accessed 1 Feb 2023).

135 Williamson V, Greenberg N, Murphy D. Predictors of moral injury in UK treatment seeking veterans. Child Abuse Negl 2021;112. doi:10.1016/J.CHIABU.2020.104889

136 Papazoglou K, Chopko B. The Role of Moral Suffering (Moral Distress and Moral Injury) in Police Compassion Fatigue and PTSD: An Unexplored Topic. Front Psychol 2017;8. doi:10.3389/FPSYG.2017.01999

137 Baker C. Mental health statistics: prevalence, services and funding in England. London: 2021. https://commonslibrary.parliament.uk/research-briefings/sn06988/ (accessed 25 Jan 2023).

138 Zuromski KL, Ustun B, Hwang I, et al. Developing an optimal short-form of the PTSD Checklist for DSM-5 (PCL-5). Depress Anxiety 2019;36:790–800. doi:10.1002/DA.22942

139 Guy W. The Clinical Global Impresssion Scale. 1976.

140 Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med 2001;16:606–13. doi:10.1046/J.1525-1497.2001.016009606.X