MORAL INJURY IN VETERANS AND ACTIVE DUTY MILITARY WITH PTSD

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MORAL INJURY IN VETERANS AND ACTIVE DUTY MILITARY WITH PTSD

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Moral injury. Image from depositphotos.com, used under an Extended License granted to Harold G. Koenig.

This eBook focuses on a relatively new frontier in psychiatry, the topic of "moral injury" (MI), which is examined here in the setting of post-traumatic stress disorder (PTSD) among Veterans and Active Duty Military. We define MI, describe how to identify it by screening, explain the impact that MI has on mental health outcomes (particularly PTSD and mental health problems often associated with PTSD), and provide information on what clinicians can do about it. While the focus here is on Veterans and Active Duty Military, MI is much more widespread than just among former or current military personnel. Healthcare professionals, first responders, clergy, and many patients seeking mental health care are also likely suffering from MI, which is not recognized or treated because clinicians are not familiar with it. Burnout among health professionals and those engaged in other high-stress occupations may often have MI as an underlying condition that is driving the burnout or related emotional condition. Therefore, psychiatrists and all mental health professionals must know about this syndrome, utilize the tools now available to identify it, and learn about

interventions that can be employed to treat it. Success in treating many of the common mental health conditions that appear resistant to treatment may depend on knowing about this new (yet very old) syndrome.

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Table of Contents

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EDITORIAL
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Editorial: Screening for and Treatment of Moral Injury in Veterans/Active Duty Military With PTSD

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Keywords: moral injury, PTSD, definition, screening, veterans

Editorial on the Research Topic

Screening for and Treatment of Moral Injury in Veterans/Active Duty Military with PTSD

Moral injury (MI) is a relatively new syndrome, yet one that has been around for a long time. MI often accompanies posttraumatic stress disorder (PTSD) and is especially common in active duty military (ADM) and veterans as a result of combat experiences and other military-related traumas. MI may also be common in noncombat veterans, health professionals, and even civilian populations. The purpose of this Research Topic is to define and describe MI in veterans and ADM, examine how it is assessed and differentiated from PTSD, and begin to explore ways that psychiatrists and other health professionals can identify and address it. In this issue, we present perspectives and new research on MI from around the world, including the USA and Canada, Australia, France, and Germany.

When it occurs in the military, MI has been defined as the emotional, spiritual, and moral consequences of committing and/or observing others commit transgressions of deeply held moral values during combat or combat-related circumstances (1). Another common definition describes MI as "a betrayal of what's right, by someone who holds legitimate authority, in a high-stakes situation" (2), in other words, betrayal by commanders who may have placed service members in a position that forced them to transgress moral boundaries. Brief measures now exist that have been psychometrically validated to identify symptoms of MI among veterans and those currently in the military (3). Research has shown that >50% of ADM with PTSD symptoms have four or more symptoms of MI in the severe range (9 or 10 on a 1–10 scale) (4), and nearly 60% of veterans with PTSD have five or more such symptoms (5).

In the past decade, we have learned that moral injuries of this type can have devastating consequences on mental health, causing severe anxiety, depression, hopelessness, and suicide among ADM and veterans (6). Given the many challenges involved in successfully treating military-related PTSD, clinicians are often so focused on PTSD symptoms and comorbid disorders (mood disorders, substance abuse, risk of suicide, etc.) that they fail to recognize underlying moral injuries that may be driving these disorders (1). Growing research suggests that PTSD and MI are distinct but overlapping conditions (7). Failure to recognize and address MI may impair successful treatment of PTSD, at least partly explaining why PTSD outcomes are so poor despite the best pharmacological and psychotherapeutic treatments now available (8).

While especially common in military settings, MI is also experienced by those outside the military. Much recent attention has been paid to rising suicide rates and burnout among physicians and nurses, which may be linked to moral injuries that occur in high stakes situations involving life and death decisions that these health professionals make (9). Likewise, victims of sexual and racial abuse may

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experience shame, guilt, anger, and undergo spiritual struggles. Although we focus here on MI acquired in military settings, future research should seek to identify and treat noncombat veterans, civilians in high-risk professions (physicians, nurses, police, firemen, other first responders), and those with a history of trauma (abuse, rape) who may experience similar symptoms.

New approaches to the treatment of MI in the setting of PTSD are now being developed and tested in randomized controlled trials (10, 11, 12). These treatments provide hope and the promise of relief to millions of ADM and veterans who currently suffer from PTSD and related disorders. Before psychiatrists and mental health professionals can take advantage of these new treatments, however, they need to know how to identify MI, who to refer to, and what kinds of treatments are available to help those with a condition that may afflict more than half of current military personnel and veterans with PTSD symptoms. This Research Topic is designed to assist and inform in this regard.

In the first article, Koenig et al. review and discuss the definition of MI and the way that it has been conceptualized and measured among veterans and ADM, making recommendations for both investigators who conduct research in this area and clinicians who must screen for this syndrome in clinical practice. In the second article, Brémault-Phillips et al. briefly review past research on MI and mental health outcomes in the setting of PTSD among current and former military personnel. Next, Kopacz et al. illustrate this by exploring the association between loss of trust (a key symptom of MI) and mental health among 427 veterans and ADM with combat-related PTSD symptoms. Frankfurt et al. then delve into the mechanisms (direct and indirect pathways) by which MI occurs as a result of two specific types of military-related trauma in US Veterans, sexual trauma and combat exposure.

The next five articles focus on treatment. Belrose et al. present a new approach to the challenge of reintegrating soldiers with chronic PTSD back into civilian life in France. Carey and Hodgson follow with an article on how clinicians can identify and treat MI, drawing on their experience from Australia and illustrating the important role that military chaplains play in addressing this syndrome. Next, Büssing et al. draw on data from a large study of German soldiers, emphasizing the need to talk about experiences during combat, the need to forgive others, and the need to be forgiven for transgressions, ultimately leading to healing of moral injuries experienced during war. Purcell and colleagues then discuss why forgiveness is so important to US Veterans who feel guilt and shame about their actions in war, what type of forgiveness is attainable and meaningful, and what role clinicians can play in facilitating forgiveness. Finally, Smith-MacDonald et al. examine the spiritual dimensions of MI in the Canadian armed forces, describing what chaplains in this setting have to offer military personnel and their families.

This Research Topic promises to update readers on the latest research and discussions on this common, consequential, and often neglected syndrome. These articles will provide researchers with the best available tools to further explore the relationship between MI and mental health outcomes and to develop effective interventions, as well as inform and equip clinicians to identify MI in high-risk ADM and veterans and monitor response to treatment.

AUTHOR CONTRIBUTIONS

Each of the authors (HK, DA, and AB) have contributed intellectual content and have contributed to the actual writing of the editorial.

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REVIEW
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Assessment of Moral Injury in Veterans and Active Duty Military Personnel With PTSD: A Review

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Background: Moral injury (MI) involves distress over having transgressed or violated core moral boundaries, accompanied by feelings of guilt, shame, self-condemnation, loss of trust, loss of meaning, and spiritual struggles. MI is often found in Veterans and Active Duty Military personnel with posttraumatic stress disorder (PTSD). MI is widespread among those with PTSD symptoms, adversely affects mental health, and may increase risk of suicide; however, MI is often ignored and neglected by mental health professionals who focus their attention on PTSD only.

Methods: A review of the literature between 1980 and 2018 conducted in 2018 is presented here to identify scales used to assess MI. Databases used in this review were PsychInfo, PubMed (Medline), and Google Scholar. Search terms were "moral injury," "measuring," "screening," "Veterans," and "Active Duty Military." Inclusion criteria were quantitative measurement of MI and health outcomes, Veteran or Active Duty Military status, and peer-review publication. Excluded were literature reviews, dissertations, book chapters, case reports, and qualitative studies.

Results: Of the 730 studies identified, most did not meet eligibility criteria, leaving 118 full text articles that were reviewed, of which 42 did not meet eligibility criteria. Of the remaining 76 studies, 34 were duplicates leaving 42 studies, most published in 2013 or later. Of 22 studies that assessed MI, five used scales assessing multiple dimensions, and 17 assessed only one or two aspects (e.g., guilt, shame, or forgiveness). The remaining 20 studies used one of the scales reported in the first 22. Of the five scales assessing multiple dimensions of MI, two assess both morally injurious events and symptoms and the remaining three assess symptoms only. All studies were cross-sectional, except three that tested interventions.

Conclusions: MI in the military setting is widespread and associated with PTSD symptom severity, anxiety, depression, and risk of suicide in current or former military personnel. Numerous measures exist to assess various dimensions of MI, including five multidimensional scales, although future research is needed to identify cutoff scores and clinically significant change scores. Three multidimensional measures assess MI symptoms alone (not events) and may be useful for determining if treatments directed at MI may both reduce symptoms and impact other mental health outcomes including PTSD.

Keywords: moral injury, internal conflict, posttraumatic stress disorder, Veterans, Active Duty Military, screening

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INTRODUCTION

Rationale

Experiences during combat have long been known to cause internal moral or ethical conflicts (1). "Moral injury" (MI) has become the term used to describe the moral suffering that results from experiences involving violence against others during the course of police work or during wartime (2, 3). There are many definitions of MI in the literature (see Hodgson & Carey for a sense of the diversity of such definitions) (4). For example, MI acquired during combat has been described as "a deep sense of transgression including feelings of shame, grief, meaninglessness, and remorse from having violated core moral beliefs" (p xiv, Brock & Lettini) (5), including "a betrayal of what's right, by someone who holds legitimate authority, in a high-stakes situation" (Shay, p 183) (6). Such feelings relate to what one has done (killed combatants or innocents, dismembered bodies, maltreated others, or deserted comrades during battle), what one has failed to do (protected innocents or prevented the death of fellow soldiers), or what one has observed others do or fail to do. MI may also involve intense feelings of betrayal by those in authority, either in or outside of the military, and may for some include religious or spiritual struggles and even a complete loss of religious faith (7) resulting from experiences during wartime.

MI has been distinguished from posttraumatic stress disorder (PTSD), which may occur alongside it (5, 8, 9). MI is considered a syndrome separate and distinct from PTSD, although with some definitional overlap between the two (particularly in the affective domain, i.e., PTSD symptom cluster D) [*Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM-5) (10)]. One can have PTSD without MI, MI without PTSD, or both together. According to DSM-5, the diagnosis of PTSD is based on the exposure to a severe traumatic stressor (Criterion A) and the presence of four major fear and trauma-based symptom clusters that cause problems in daily functioning: intrusive nightmares and flashbacks (Criterion B), avoidance (Criterion C), emotional negativity and numbing (Criterion D), and hyperarousal and irritability (Criterion E). In contrast, MI results from transgressions committed, observed, or learned about that conflict with moral beliefs (11) and is a syndrome characterized by guilt, shame, feelings of betrayal, difficulty forgiving, loss of meaning, loss of trust, self-condemnation, spiritual struggles, and feelings of inner conflict over the moral implications of those transgressions (3–7, 12–14). Experiences during war may be severely traumatic (as in Criterion A for the diagnosis of PTSD), morally injurious, or both. For some individuals, transgressing cherished moral values or experiencing betrayal by trusted others in high stakes situations may be severely traumatic, whereas for others, these events may be very distressing yet not reach the threshold for PTSD (i.e., Criterion A, involving exposure to death, threatened death, actual or threatened serious injury, actual or threatened sexual violence, and Criteria B-E in DSM-5). A MIE (morally injurious event), like any distressing event that has occurred in the past, cannot be changed; however, the symptoms that result from these events and continue to cause distress and dysfunction may be assessed and treated.

One reason that MI has received increasing attention over the past decade is the possibility that it may block successful treatment of PTSD, one of the most common mental disorders in Veterans and Active Duty Military (ADM) (15, 16) that is often resistant to both pharmacological and psychological therapies (17, 18). The identification and treatment of MI among those with PTSD may be key to the management and ultimate resolution of the latter (6, 10). MI is recognized as one of the five stress outcomes noted in the *Consensus Recommendation for Common Data Elements for Operational Stress Research and Surveillance* report by U.S. Armed Forces and Veterans Administration (VA) experts, and "case identification" is one of seven components of the mental health intervention spectrum noted in that report (19).

Systematic research has shown that MI is common among Veterans with PTSD symptoms. One study reported at least one MI symptom of significant severity in over 90% of 373 Veterans (59% with five or more such symptoms) (20) and in over 80% of 103 ADM (52% with four or more symptoms) (21). The seriousness of MI has been underscored by its association in Veterans with a host of adverse mental health outcomes, including PTSD (12, 22, 23), depression and anxiety (21, 23–26), and increased risk of suicide (27–29). Several of these studies show that MI is associated with depression, anxiety, and suicide, even after controlling for severity of PTSD symptoms (12, 19, 27–29), further justifying MI as a syndrome separate from PTSD. However, there is no measure of MI that uses gold standard methodology here, underscoring the importance of understanding what measures are available for current use and how understanding these may help inform the development of more robust measures. While MI in military settings has been discussed since the early 1980s, systematic research providing an evidence base on the topic has been only relatively recent. As a result, many mental health professionals may not have even heard of MI, and the condition can often go unrecognized and ignored when the clinician's primary focus is on PTSD.

Research Question

The purpose of this study was to review measures used to assess MI that clinicians may use for screening and behavioral health investigators for conducting research in current and former military personnel. This review focused on scales that assess single or only a few dimensions of MI (guilt, shame, difficulty forgiving, loss of meaning, moral objections, and transgressions) and those that more comprehensively assess multiple aspects of this construct. In order to be comprehensive, we have included measures that address only one or two aspects of MI (e.g., transgressions, guilt, and shame). However, we do not believe that those measures are assessing the construct of MI as a unique phenomenon, but only assess certain dimensions of MI and are therefore incomplete in themselves.

Measures are distinguished in terms of whether they assess morally injurious events (experiences in war that cannot be changed) or MI symptoms (feelings about those events that can be altered by therapeutic interventions), or both events and symptoms. Reviewed are studies using these scales for the first

time to assess MI in Veterans (including original validation studies) and later studies that have used those scales in military populations. Based on this review, recommendations are made on the best measures to use depending on the clinician's or researcher's goal. Treatments for MI are also briefly discussed.

METHOD

Study Design

The review focused on studies that developed or used measures of MI to examine health outcomes in present and former military personnel. Because the emphasis was on "moral injury," this term was included either alone or with the keywords "Active Duty Military," "Veterans," "measuring," and "screening." The Boolean operators "and"/"or" were used between search terms to reduce the number of articles to those meeting the inclusion and exclusion criteria for this review. Inclusion criteria were 1) quantitative measurement of MI (scales including more than one item), 2) assessment of Veterans or ADM, 3) quantitative measurement of health outcomes, and 4) publication in a peer-reviewed academic journal in the English language. Excluded were literature reviews, dissertations, book chapters, letters to the editor, case reports, and qualitative studies.

Search Strategy

The search strategy involved four stages. The first stage involved a search of the literature between 1980 and April 3, 2018, using the databases PubMed, PsychInfo, and Google Scholar. Second, the titles of promising articles were reviewed to identify studies that appeared to meet the inclusion criteria. Third, abstracts of these articles were reviewed. Finally, the full texts of articles that passed the initial screens were retrieved and examined more closely to ensure that inclusion and exclusion criteria were met. Each of the three co-authors independently conducted the review, screened relevant articles, and then agreed by consensus on the articles that met the criteria above. **Figure 1** provides a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) chart describing how studies were selected for this review.

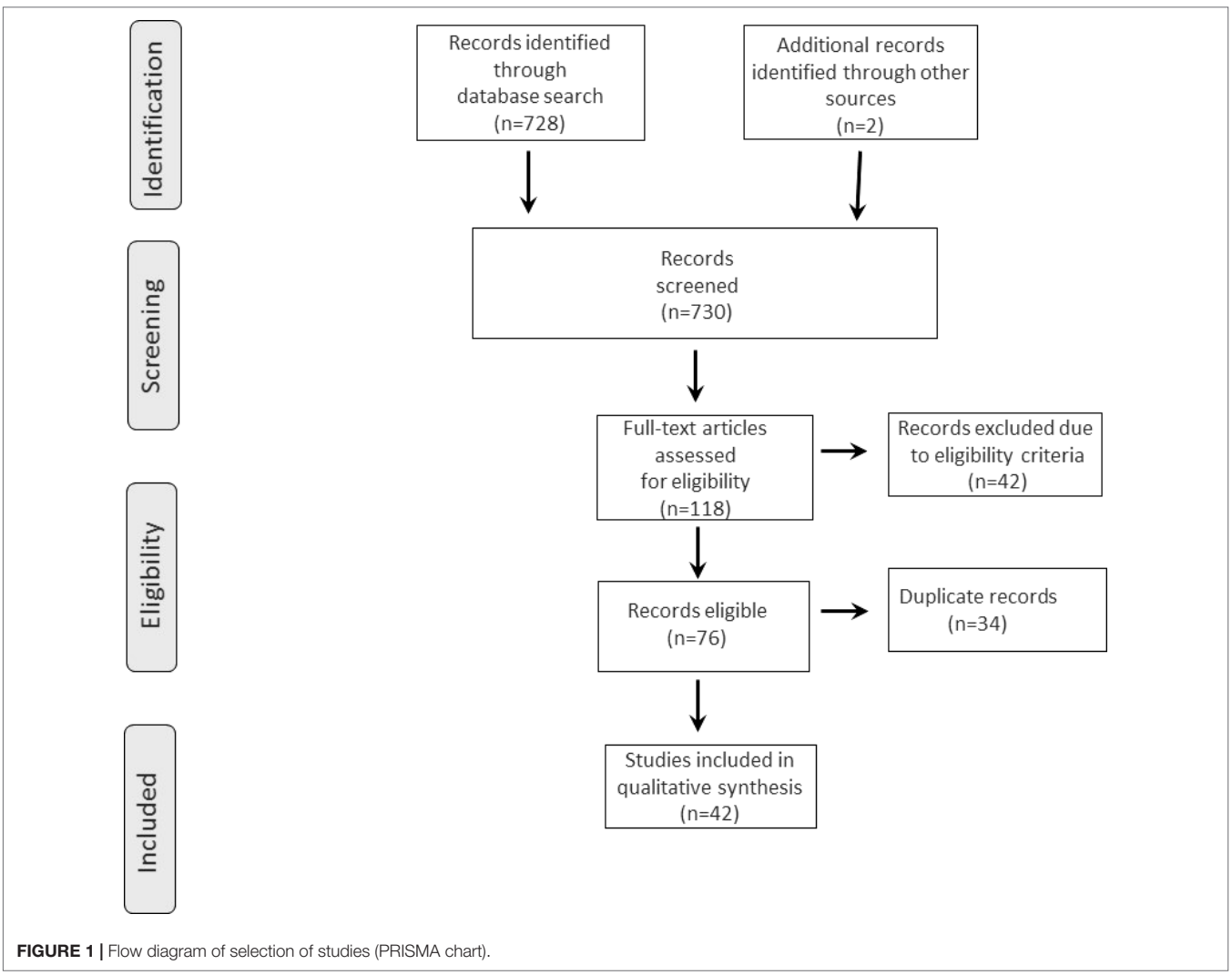

FIGURE 1 | Flow diagram of selection of studies (PRISMA chart).

RESULTS

The search term "moral injury" alone identified 62 articles in PubMed and 160 articles in PsychInfo, which represented the total number of articles identified by the three reviewers (all reviews were independently conducted in March and early April 2018). Given the number of articles in those two databases were relatively few, all were screened. When the keyword "moral injury" was used to search the Google Scholar database, however, over 5,000 articles were retrieved. To narrow down the search based on study inclusion criteria, the terms "Veterans," "Active Duty Military," "measuring," and "screening" were added to the search term "moral injury" reducing the number of articles to 446, all of which were screened. Thus, search of the three databases identified 728 possible studies. Two additional studies were identified (known by the authors to be published soon), increasing the total to 730. Of those, 118 looked promising enough to download the full text articles and review them more carefully for inclusion criteria. Of those, 42 were eliminated for failing to meet inclusion and exclusion criteria leaving 76 eligible records. After excluding 34 duplicates, this resulted in the final 42 studies for this review. Most of these (93%) were published in 2013 or later, and 78% were published in 2017 or 2018, underscoring the recent attention paid to this topic.

Of the 42 studies, 17 studies developed or used previously published measures that assessed only one or two aspects of MI (e.g., guilt, shame, or forgiveness), and five studies reported the development of scales that assessed multiple dimensions of MI (**Table 1**). In addition, 20 studies used a scale reported in one of the first 22 studies published earlier; these were included to provide a sense of the scales most commonly used today by researchers to measure MI (**Table 2**). Except for one randomized clinical trial (RCT), one non-randomized trial, and one planned RCT, studies were all cross-sectional in design. No study established a cutoff to indicate significant symptom levels on a scale requiring clinical attention, nor did any study report clinically significant change scores for a scale. Now reviewed are the studies describing the 22 scales identified in this review.

Single or Limited Dimensional Scales

The majority of studies used scales that assessed only one or two dimensions of MI in Veterans and ADM. These studies either a) reported the development of a new scale or b) used previously published scales or subscales that had assessed specific aspects of MI in non-military populations (discussed below by year of publication). We include these scales for background only in this comprehensive review.

Regarding studies reporting the development of a *new scale*, the first was by Henning and Frueh who developed the Combat Guilt Scale (CGS) (30). This measure, which assesses 15 guilt symptoms related to combat experiences, was administered to 40 U.S. Veterans diagnosed with combat-related PTSD. Each symptom was rated as either present or absent, producing a theoretical score ranging from 0 to 15. CGS scores in this study were significantly and positively related to re-experiencing, avoidance, and arousal subscales of the Clinician Administered PTSD Scale and to the total score on the Mississippi Scale for Combat-Related PTSD (with r's ranging from 0.45 to 0.50).

Stein and colleagues conducted structured clinical interviews with 122 active duty Army personnel, who had experienced traumatic events during their military service (31). Traumatic events were categorized into six groups by two of the authors: life threatening to self, life threatening to others, aftermath of violence, traumatic loss, *moral injury by self* (MI-S), and *moral injury by others* (MI-O). Each category was dichotomized into whether such an event was present (1) or not (0). Relationships were then examined between these categories and various measures assessing emotional reactions to trauma. MI-S was most strongly related to the post-trauma emotions of humiliation, sadness, numbness, PTSD symptoms in the re-experiencing cluster, and guilt symptoms (assessed by the Trauma-Related Guilt Inventory). MI-O was most strongly related to humiliation, anger, and state anxiety. The authors concluded that these findings provided tentative support for the six event categories above. This was one of the first studies to examine combat-related events that might result in MI.

Ritov and colleagues developed a 4-item scale assessing "moral objections" (MO) to commands given by superior officers (33). Participants were 145 reserve combat troops in the Israel Defense Forces. Soldiers were expected to act on these commands (each rated on a 1 to 7 scale from "very little objection" to "very much objection"). Again, those with high MO scores experienced more PTSD symptoms and, interestingly, were more likely to indicate a left lateral preference (despite all being right-handed), possibly suggesting greater right brain activation.

Campbell reported the development of a scale assessing "shame," called the Military Compass of Shame Scale (M-CoSS) (37). The scale was initially administered to 379 U.S. Navy sailors preparing to deploy to Iraq and Afghanistan, and then to 27 ADM with PTSD undergoing residential treatment. The M-CoSS consists of 10 shame-producing scenarios paired with four maladaptive shame regulation strategies (attack self, attack other, withdrawal, or avoidance). The PTSD sample scored significantly higher on all four subscales of the M-CoSS.

Lancaster administered two 5-item subscales from the 15-item State Shame and Guilt Scale (61), along with an original 7-item measure of transgressive acts (Transgressive Acts Scale; TAS) to 161 Veterans (41). Examples of TAS items included treating civilians more harshly than necessary, perpetrating violence that was out of proportion to the situation, and so forth. The author found a significant direct relationship between the TAS and PTSD symptoms, as well as indirect effects on both PTSD and depressive symptoms through guilt and shame. Psychometrics of the new scale (TAS) were not provided.

Finally, Maguen and colleagues conducted a RCT examining effects of the Impact of Killing (IOK) intervention in 33 combat Veterans with PTSD (42). IOK involves six to eight 60- to 90-min weekly sessions of individual CBT targeting maladaptive thoughts about killing, difficulty with self-forgiveness, spiritual and moral issues, and making amends. Participants were randomized to either IOK (n = 17) or a wait-list control group (n = 16). One of the outcomes examined involved maladaptive beliefs about killing, including beliefs about the justification of

TABLE 1 | Characteristics of studies developing or using scales to assess moral injury (ordered by year of publication) (n = 22).

Reference (abbreviation)	Design	Population Studied	Events vs. Symptoms	Moral Injury Dimension	No. Items (Rating)	Source Scale	Psychometrics
Henning and Frueh (30) (CGS)	CS	40 Veterans with PTSD	Symptoms only	Guilt	15 (1 vs. 0)	Authors	α = .78
Stein et al. (31)	CS	122 ADM	Event Categories	MI by self MI by others	2 (1 vs. 0)	Authors	kappa = .74-.90
Gray et al. (32)	NRCT	44 Marines	Cognitions and beliefs	Trauma-related cognitions	33 (1-7)	Posttraumatic Cognitions Inventory	—
Nash et al. (12)	CS	533 Marines 503 Marines	Events and symptoms	Transgressions by self, others, and betrayal	9 (1-6)	Authors	2 factors (F) F1 α = .89 F2 α = .82
Bryan et al. (27)	CS	69 ADM	Symptoms only	Guilt	6 (0-4)	Personal	α = .85
				Shame	10 (0-4)	Feelings Questionnaire (PFQ-2)	α = .86
Ritov et al. (33)	CS	147 ADM (Israeli)	Symptoms (moral response to events)	Moral objections	4 (1-7)	Authors	α = .83
Currier et al. (34) (MIQ-M)	CS	131 Veterans 82 Veterans	Events and symptoms	Betrayal, moral violations, guilt, others	19 (1-4)	Authors	1 factor α not reported
Bryan et al. (29)	CS	474 ADM or Veterans	Symptoms only	Self-forgiveness	6 (1-7)	Heartland Forgiveness Scale	α = .84
Hijazi et al. (35)	CS	167 Veterans	Symptoms only	Wrongdoing	5 (0-4)	Trauma-Related Guilt Inventory (TRGI) subscale	α = .78
Crocker et al. (36)	CS	127 Veterans	Symptoms only	Shame	24 (0-4)	Internalized Shame Scale;	α = .96
				Guilt	32 (0-4)	TRGI	α = .87-.91
Campbell (37) (M-CoSS)	CS	378 Sailors 27 ADM	Symptoms only	Maladaptive shame regulation	6 by 4	Author	α = .89
Yan (38)	CS	100 Veterans	Events only	Combat experiences (aftermath of battle)	30 (1 vs. 0)	Deployment Risk & Resilience Inventory (DRRI)	α = .85-.86
Dennis et al. (39)	CS	603 Veterans	Events and symptoms	Atrocities committed Guilt (global)	6 (1-5) 4 (0-4)	Vietnam Stress Invent. TRGI subscale	α = .87 α = .88
Frankfurt et al. (40)	CS	190 Veterans	Events and symptoms	Transgressive acts Feeling guilty	8 (1 vs. 0) 1 (0-5)	Clinician Administered PTSD Scale-IV	K = .72
Lancaster (41)	CS	161 Veterans	Events and symptoms	Transgressions/betrayal Transgressive acts Shame and guilt	6 (1-6) 7 (1 vs. 0) 10 (1-5)	MIES (partial) Author State Shame and Guilt Scale	— — α = .90 shame α = .88 guilt
Maguen et al. (42)	RCT	33 Veterans with PTSD	Symptoms and beliefs	Maladaptive beliefs about killing	55 (1-5)	Author (Killing Cognitions Scale)	—
Currier et al. (26) (EMIS-M)	CS	286 Veterans 624 Veterans	Symptoms only	Self-directed, Other-directed (shame, guilt, betrayal, etc.)	17 (1-5)	Authors	2 factors α = .94-.95 (total) Test-retest α = .80
Koenig et al. (23) (MISS-M-LF)	CS	214 Veterans 213 Veterans (with PTSD symptoms)	Symptoms only	Guilt, shame, moral concerns, betrayal, religious struggles, loss of faith, loss of meaning, loss of trust, difficulty forgiving, self-condemnation	45 (1-10)	Items from multiple established scales, and study authors	1-2 factors per subscale Overall α = .92 Test-retest α = .91
Koenig et al. (24) (MISS-M-SF)	CS	214 Veterans 213 Veterans (as above)	Symptoms only	Same as above MISS-M-LF	10 (1-10)	Based on MISS-M-LF	1 item/scale Overall α = .73 Test-retest α = .87
Nazarov et al. (43) (DEX)	CS	4854 ADM (Canadian)	Events only	Potential moral injury events (PMIEs)	3 (1 vs. 0)	US/Canada Combat Experiences Scale	None reported

TABLE 1 | Continued

Reference (abbreviation)	Design	Population Studied	Events vs. Symptoms	Moral Injury Dimension	No. Items (Rating)	Source Scale	Psychometrics
Bryan et al. (44)	CS	930 ADM	Symptoms only	Anger outward, hostility inward, shame, guilt, sorrow;	15 (1-5)	Differential Emotions Scale-IV	α = .85-.93
				low cohesion	5 (1-5)	DRRI-2	α = .91
Currier et al. (45)	CS	1124 Veterans	Symptoms only	Religious/spiritual struggles	22 (1-5)	Religious and Spiritual Struggles Scale	α = or >.90

CS, cross-sectional; ADM, Active Duty Military; α, Cronbach's alpha (internal reliability).

TABLE 2 | Other studies in which moral injury scales in **Table 1** were used (ordered by year of publication) (n = 20).

Reference	Design	Population Studied	Events vs. Symptoms	MI Dimension	No. Items (Rating)	Source Scale	Psychometrics
Bryan et al. (46)	CS	97 ADM	Symptoms only	Guilt	6 (0-4)	PFQ-2	α = .85
Bryan et al. (28)	CS	151 ADM	Events and symptoms	Transgressions by self, by others, and betrayal	9 (1-6)	MIES	3 factors reported α's > .79 reported
Currier et al. (47)	CS	131 Veterans	Events and symptoms	Betrayal, moral violations, guilt, others	19 (1-4)	MIQ-M	—
Bryan et al. (48)	CS	464 ADM or Veterans	Symptoms only	Guilt	6 (0-4)	PFQ-2	α = .85
Bryan et al. (22)	CS	151 ADM 935 ADM	Events and symptoms	Transgressions by self, by others, and betrayal)	9 (1-6)	MIES	3 factors demonstrated α's = .83-.96
Wisco et al. (49)	CS	564 Veterans	Events and symptoms	Transgressions by self, by others, and betrayal	9 (1-6)	MIES	3 factors reported α = .88 (total)
Lancaster and Erbes (50)	CS	182 Veterans	Symptoms only	Shame Guilt	10 (0-4) 5 (0-4)	PFQ-2	α = .92 α = .88
Ferrell et al. (51)	CS	37 Veterans	Events and symptoms	Betrayal, moral violations, guilt, others	19 (1-4)	MIQ-M	—
Currier et al. (52)	CS	125 Veterans	Events and symptoms	Betrayal, moral violations, guilt, others	19 (1-4)	MIQ-M	—
Evans et al. (25)	CS	155 Veterans	Events and symptoms	Transgressions, by self, by others, and betrayal	9 (1-6)	MIES	3 factors reported α = .91
Houtsma et al. (53)	CS	522 ADM	Events and symptoms	Transgressions by self, by others, and betrayal	9 (1-6)	MIES	3 factors reported α's = .75-.94
Jordan et al. (54)	CS	867 Marines	Events and symptoms	Transgressions by self and betrayal	7 (1-6)	MIES (partial)	2 factors reported α's = .84-.93
Martin et al. (55)	CS	562 ADM	Symptoms only	Betrayal	3 (1-6)	MIES (partial)	1 factor reported α = .86
Cunningham et al. (56)	CS	988 Veterans with PTSD	Symptoms only	Guilt (hindsight bias, wrongdoing, lack of justification)	22 (0-4)	TRGI cognitions	α = .91
Yeterian et al. (planned) (57)	RCT	186 Veterans	Symptoms only	Guilt Shame	32 (0-4) 24 (0-3)	TRGI TRSI	— —
Dedert et al. (58)	CS	50 Veterans	Symptoms only	Guilt (hindsight bias, wrongdoing, lack of justification)	18 (0-4)	TRGI cognitive subscales	—
Volk and Koenig (21)	CS	103 ADM w PTSD symptoms	Symptoms only	10 MI symptom categories	45 (1-10)	MISS-M-LF	α = .92
Norman et al. (59)	CS	254 ADM	Symptoms only	Guilt (hindsight, bias, wrongdoing, lack of justification)	22 (0-4)	TRGI cognitions	—
Koenig et al. (20)	CS	373 Veterans w PTSD symptoms	Symptoms only	10 MI symptom categories	45 (1-10)	MISS-M-LF	α = .92 ICC = .91
Zerach and Levi-Belz (60)	CS	191 Israeli combat Veterans	Events and symptoms	Transgressions by self, by others, and betrayal	9 (1-6) 19 (1-4	MIES MIQ-M	— —

killing, wishes not to have killed, and feelings of betrayal from superiors, measured using the 55-item Killing Cognitions Scale (KCS). No psychometrics were provided for the instrument, which the authors indicated was "still being validated." KCS scores (maladaptive cognitions having to do with killing in war) were significantly reduced in those receiving the IOK intervention compared to those in the wait-listed control group.

Rather than examine MI using a new scale, several studies have used scales or subscales from existing measures originally published and validated in non-military populations or used for purposes other than examining MI. Gray and associates conducted an open trial (without a control group) examining Adaptive Disclosure Therapy (ADT) in 44 active duty Marines (32). One outcome measure was the Posttraumatic Cognitions Inventory (PTCI), a 33-item scale that assesses negative beliefs about the self, negative beliefs about the world, and self-blame (62). No psychometrics were reported in Gray et al.'s sample, although they indicated that the PTCI's authors had previously found the scale to have high internal consistency and stability (62). While this measure does not assess MI symptoms *per se*, it does assess cognitions that may be driving these symptoms (e.g., "I can't rely on myself" or "I am inadequate" leading to self-condemnation; "people can't be trusted" leading to loss of trust; "the event happened because of the way I acted" or "the sort of person I am" leading to guilt or shame, etc.). In the pre-post analysis, ADT significantly decreased PTSD symptoms and depressive symptoms, as well as negative beliefs about the self, world, self-blame, and total PTCI scores.

Bryan (CJ) and colleagues administered the 6-item guilt and 10-item shame subscales of the Personal Feelings Questionnaire (63) to 69 ADM (95% Air Force) seen in military mental health outpatient clinics, examining the relationship between guilt and shame and suicidal ideation or behavior (27). Guilt and shame were both associated with more severe suicidal ideation, findings that were independent of depression and PTSD symptom severity.

Bryan (AO) and colleagues administered the six-item self-forgiveness subscale from the Heartland Forgiveness Scale (64) to 476 ADM and Veterans, examining its relationship to suicidal ideation or attempts (28). We include this study because of the importance of forgiveness (self-forgiveness and forgiveness of others) as a dimension of MI, which has been stressed by experts in this area (11, 14). The results of that report indicated that greater self-forgiveness was inversely related to both suicidal ideation and past suicide attempts in bivariate analyses and in multivariate analyses was inversely related to past suicide attempts, independent of depression and PTSD symptom severity. Bryan et al. concluded that this aspect of MI may help to explain the association between PTSD and suicide risk among military personnel.

Next, Hijazi and colleagues administered the 5-item "wrongdoing" subscale from the 32-item Trauma-Related Guilt Inventory (TRGI) (65) to 167 U.S. Veterans seeking treatment for PTSD, examining its relationship to posttraumatic growth (PTG). (35) Hierarchical regression modeling revealed that non-white ethnicity, greater cognitive flexibility, and *higher scores* on the wrongdoing subscale were associated with greater PTG. While the association between higher scores on the wrongdoing subscale and PTG seems counterintuitive, feelings of wrongdoing may indicate a more sensitive conscience and, with greater cognitive flexibility, drive these individuals to psychologically (and perhaps spiritually) grow from these traumatic experiences, whereas those with less sensitivity to these matters or less cognitive flexibility may be less driven to make the changes necessary for such growth.

In another study assessing guilt and now also shame, Crocker and colleagues examined whether these indicators of MI mediated the relationship between PTSD symptom severity and aggression in 127 U.S. Veterans returning from deployment to the Middle East (36). Guilt was assessed with the 32-item TRGI mentioned earlier, whereas shame was measured using a 24-item subscale of the Internalized Shame Scale (66). Results indicated that while both guilt and shame were associated with higher PTSD severity, only shame mediated the relationship between PTSD severity and aggression.

Yan administered the Combat Experiences (CE) and Aftermath of Battle (AB) subscales from the Deployment Risk and Resilience Inventory (DRRI-1) (67) to 100 U.S. Veterans who served in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), examining the relationship between potentially morally injurious events (PMIES) and mental health outcomes. (38) Each of these subscales were assessed with 15 yes or no items. Regression analyses controlling for other predictors revealed that AB scores were inversely related to overall mental health and positively related to depressive symptoms, whereas CE scores were positively related to PTSD symptom severity.

Likewise, Dennis and colleagues examined the relationship between PIES and mental health outcomes in 603 U.S. combat Veterans seeking mental health services for PTSD (39). In this study, investigators administered the Atrocities Exposure Subscale (AES) of the Vietnam Era Stress Inventory (68) along with the four-item global guilt subscale of the TRGI. The AES consists of six items that ask about directly or indirectly being involved in "hurting," "killing," or "mutilating bodies" of Vietnamese soldiers or civilians. Structural equation modeling revealed that AES score predicted increased guilt, PTSD severity, hostility, aggression, depression, and suicidal ideation, controlling for combat exposure. Guilt partially mediated the relationship between AES and PTSD severity.

Frankfurt and associates asked questions on commission of transgressive acts (PMIEs) from the Clinician Administered PTSD Scale-IV (69) and feeling guilty from the Mississippi Scale for Combat PTSD (70) to 190 U.S. combat Veterans (40). The purpose was to examine the relationships between responses to these questions and combat exposure, fear, suicidality, and PTSD symptoms using structural equation modeling. Results indicated that guilt again partially mediated the relationship between commission of transgressive acts and both suicidality and PTSD symptoms. Both studies above suggested that MI symptoms may help to explain the negative impact of PMIEs on mental health outcomes, particularly PTSD symptoms.

In one of the few studies of military personnel outside of the U.S., Nazarov and colleagues examined the relationship between PMIEs, PTSD, and depressive symptoms in 4,854 Canadian

ADM (reserve ADM deployed to Afghanistan and members of the regular armed forces) (43). The three items asking about PMIE's were taken from the eight-item deployment experiences (DEX) module of the U.S. Walter Reed Army Institute of Research Combat Experiences Scale (71) adapted for use by the Canadian Department of National Defense. These three items asked whether the respondent had 1) seen ill or injured women or children but was unable to help; 2) had trouble distinguishing combatants and non-combatants; and 3) had been responsible for the death of a Canadian or allied member of the force. Again, PMIEs were associated with both recent PTSD and major depression.

Bryan (CJ) and colleagues administered five three-item subscales of the Differential Emotions Scale-IV (72) (anger, hostility, sorrow, guilt, and shame) and the five-item Unit Social Support Scale from the DRRI-2 (73) (a measure of Unit cohesion) to 930 active duty U.S. National Guard personnel (44). Also given were measures of PTSD, alcohol use, insomnia, and nightmares. The goal was to identify differences between symptoms of MI and PTSD symptoms and then to determine their relationship with suicide risk. Structural equation modeling was used to examine the overlap between MI and PTSD symptoms. Results indicated a five-item factor characterized by nightmares, insomnia, flashbacks, memory loss, and startle reflex (corresponding to the authors' theorized composition of PTSD) and a six-item factor characterized by low enjoyment, low unit cohesion, anger, shame, guilt, and inward hostility (corresponding to the authors' theorized composition of MI). An interaction was found between PTSD and MI factors. Suicidal ideation and attempts were associated with PTSD severity, but this was true only in those with high MI scores.

Finally, Currier and colleagues examined Veterans' preferences for incorporating spirituality into therapies for treating PTSD or major depression (45). Two samples of Veterans were surveyed (499 Veterans from a general population and 624 Veterans who had completed one or more war-zone deployments). Several characteristics were assessed in both samples including severity of PTSD and depressive symptoms. In addition, religious or spiritual struggle (an aspect of MI) was assessed using the Religious and Spiritual Struggles Scale (RSSS). (74) This 26-item measure assesses spiritual struggles related to belief in God, moral issues, religious doubting, meaning and purpose, and interpersonal religious interactions. Researchers found that each of these five religious or spiritual struggle dimensions were positively related to a preference for spiritually integrated treatments (especially in the second sample of Veterans deployed to combat zones).

Multidimensional Scales

Of the 22 studies, five were designed to assess multiple dimensions of MI in Veterans or ADM. Two of the five scales measure a combination of events and symptoms, and three scales measure MI symptoms alone. We describe each of these measures below.

Moral Injury Events Scale (MIES) (12). The nine-item MIES is the first measure designed specifically to assess multiple dimensions of MI in a military population and is the shortest of the five scales. The three dimensions of MI assessed by the MIES are perceived transgressions by self (three items), perceived transgressions by others (three items), and perceived betrayal by others (three items). The MIES assesses both the previous experience of PIES (witnessing acts of commission, perpetrating acts of commission, or perpetrating acts of omission) and symptoms (feelings of distress over acts of commission, omission, or betrayal). The factor structure of the MIES in the original study revealed two MI dimensions (transgressions by self or others and betrayal), which were determined using exploratory factor analysis (EFA) in 533 active duty U.S. Marines and then was replicated using confirmatory factor analysis (CFA) in a second cohort of 506 Marines. However, Bryan and colleagues (22) later reported that the MIES was actually composed of three dimensions (transgressions by self, transgressions by others, and betrayal) in a study of 151 ADM, findings that were replicated in 935 ADM. In the original study (12), the item-to-total correlations on the MIES ranged from 0.55 to 0.79, and the internal reliabilities for each of the two dimensions were high ($\alpha = 0.89$ for perceived transgressions and $\alpha = 0.82$ for perceived betrayals). The MIES demonstrated high temporal stability (between 1 and 3 months post-deployment) and discriminant and convergent validity and was significantly and positively related to depressive symptoms ($r = 0.40$), negative affect ($r = 0.29$), anxiety ($r = 0.28$), and PTSD symptoms ($r = 0.28$), and was inversely associated with social support ($r = -0.29$) and positive affect ($r = -0.15$).

The greatest strength and the greatest weakness of the MIES is that it measures both the occurrence of transgressive events and the symptoms associated with those events. Including events that might be the cause of MI symptoms makes it excellent as a screening measure, since it identifies specific events that might be the target of interventions. The inclusion of events, however, means that the MIES might be less useful in intervention studies that seek to assess change in MI symptoms over time, in that the inclusion of MI events in the MIES that cannot change complicates the assessment of MI symptom change in response to treatment.

Moral Injury Questionnaire-Military Version (MIQ-M) (34). The 19-item MIQ-M was the second multidimensional scale developed specifically to assess MI in military populations. This measure is made up of a single factor that assesses numerous aspects of MI and also (like the MIES) includes both PMIEs and symptoms that result from those events. *Events* include acts of commission involving betrayal of personal values, acts of revenge or retribution, witnessing or committing moral violations, and witnessing or involvement in the death of innocents or fellow soldiers. *Symptoms* include feelings of betrayal by others or self, guilt over failing to protect others, guilt for surviving when others did not, and feeling changed from experiences had during war. The MIQ-M was initially validated using EFA in 131 Iraq or Afghanistan Veterans attending a community college on the West Coast, and then the factor structure was replicated using CFA in a clinical sample of 82 Veterans receiving residential treatment for PTSD. EFA and CFA of the MIQ-M demonstrated strong fit to the data in both community and clinical samples. Although internal consistency and test-retest reliability were not reported, the MIQ-M was strongly related to combat exposure ($r = 0.63$),

work and social maladjustment (r = 0.42), depressive symptoms (r = 0.39), and PTSD symptoms (r = 0.65), as well as greater risk of suicide in multivariate analyses (B = 0.22, SE = 0.11, $p < 0.05$), indicating concurrent and incremental validity.

Moral Injury Symptoms Scale-Military Version (MISS-M) (23). Two scales that comprehensively measure MI symptoms alone were published online about the same time in late 2017, the 45-item Moral Injury Symptom Scale-Military Version (MISS-M) and the 17-item Expressions of Moral Injury Scale-Military Version (EMIS-M) (26). Not long afterward in 2018, a report on the development of a third scale was published that also measures MI symptoms only, the brief 10-item version of the MISS-M (MISS-M-SF).

The MISS-M-LF (long form) was designed for use in Veterans and ADM with PTSD symptoms. The measure assesses 10 dimensions of MI that capture both the psychological and the spiritual or religious (S/R) symptoms of this construct. Each dimension of the MISS-M-LF was intentionally chosen based on the definitions for MI reported in the literature. Psychological symptoms assessed include guilt (4 items), shame (2 items), betrayal (3 items), moral concerns (3 items), loss of meaning and purpose (4 items), difficulty forgiving (7 items), loss of trust (4 items), and self-condemnation (10 items). S/R symptoms assessed include religious struggles (six items) and loss of religious faith and hope (two items). Items making up the scale were derived primarily from existing scales published in the literature. All items are rated on a scale from 1 to 10 (total score range 45 to 450).

To ensure that items with strong face validity for a particular dimension ended up on the subscale assessing that dimension, EFA and CFA were conducted at the subscale level rather than at the item level. A sample of 427 Veterans and ADM with PTSD symptoms was randomly split into two groups. EFA was performed on an original pool of 54 items in the first half of the sample (n = 214). EFA identified one or two factors per dimension and reduced the total number of items to 45 when only those items with factor loadings ≥ 0.45 were retained. The factor structure for each dimension was then independently verified using CFA in the second half of the sample (n = 213). The final MISS-M-LF had high internal reliability (α = 0.92) and test–retest reliability [intraclass correlation (ICC) = 0.91]. Discriminant validity was demonstrated by relatively weak correlations with S/R measures, community activities, and indicators of physical health; convergent validity was indicated by strong correlations with symptoms of PTSD, anxiety, and depression (r's ranging from 0.56 to 0.62). The MISS-M-LF is the first multidimensional scale that measures both the psychological and S/R symptoms of MI, and because it measures symptoms alone, the scale can be used for tracking symptom severity in clinical practice and for conducting research that examines treatments for MI in Veterans and ADM that target MI symptoms.

In order to create a shorter measure that might facilitate its use by clinicians and researchers, an abbreviated version of the MISS-M was developed (24). The 10-item MISS-M-SF assesses the same 10 dimensions as the 45-item MISS-M-LF but does so with only one item per dimension (total score ranges from 10 to 100). The sample used for developing the MISS-M-SF was the same used for development of the MISS-M-LF. The highest loading item for each dimension was identified using EFA in the first half of the sample and was verified in the second half of the sample using CFA. The scale had acceptable internal reliability (α = 0.73) and test–retest reliability (ICC = 0.87). The correlation between the short and long versions of the MISS-M-LF was high (r = 0.92). The MISS-M-SF may be easier to use for clinicians and researchers given its brevity and ability to comprehensively assess both the psychological and spiritual symptoms of MI.

Expressions of Moral Injury Scale-Military Version (EMIS-M) (26). The 17-item EMIS-M assesses the symptoms of MI across two dimensions: self-directed and other-directed. The self-directed subscale assesses symptoms of guilt, shame, moral concerns, self-condemnation, social withdrawal, and inability to forgive self. The other-directed subscale assesses anger and feelings of betrayal, revenge, and disgust over what others have done. An initial pool of 85 candidate items was reduced down to 45 during a four-stage process by reviewing the literature and consulting with subject experts. EFA was then done in a sample of 286 Veterans to reduce the number of items from 45 down to 17, identifying two factors with strong internal reliability (α = 0.92 for self-directed, α = 0.90 for other-directed). The factor structure was then verified using CFA in a second sample of 624 Veterans (α = 0.94 for self-directed, α = 0.92 for other-directed). Test-retest reliability in the first sample was high for each subscale and the overall scale (ICC = 0.74, 0.80, and 0.80, respectively). Convergent and concurrent validity was demonstrated by strong correlations between the EMIS-M (total score) and PTSD symptoms (r = 0.69 to 0.73), depression (r = 0.58 to 0.65), social support (r = −0.45), and scales assessing other dimensions of MI (r = 0.69 for loss of meaning, r = −0.44 for forgiving others, r = 0.57 for perceived transgressions, and r = 0.62 for perceived betrayals on the MIES). Thus, the EMIS-M is a solid measure of the psychological symptoms of MI and, because it measures symptoms only, can be used by clinicians to follow symptom change with treatment or by researchers to assess the efficacy of interventions that target MI.

Use of Moral Injury Scales

The MIES is currently the most frequently used multidimensional measure in the literature that assesses PMIEs and MI symptoms, followed by the MIQ-M (**Table 2**). The three multidimensional MI symptom scales (EMIS, MISS-M-LF, and MISS-M-SF) have been published so recently that not enough time has passed yet for investigators to use them. Among the one- or two-dimensional scales used most often are the guilt and shame subscales of the PFQ-2 and the guilt cognitions subscale of the TRGI, although these were not designed specifically for assessing MI in military populations as were the five multidimensional scales above. **Table 3** lists and distinguishes between scales that measure MI events only, MI symptoms only, and both events and symptoms.

DISCUSSION

Moral injury is a term now used widely in clinical discussions and research studies involving Veterans and ADM personnel

TABLE 3 | Scales measuring events, symptoms, and events and symptoms.

Events Only	Symptoms Only	Events and Symptoms
Event Categories (31)	Combat Guilt Scale (30)	Moral Injury Events Scale (12)
Vietnam Stress Inventory	Posttraumatic Cognitions Inventory (62)	Moral Injury Questionnaire (34)
(atrocities exposure subscale) (68)	Personal Feelings Questionnaire	Deployment Risk &
Moral Objections Scale (33)	(guilt and shame subscales) (63)	Resilience Inventory (67)
Clinician PTSD Scale-IV	Heartland Forgiveness Scale)	
(transgressive acts subscale) (69)	(self-forgiveness subscale) (64)	
Transgressive Acts Scale (41)	Trauma Related Guilt Inventory (65)	
Combat Experiences Scale (71)	Internalized Shame Scale (66)	
	Military Compass of Shame Scale (37)	
	State Shame and Guilt Scale (61)	
	Killing Cognitions Scale (42)	
	Expressions of Moral Injury Scale (26)	
	Moral Injury Symptoms Scale-LF (23)	
	Moral Injury Symptoms Scale-SF (24)	
	Differential Emotions Scale-IV (72)	
	Religious & Spiritual Struggles Scale (74)	

(11, 75, 76). As MI is discussed more and more in the psychiatric literature, particularly as it applies to those with concurrent PTSD, the comprehensive quantitative measurement of this syndrome will become increasingly important. Studies have shown that the vast majority of Veterans and ADM with PTSD have symptoms of MI from events experienced while serving in the military (20, 21, 76). While MI and PTSD are distinct constructs that frequently occur together, why they are associated (including concerns over definitional overlap) and how MI and PTSD influence each other over time are largely unknown. Longitudinal studies and psychometric studies directly addressing convergent and divergent validity of MI and PTSD measures will be needed to more completely sort this out.

This is the first comprehensive review of MI measures developed specifically for use in current or former military personnel. We described the development of these measures, their psychometric properties, and their relationship to mental health outcomes such as PTSD, anxiety, depression, and suicide risk. These measures assess PMIEs or transgressions, current symptoms of moral conflict over those events, or both events and symptoms. Some scales measure either one or two aspects of MI, whereas others assess multiple dimensions. Because some measures are new (published within the past 12 months), clinicians and researchers have had little opportunity to use them outside of the original validation studies, underscoring the need for future studies.

Nevertheless, it is becoming increasingly clear that MI is a syndrome associated with much distress and comorbidity, making it necessary for clinicians treating Veterans or ADM and for those doing research in these populations to be aware of both earlier and more recent measures. This is particularly important because of the role that MI may play in the pathway that leads from war trauma to the development and maintenance of PTSD (11). The urgency to identify factors that may be driving PTSD is due to the high prevalence of PTSD among Veterans returning home and ADM returning from deployment to combat theaters (15, 16, 77); the devastating impact this disorder has on physical health, quality of life, productivity, and social relationships (78–80); and the resistance to treatment that many patients with PTSD show despite the latest pharmacological and psychological approaches (17, 18). Thus, it is becoming clear that MI is a condition that can no longer be ignored because of both the suffering it causes and the possible negative impact on PTSD.

Further epidemiological research is necessary to determine whether and how MI affects PTSD (and related co-morbidity) over time and how MI is affected by these conditions, all of which requires longitudinal studies have yet to be done. However, given the high prevalence of MI among Veterans and military personnel with PTSD and the frequent lack of recognition by clinicians, it may be important to start now to identify those with significant MI symptoms through screening (81). This requires that clinicians be aware of measures that can assist in case identification, as well as information about treatment options. The development of treatments for MI and establishment of their efficacy likewise requires psychometrically reliable and valid symptom measures that can be targeted by those interventions.

The field, however, is moving fast. Despite knowing relatively little about MI or how it relates to PTSD over time, researchers are now developing and testing interventions to treat some aspects of MI in both Veterans and ADM (82). For example, studies are now taking place or being proposed to examine the efficacy of mainstream and spiritually integrated treatments for MI in former or current military personnel with PTSD symptoms. Mainstream interventions suggested for MI include Cognitive Behavioral Therapy (CBT) (83), Cognitive Processing Therapy (CPT) (84, 85), Prolonged Exposure (PE) (86), Acceptance and Commitment Therapy (ACT) (87), and Adaptive Disclosure Therapy (ADT) (88), many of which have also been used to treat PTSD. Spiritually integrated treatments have also received attention because the moral values that are transgressed in MI are often based on religious beliefs of individuals or of the culture in which they were raised. One such treatment is a group intervention for moral trauma called Building Spiritual Strength (BSS) that is now being delivered in faith community settings

(89). Another such treatment is a one-on-one intervention administered by licensed clinicians called Spiritually Integrated CPT (SICPT) that uses the patient's religious beliefs to process traumatic events and dysfunctional cognitions using a CPT framework (90–92). There is growing evidence of treatment efficacy from pilot interventions directed at specific aspects of MI, such as the guilt from killing in war (42), inner distress from combat using ACT (93), and moral and religious conflicts associated with combat-related trauma (89, 94). Some of these studies are now ongoing (57, 95). Awareness of multidimensional MI symptom scales will facilitate future RCTs examining the efficacy of such interventions.

Thus, many of the MI measures above will be useful for both clinicians working with patients and researchers designing and implementing research studies. However, none of the measures reviewed here was created using a gold standard methodology, such as by starting with representative focus groups to collect a comprehensive list of all possible symptoms, behaviors, affects, and cognitions that might possibly be a result (and component) of MI, and then see what correlates with what, letting the data create the symptom clusters. The EMIS goes a long way in this regard, although possibly not far enough. Without doing such heavy lifting involved in the discovery of symptoms clusters from a much larger pool, researchers cannot be sure that they've got the right measure that comprehensively assesses this concept. The development of measures driven solely by statistical grouping, on the other hand, may not be the ideal solution either, since the face validity of items guided by theory should also play some role in determining items for a comprehensive measure of any new construct. That too cannot be ignored.

Limitations

A number of limitations should be considered when interpreting the results of this review. First, not examined here were MI scales designed to assess symptoms resulting from traumatic experiences occurring outside of the military, such as trauma from assault, rape, or natural or man-made disasters. This may not have always been indicated in the scales. For example, the MIQ-M specifies that MIEs must have occurred in the context of wartime deployment, whereas other measures are not as clear in that instruction. Second, this review was also limited by not including all studies that measured various dimensions of MI (e.g., guilt, shame, difficulty forgiving, self-condemnation, and loss of meaning or trust), particularly those that did not include the term "moral injury" in the title, abstract, or full text of the article (an inclusion criterion for this review). The relative recency of the term "moral injury" likely contributed to missing such studies. However, conducting a review that separately examined each possible dimension of MI (indicated by a wide range of terms) would have gone beyond the scope of this paper. Third, and perhaps most concerning, the present authors developed two of the measures discussed in this review (MISS-M-LF and MISS-M-SF), thus introducing the possibility of bias in study description, particularly since these two measures are recommended for use (see below). In order to address this bias, the authors have described the other three multidimensional measures as comprehensively and accurately as possible, especially the only other "pure" MI symptom measure, the EMIS-M. Despite these efforts, readers should be aware that this bias may have colored our descriptions of these measures. Finally, the scales reviewed here (even those assessing PMIEs) did not always identify the exact circumstances in which Veterans or ADM experienced their trauma, i.e., whether this occurred while fighting in combat, during deployment but not combat, or either before or after returning from deployment, and the specific nature of the trauma (assault, rape, etc.), which clinicians will need to explore beyond simply administering a scale.

Recommended Scales

As noted earlier, we have included measures in this review that address only certain aspects of MI (e.g., transgressions, guilt, and shame). These measures, in our opinion, are not assessing the complete phenomenon of MI, but rather only certain dimensions of this construct. For this reason, we recommend the use of multidimensional measures that go beyond measuring guilt and shame and are more likely to capture MI as the unique phenomenon that experts in the field now describe (see above). However, given the limitations noted above, these recommendations should be viewed as strictly preliminary rather than instructive.

As always, the scale chosen will depend on the purpose of the clinician or investigator. Multidimensional scales that assess *events* involving transgressions of moral values by self or others and *symptoms* resulting from such transgressions are mostly likely to comprehensively cover the construct of MI. For clinicians wishing to screen current or former military personnel for MI to identify whether this syndrome needs attention, any of the five multidimensional scales described above will serve this purpose. Bear in mind, however, that the questionnaires described here are for screening purposes only and, if positive (i.e., several yes responses to events or symptoms), should be followed by a clinical interview. Unfortunately, none of these measures have established thresholds for the number of clinically meaningful events or symptoms.

The two shortest scales for clinicians are the 9-item MIES (12) and the 10-item MISS-M-SF (24). The advantage of the MIES is that it assesses both events and symptoms, allowing identification of the particular event that may be driving symptoms. The advantage of the MISS-M-SF is that it assesses symptoms only, allowing for the tracking of treatment progress over time, and measures all 10 dimensions of MI, including the religious or spiritual aspects. For researchers wanting to examine the association between MI and mental or physical health outcomes or include MI as a covariate in studies with other objectives, again, any of the five multidimensional scales would be appropriate, depending on how much room is available in the questionnaire for assessing MI. For investigators wishing to conduct intervention studies that target MI in former or current military personnel, only multidimensional "symptom" scales are recommended (since PMIEs experienced in the past are unlikely to change in response to treatment). Multidimensional symptom scales are the EMIS (26), MISS-M-LF (23), and MISS-M-SF (24).

To our knowledge, the MISS-M-LF and MISS-M-SF are the only symptom scales now available that assess both the psychological and the religious or spiritual dimensions of MI.

CONCLUSION

While the recognition of inner conflict over moral transgressions in former or current military personnel has increased during the past decade, many clinicians and researchers may not know how to measure or treat these injuries. There is growing evidence that MI in Veterans and ADM is associated with adverse mental health states, including PTSD, depression, anxiety, and risk of suicide, and may block the treatment of these conditions unless also addressed. We identified 42 studies in this review that used scales to assess one or more aspects of MI as currently defined. Among those studies, 17 reported the use of scales that assessed only one or two dimensions of MI, while five studies reported the development and psychometric properties of scales assessing multiple dimensions. These measures assess morally injurious events, symptoms that result from the events, or both events and symptoms. Measures that assess both events and consequences are assessing the morally injurious event and the symptoms that the event may cause. Some events may not result in symptoms, whereas some symptoms assessed may not result from the morally injurious event. Therefore, when clinicians are using these scales to screen for MI, a clinical interview will be necessary to clarify which MI symptoms may have followed the acknowledged event, and which MI symptoms may have other causes (possibly prior traumas during youth or adulthood).

In comparing the comprehensiveness, internal consistency, and validity across the five multidimensional measures, the 45-item MISS-M-LF (and shorter 10-item MISS-M-SF) is probably the most comprehensive, assessing 10 dimensions of MI including both psychological and spiritual aspects. With regard to internal consistency and reliability, all five scales have solid psychometric properties, although the 17-item EMIS-M has perhaps the best internal reliability (alphas exceeding 0.92) and test–retest reliability (ICCs in the 0.74 to 0.80 range), as well as strong concurrent validity with PTSD symptoms (r = 0.69–0.73), depression (r = 0.58–0.65), and loss of meaning (r = 0.69), established in large samples. However, except for the 9-item MIES and 19-item MIQ-M, the newer scales have not yet been used in many studies (as noted above), so the performance of these scales (MISS-M-LF, MISS-M-SF, and EMIS-M) in other populations and settings still needs to be demonstrated.

Multidimensional scales that assess both events and symptoms (MIES and MIQ-M) are recommended for clinicians who wish to screen Veterans and military personnel for MI and for researchers who wish to conduct observational studies on this syndrome. Multidimensional scales that assess symptoms only (MISS-M-LF, MISS-M-SF, and EMIS-M), however, are recommended for clinicians and researchers wishing to track change in MI symptoms with treatment. Future longitudinal studies are needed to identify cutoff scores and clinically significant change scores for these measures. Likewise, clinical trials are needed to determine whether treatments directed at MI not only reduce MI symptoms but also impact the many adverse mental health outcomes that have been associated with it.

AUTHOR CONTRIBUTIONS

HK is a researcher and psychiatrist at Duke University Medical Center in Durham, NC, USA. He contributed to the literature review and is the main author of this article. NY is a researcher and psychiatrist at the Medical College of Georgia and Charlie Norwood Veterans Administration Medical Center in Augusta, GA. He contributed to the literature review and the writing and editing of this paper. MP is a researcher and psychologist at the University of Maryland. She contributed to the literature review and the writing and editing of this paper. In addition, HK, NY, and MP all made important intellectual contributions to this article.

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MINI REVIEW
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Spirituality and Moral Injury Among Military Personnel: A Mini-Review

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Introduction: Moral injury (MI) results when military personnel are exposed to morally injurious events that conflict with their values and beliefs. Given the complexity of MI and its physical, emotional, social, and spiritual impact, a holistic approach is needed. While the biopsychosocial aspects of MI are more commonly addressed, less is known of the spiritual dimension and how to incorporate it into treatment that facilitates restoration of one's core self and mending of relationships with self, others, and the sacred/Transcendent. The purpose of this study was to gain a greater understanding of the relationship between spirituality/religion (S/R) and MI as experienced by military members and veterans and to consider how S/R might be better integrated into prevention and treatment strategies.

Methods: A mini-review of peer-reviewed articles published between January 2000 and April 2018 regarding the relationship between spirituality and MI among military personnel and veterans was conducted.

Results: Twenty-five articles were included in the final review. Five themes were identified and explored, including i) Spirituality: A potential cause of and protective factor against MI, ii) Self and identity: Lost and found, iii) Meaning-making: What once was and now is, iv) Spirituality as a facilitator of treatment for MI, and v) Faith communities: Possible sources of fragmentation or healing.

Discussion: Findings identified a cyclical relationship between S/R and MI, whereby S/R can both mitigate and exacerbate MI, as well as be affected by it. Seen as a type of S/R struggle, the use of S/R-specific strategies [e.g., forgiveness, review of S/R beliefs, engagement in S/R practices, and (re)connection with S/R communities], integration of S/R perspectives into general interventions, and help from chaplains may support healing, self-regulation, and mending of relationships, moral emotions, and social connection. Further research is yet needed, however, regarding i) S/R orienting systems, interventions, practices, and rituals/ceremonies that might protect against and treat MI; ii) features of individuals who do/do not experience MI; iii) S/R assessment tools and interventions; and iv) ways to maximize the positive contributions of faith communities.

Keywords: moral injury, military, veterans, spirituality, self, identity, biopsychosocial–spiritual approach

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INTRODUCTION

Exposure to morally injurious experiences (MIEs) (1–9) that occur in the course of military service can be mentally and spiritually distressing (1, 10). MIEs, experiences that cannot be justified within a member's personal and moral beliefs, can leave military members struggling to reconcile seemingly irreconcilable discrepancies between their lived experience, beliefs, values, and worldview(s) (11–14). Occurring in the course of military service, missions, disaster relief efforts, stateside and/or training accidents, drone warfare, or military sexual trauma, exposure to MIEs can be life-altering. Serious psychological problems such as posttraumatic stress disorder (PTSD) and moral injury (MI) can arise (11, 15), leaving military members contending with intrusive thoughts, impulsivity, suicidal ideation, sleep disturbances, or substance use; avoiding experiential triggers; and engaging in maladaptive coping, aggressive, self-harming, self-handicapping, or demoralizing behaviors, all of which can be debilitating (11, 13, 16). More fundamentally, individuals can be impacted at the deepest level of their being (17) and spirit (18). As a result, consideration of the spiritual dimension is needed when trying to understand the impact of exposure to MIEs and prevention and treatment of MI.

The Human Spirit

The human spirit is "the essential core of the individual, the deepest part of the self" (p. 58) (15). More than characteristics and roles associated with one's identity (15), the human spirit is a motivating force directed toward realizing higher-order goals and aspirations that grow out of the essential self (19). When exposed to MIEs, a person's core self, ideals, and perceptions of reality can be shattered and their spirit "broken," leaving them spiritually and existentially struggling.

Moral Injury: A Form of Spiritual/Religious Struggle

MI, described as one of several types of S/R struggles (20–24), is associated with questions, disorientation, and tensions about matters of deepest significance that arise within oneself, with other people, and/or with the sacred or Transcendent (15, 25–27). Positively associated with depressive symptoms and negatively with happiness, S/R struggles can impact psychological well-being and health, and cause significant distress (20, 27, 28) and decline (29–31). When a person is unable to resolve S/R struggles, one can experience compromised psychological, social, physical, and spiritual functioning; poor recovery from MI; increased mental health symptoms; and greater risk of mortality. Disconnection from self, others, and the sacred/Transcendent can also occur (22, 26, 31–33). Longer periods of S/R struggle tend to create greater risk (21, 26, 32, 34–38).

Spiritual/Religious Struggles: Potential for Growth and Resilience

An association between S/R struggles and growth is found in the literature (29–31). Rosner and Powell (2006) reported that there is limited empirical evidence that posttraumatic or adversarial growth occurs due to war, and a paucity of evidence that "adversarial growth" during and after war is specifically due to traumatic events (39). More recently, however, exposure to MIEs has been associated with S/R growth, with some veterans reportedly experiencing renewed faith and more frequent use of prayer as a means of protection (40). S/R commitment, life sanctification, support, and hope have been identified as significant buffers against unhappiness, depressive symptoms, and S/R struggles (28). The most significant growth seems to be related to existential and S/R matters (30, 41, 42).

Growth and resilience related to S/R struggles (including recovery, resistance, and reconfiguration) (43) may be predicated on numerous factors. These include a person's ability to accept the reality of situations, access supports, draw on S/R resources, make meaning of experiences, (re)affirm a sense of purpose, and (re)engage in positive problem-solving actions (41, 42, 44, 45). Further, a person's history of S/R struggles seems to be an important factor to consider as those with a lifetime history of S/R struggles appear to have lower levels of well-being. One's standing on the Big Five and religiousness also seems to be a contributing factor, with higher Neuroticism and Openness, and lower Agreeableness and Conscientiousness, being associated with higher lifetime frequency of S/R struggles and degree of current S/R struggles (27). Identifying those at greater risk of S/R struggles based on their history, personality traits, and religiousness, and facilitating their growth and development, may be beneficial for mitigating the impact of MIEs and development of MI.

This article examines peer-reviewed literature on spirituality as it relates to MI among military personnel and veterans, and its role in the prevention of and recovery from MI. While two scoping reviews have explicitly explored spirituality and MI [Carey et. al.'s review focused on MI, spiritual care, and the role of chaplains (46), and Haight et al.'s review focused on social work research (47)], no review to date has looked more specifically at how MI affects the human person—particularly the spirit (or spiritual) dimension of the self and the importance of using a holistic, biopsychosocial–spiritual model when addressing MI. Spirituality and S/R issues, isolated as key aspects of MI (1), warrant further examination regarding their association with MI.

MATERIALS AND METHODS

The search, selection, and critical assessment of English-language, peer-reviewed manuscripts published between January 2000 and April 2018 were performed independently and blindly by two authors according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (48). Conducted on January 21, 2017, and repeated on April 22, 2018 to identify new articles published between January 2017 and April 2018, the database searches used SocIndex, MEDLINE (with EBSCO), PsycINFO, Web of Science, and Cumulative Index to Nursing & Allied Health Literature (CINAHL). Keywords included the following: "Moral injur*," "moral emotions, transgressive acts, morals"; military personnel or naval medicine or military medicine or war or aerospace medicine or soldier* or sailor* or air men or air man or airmen or airman or armed forces or air force or military or naval or coast guard* or submariner* or

infantr* or marine corps or marines or army or special forces or warfight* or warfare or land mine* or machine gun* or "United States Department of Veterans Affairs" or Veterans or Veterans Health or army or soldier (49) and spiritual* or faith or theolog* or Muslim or "Bapti* or Buddhis* or religi* or Christian* or Judaism or "belief system*" or meaningful* (50) (**Figure 1**). A manual search of the literature and reference lists was also performed. Data charting utilized data extraction categories suggested by Arksey and O'Malley (51, 52). Concept charting allowed for identification and tracking of overlapping concepts and presenting themes. Discrepancies between authors were resolved through discussion and by consensus.

RESULTS

Table 1 presents the studies included in the review, author(s), year of publication, study type, population, and study objectives. The following themes regarding MI and spirituality were identified in the course of the review: i) Spirituality: A potential cause of and protective factor against MI, ii) Self and identity: Lost and found, iii) Meaning-making: What once was and now is, iv) Spirituality as a facilitator of treatment for MI, and v) Faith communities: Possible sources of fragmentation or healing. As for populations represented in the articles, 18 of the 25 articles focused on military populations, 2 considered military members and the role of social work, 3 explored military healthcare/religious professionals, 1 focused on individuals including military personnel experiencing moral stress, and 1 included the development of MI and treatment options as it relates to social work practice in morally complex environments including with military personnel. What follows is a description of the key findings.

Moral Injury and Spirituality: Descriptive Summary of the Studies

Spirituality: A Potential Cause of and Protective Factor Against Moral Injury

The literature reflects a close association between MI and spirituality (11, 18, 46, 53–65), with spirituality being described as underlying MI and MI having an equally salient impact on spirituality (55, 58, 61–68). A person's spiritual worldview contributes to the development of MI, with rigid religious principles and expectations potentially enhancing guilt and

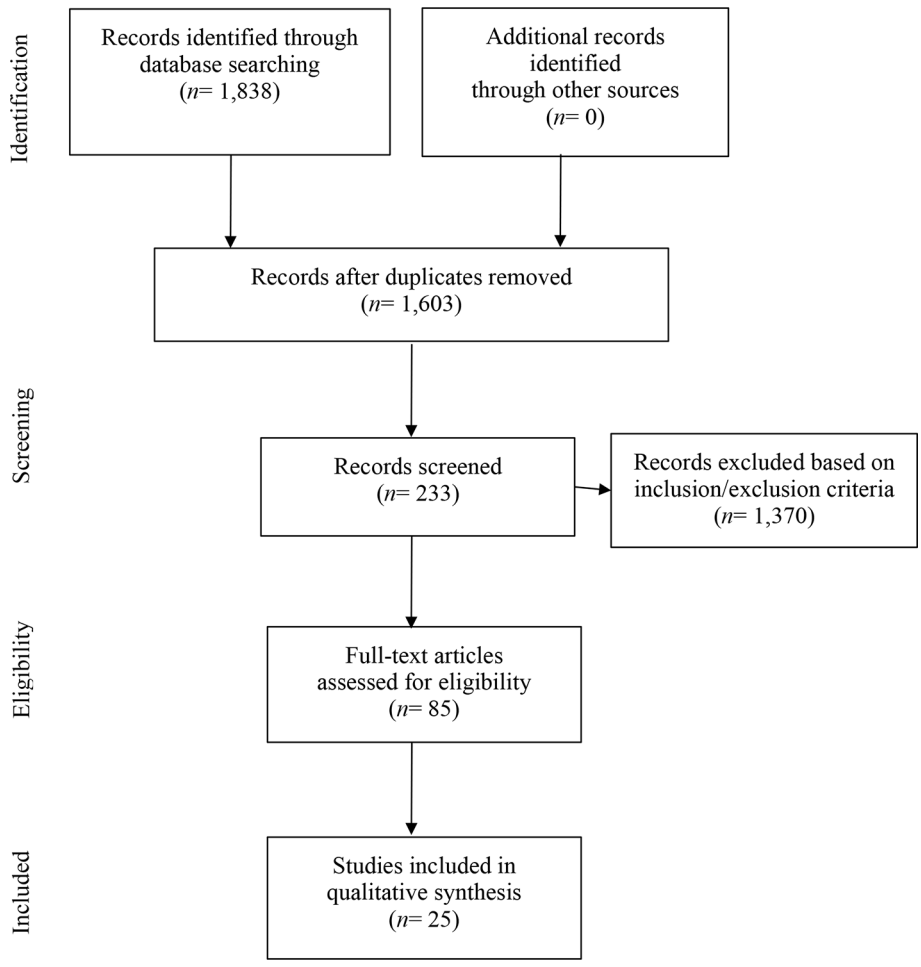

FIGURE 1 | Flowchart of the systematic search. PRISMA flowchart from (82).

TABLE 1 | Results of peer-reviewed publications on spirituality and moral injury among military personnel (from January 2000 to April 2018).

Author, year of publication	Study type	Study population	Objective	Spirituality: A Potential Cause of and Protective Factor against MI	Self and Identity: Lost and Found	Meaning-Making: What Once Was and Now Is	Spirituality as a Facilitator of Treatment for Moral Injury	Faith Communities: Possible Sources of Fragmentation or Healing
Blinka et al., 2014 (73)	Qualitative	Military, social workers	Explore role of social work within MI treatment and consider spiritual implications of treating MI		*		*	
Carey et al., 2016 (46)	Qualitative	Military chaplains	To gain an understanding of the role of chaplains within experiences of MI	*			*	
Currier et al., 2015 (67)	Mixed methods	Military	To gain an understanding of how exposure to morally injurious experiences contribute to mental health through meaning making	*		*		*
Doehring, 2015 (54)	Qualitative	Individuals including military members experiencing moral stress	Analysis of moral stress as drawn from the military moral injury literature, considering resilience and the role of spiritual care	*	*		*	*
Drescher et al., 2011 (57)	Qualitative	Health and religious professionals experienced in working with military populations	Construct validation of MI through comparison with semistructured interviews conducted with health and religious professionals	*			*	
Drescher et al., 2011 (57)	Qualitative	Military	Examination of spiritual consequences of MI and PTSD in military veterans		*			*
Evans et al., 2019 (65)	Quantitative	Military	Examined the relationships between potentially morally injurious events, religion/spirituality struggles, and psychological distress	*		*		*
Haight et al., 2016 (47)	Qualitative	Individuals including military members experiencing MI, social workers	Literature review of MI to inform social work research on MI development and treatment options as relates to practice in many morally complex environments including with military populations.	*	*	*		
Hufford et al., 2010 (55)	Qualitative	Military	Exploration of how spiritual fitness can contribute to military unit cohesion, performance, readiness, resilience, and protection	*		*	*	*
Jinkerson, 2016 (53)	Qualitative	Military	Literature review of MI to inform a proposed updated conceptual definition	*		*		
Kopacz et al., 2017 (74)	Qualitative	Military, spiritual care providers	Provide contextual framework for chaplain services provided to veterans, conceptualize the needs of veterans seeking chaplain support, and provide recommendations for providing spiritual care to veterans			*	*	*
Kopacz et al., 2015 (66)	Qualitative	Military, social workers	Inform understanding of role of social work within MI treatment	*		*	*	
Kopacz et al., 2016 (60)	Qualitative	Military	Consideration of complementary therapies as treatment for MI and research strategies to create an evidence base around MI treatments	*				
Kinghorn, 2012 (18)	Qualitative	Military	Consideration of combat trauma and MI from a theological perspective	*				*
Koenig et al., 2017 (68)	Qualitative Case Study	Military	Described a case study employing spiritually integrated cognitive processing therapy	*			*	*
Litz et al., 2009 (11)	Qualitative	Military	Literature review of MI-proposed conceptual framework and interventions	*	*	*	*	*
Malott, 2015 (58)	Mixed methods	Military	Examination of the relationship between morally injurious experiences, religious/spiritual factors, and meaning making in veterans	*		*	*	

(Continued)

TABLE 1 | Continued

Author, year of publication	Study type	Study population	Objective	Spirituality: A Potential Cause of and Protective Factor against MI	Self and Identity: Lost and Found	Meaning-Making: What Once Was and Now Is	Spirituality as a Facilitator of Treatment for Moral Injury	Faith Communities: Possible Sources of Fragmentation or Healing
Miller, 2016 (61)	Qualitative	Military	Increased understanding of combat veterans' firsthand accounts of moral, theological, and spiritual struggles following morally injurious experiences	*	*	*		*
Nazarov et al., 2015 (62)	Qualitative	Military	Exploration of association between morality, guilt, and shame	*				*
Pearce et al., 2018 (64)	Qualitative case study	Military	Introduced a new treatment for moral injury, spiritually integrated cognitive processing therapy	*			*	*
Purcell et al., 2016 (40)	Qualitative	Military	Examination of the psychosocial and interpersonal consequences of killing in war and consideration of findings for treatment of military personnel.	*	*		*	*
Rennick, 2013 (59)	Qualitative	Military	Examination of changes in religious and values in Canadian society, role of leaders in moral/ethical experiences and need for enhanced spiritual education for military personnel	*	*	*	*	
Flipse Vargas et al., 2013 (56)	Qualitative	Military	Construct validation of MI through examination of MI themes present in National Vietnam Veteran's Readjustment Study	*				
Worthington et al., 2012 (63)	Qualitative	Military	Explore mechanisms of development of self-condemnation and how trauma relates to self-condemnation.	*	*		*	*
Yan, 2016 (71)	Mixed methods	Military	To gain an understanding of the impact of spirituality, demographic variables, and MI on physical and mental health of veterans	*	*			
Total (N = 25)				**22**	**10**	**11**	**14**	**14**

MI, moral injury; PTSD, posttraumatic stress disorder.

self-condemnation following exposure to an MIE (63, 66). Hufford et al. suggested that those who are religious may experience greater distress and may be at greater risk of MI due to existential questioning of a Divine being and a "shattering [of] deeply held spiritual beliefs" (p. 76) (55). Currier et al. (67) noted that insult to one's religious framework or spiritual belief system may result in distress (40, 55, 61, 62, 67, 69). Interviews with combat veterans considering experiences of MI identified loss, questioning, and disillusionment of faith/a higher power as postdeployment experiences (61). As MI can significantly damage the way a person's values, beliefs, and spirituality guide daily behaviors, consideration of spiritual or theological perspectives may enhance current psychological and medical understandings of MI (18, 54).

Spirituality is also identified both as a protective factor against MI (55, 58, 70, 71) and as a means of coping with MIEs. Hufford and colleagues suggest that spiritual resilience might provide protection from MI in wartime experiences (55). Malott's (58) survey of 140 Iraq and Afghanistan veterans found that veterans who utilized daily spiritual practices had increased religious coping abilities and levels of forgiveness (58). Further, military personnel whose spirituality was more refined were found to more readily incorporate MIEs into their spiritual framework, potentially reducing the risk of MI (58). Finally, studies suggest that drawing on spiritual practices and Chaplain services during deployment can support spiritual beliefs and offer understanding and context to MIEs (55, 59).

Self and Identity: Lost and Found

A loss of innocence, self, and soul during and following deployment has been reported by veterans (61). Cognitive dissonance that arises from discrepancies between an individual's moral belief system, self-concept, actions, and experiences when exposed to MIEs (11, 59, 72) can disrupt a person's ability to align their personal sense of right and wrong with that of society (11, 40, 47, 54) and create "maladaptive moral intuitions" of oneself (p. 644) (54). As spirituality enables people to make meaning of events, helping military members "cognitive[ly] [reframe] events as implicitly spiritual experiences" (p. 78) (55) may minimize the risk of MI. In the course of recovery from MI, efforts

can be made to help members gain greater self-understanding, self-acceptance, and self-worth through self-reflection (69).

Meaning-Making: What Once Was and Now Is

Exposure to MIEs can compromise an individual's sense of identity, self-worth, and orienting systems, leaving one struggling to find meaning (11, 13, 47, 54, 58, 59, 61, 69, 71, 72). Feelings of unease, self-condemnation, and distress can quickly surface (47, 58, 67). Currier and colleagues found that exposure to more traumatic MIEs is negatively correlated with a person's ability to make meaning of trauma (67), be that meaning made of the MIE, the impact of the MIE on meaning systems, or attributions of the MIE (11, 47, 53, 55, 59–61, 65, 67, 58, 73). From a syndrome perspective of MI (53), perceived loss of life meaning has been identified as a core symptom within the spiritual conflict domain (61). Deriving meaning from an MIE has enabled veterans to alleviate stress, restore meaning, realign previously established moral frameworks, and influence the likelihood of developing MI (53, 55, 59). Consideration of the MIE and the meaning a member attributes to it is essential when seeking resolution for MI (11), something that Kopacz and colleagues (60) suggest pastoral care can help military personnel with.

Spirituality as a Facilitator of Treatment for Moral Injury

The literature outlines treatment strategies required for the prevention and resolution of MI (1, 11, 74, 75). Specific spiritual interventions may be key to alleviating symptoms, reestablishing a stable framework of beliefs, values, and moral code (11, 54), and reestablishing relationships with self, others, the world, and the sacred or Transcendent. This may involve education, modified exposure, self-forgiveness, dialogue with a benevolent moral authority, reparation and forgiveness, (re)connection and (re) engagement with an S/R community, and integration throughout life (1, 11, 74, 76). Spirituality, which is identified as a treatment modality for MI (p. 704) (77), may enhance recovery and healing (11, 40, 46, 54, 55, 58–60, 63, 64, 68, 72, 73, 78).

S/R practices can be incorporated throughout the course of military service. During deployment and prior to returning home, S/R practices and rituals/ceremonies aimed at cleansing, purification, healing, and restoration of relationships with self, others, and the gods/Transcendent have been noted to foster cohesion among military members (55) and facilitate healing and transition to postservice activities. S/R principles and practices—specifically confession and forgiveness from a higher power—are noted to support self-forgiveness (63), which has been identified as a critical component of recovery from MI (11, 63). Further, Drescher et al. (29) highlighted numerous specific S/R intervention strategies: i) forgiveness to facilitate repair of relationships; ii) review of S/R beliefs and engagement in S/R practices that temper anger, rage, and a desire for revenge; iii) prayer and meditation to reduce stress; and iv) (re)connections with S/R communities to reduce isolation, establish social supports, encourage a healthy lifestyle, and facilitate recovery. The following S/R practices can also be incorporated into general interventions (17): i) self-regulation (e.g., through prayer, meditation, yoga, mindfulness, and breathing), ii) self-concept (i.e., enhancing self-awareness through journaling, alignment with a benevolent moral authority), iii) concept of the world (e.g., contributing to making the world a better place through acts of community services, e.g., working at a food bank, soup kitchen, or house-building initiatives), iv) moral emotions (e.g., virtuous living, cultivating a grateful attitude, acceptance, joy), and v) social connection.

Integration of S/R perspectives into general strategies used to treat PTSD and MI is also noted in the literature. This includes the use of spiritual dialogue (77), imagination, and spiritually oriented/integrated cognitive processing therapy (68). Specific spiritually integrated mindfulness, theological reflexivity, and compassion training could be employed to promote recovery and strengthen spiritual fitness and resilience (54, 55). Spiritual-strengthening and meaning-making groups are also suggested (58), as are arts and literature groups to explore S/R and moral dimensions of MIEs (66). Several articles highlighted the importance of chaplains, and pastoral and spiritual care services as a resource for addressing MI (46, 58, 59, 79).

Faith Communities: Possible Sources of Fragmentation or Healing

S/R communities can be invaluable resources for military personnel and veterans recovering from MI. Faith-based communities can provide a place and space for members to connect; engage; practice patience, kindness, and forgiveness; spiritually integrate; and reconstruct meaning and purpose (11, 13, 18, 54, 61–65, 40, 68, 73). Conversely, some individuals may experience difficulty engaging in S/R communities due to feelings of guilt, shame, and perceived or real judgment. This can regrettably exacerbate MI symptoms (61, 67). Ideally, however, community can surround military members and veterans struggling with MI so that they can find healing and a renewed sense of meaning and growth.

DISCUSSION

This mini-review, which aimed to explore the relationship between spirituality and MI, identified a cyclical relationship between MI and spirituality such that S/R was found to serve as both a risk factor for and a protective factor against MI; it can also be directly influenced by MIEs. As a result, consideration of S/R factors, in addition to biopsychosocial elements, is essential when trying to better understand, prevent, and treat MI experienced by military members and veterans.

This review emphasizes the importance of utilizing a holistic biopsychosocial–spiritual approach that leverages S/R resources for the benefit of those who experience S/R struggles such as MI (80) (e.g., the Canadian Model of Occupational Performance and Engagement) (81). Biopsychosocial models more widely used in modern healthcare (46) may be better able to meet the existential and spiritual needs of military members by integrating S/R resources, practices, and tools. This is becoming all the more important as military service becomes increasingly complex and members are impacted at the deepest level of their being (17) and spirit (18) by MIEs not only in the course of missions and disaster relief efforts, but also due to stateside and/or training accidents, drone warfare, and military sexual trauma.

There is growing support for the use of spirituality as both a treatment component of MI and way of addressing the varying values, beliefs, and spiritual needs of military personnel and veterans (11, 40, 46, 54, 55, 57, 59, 60, 63, 64, 72, 76, 79). Helping military personnel and veterans maintain a stable meaning system, ascribe spiritual meaning to MIEs, and access opportunities to discuss moral dilemmas may reduce the risk of developing MI (11, 43, 47, 53, 55, 59–61, 76, 79). This may be facilitated through supportive, nonjudgmental groups and faith communities and engagement in S/R practices and rituals prior to, during, and following military service.

While some evidence exists regarding the relationship between spirituality and MI, further research is yet needed regarding the following: i) how specific S/R orienting systems, interventions, practices, and rituals/ceremonies might protect against and treat MI; ii) features of individuals who do/do not experience MI; iii) S/R assessment tools and interventions, and key time points for their administration; and iv) ways to maximize the positive contributions of faith communities. More robust evidence is also needed to enable the confident use of S/R interventions as it applies to MI in relation to the self, identity, meaning making, S/R struggles, growth, and resilience. Finally, while research has been conducted regarding the way in which S/R may be supportive of members and veterans struggling with MI, further research into supports that social/cultural environments may be able to offer is also warranted.

Limitations

The scope of the review was restricted to a limited number of indexed peer-reviewed studies that focused on the S/R dimension of MI and were found in the five databases searched. While the search strategy reduced the risk of publication bias, some studies and salient work may have been overlooked. The findings are not generalizable to other groups experiencing MI beyond military personnel and veterans. Further, the subjective nature of concepts presented raises the possibility that personal bias informed thematic findings. To help offset this, the review was conducted by two blind reviewers, reflexivity occurred throughout the research process, and concepts were linked to concrete definitions.

CONCLUSION

Spirituality underlies many of the experiences of MI, including changes in identity, meaning making, social supports, and MI symptoms. The findings of this mini-review highlight the need to consider a person's spiritual fitness and health throughout military service and during treatment of MI and examine how spirituality can be fostered to help build resilience and reduce the risk of MI (17). While acknowledging the limited quality of evidence, encouraging military members and veterans to draw on S/R resources and practices may be a salve to psychospiritual distress. Integration of spirituality as a bona fide modality seems timely. Although much of the literature agreed that spirituality is important for the treatment of MI, more research is needed to understand how to effectively incorporate it into treatment to facilitate healing of MI among military members and veterans.

AUTHOR CONTRIBUTIONS

FS and SB-P collected the materials and resources needed for this review. SB-P, FS, and AP analyzed the data. FS and SB-P wrote this article, AP and TC provided subject matter expertise and reviewed and revised each draft of the manuscript.

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Association Between Trust and Mental, Social, and Physical Health Outcomes in Veterans and Active Duty Service Members With Combat-Related PTSD Symptomatology

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Background: Trust represents a complex emotion and interpersonal concept which assumes abandoning control over a given situation or set of circumstances, in turn yielding such control to another party. Advances in our knowledge of post-traumatic stress disorder and moral injury have underscored the need to more closely examine how trust stands to impact health outcomes in these disorders. The aim of the present study is to examine and identify relationships linking general trust with select health outcomes in a mixed sample of Veterans and Service members with a self-reported history of deployment to a combat theater and PTSD symptomatology.

Methods: This study applied a cross-sectional methodology, surveying $n = 427$ participants recruited across six sites. This included 373 Veterans and 54 active duty Service members in the United States. Measures included demographic characteristics, combat exposure, general trust, post-traumatic stress disorder symptomatology, depressive/anxiety symptomatology, alcohol use, social involvement, religiosity, and physical health. Data were analyzed descriptively as well as using Pearson correlations, Student's *t*-test, and multivariate regression.

Results: Several significant relationships were identified, indicating an inverse relationship between trust and PTSD, depressive, and anxiety symptomatology. Greater levels of trust were also significantly associated with increased social interaction and religiosity. Lastly, no significant associations were identified with either physical functioning or pain level.

Conclusion: The findings suggest that trust is correlated with a variety of health outcomes in Veterans and Service members affected by combat-related PTSD.

Additional, hypothesis-driven research, informed by longitudinal data, is needed to better understand how trust stands to impact health outcomes, including the development of strategies and intervention options for repairing trust.

Keywords: trust, post-traumatic stress disorder, Veterans, active duty military, depression, anxiety, pain, physical function

INTRODUCTION

Developing and establishing trusting relationships remains essential to healthy human development. Trust represents a complex emotion and interpersonal concept which assumes abandoning control over a given situation or set of circumstances, in turn yielding such control to another party (1). An enhanced or diminished capacity for trust stands to tangibly impact individual well-being across the biological-psychological-social spectrum (2). Of note, however, is that only a limited literature has informed understandings of how disturbed trust stands to impact the health and well-being of Veteran and Service member populations.

The value and importance of trust is especially well developed in the military, where the dynamic of military service pushes the issue of trust to the forefront (3–6). Operationalizing military policies or directives as well as ensuring individual and organizational safety is inherently dependent on trust between Service members to adhere to a common culture of accepted practices, principles, values, beliefs, and behaviors (7, 8). Even after military service, the presence or absence of trust remains a key factor in whether some Veterans choose to establish and maintain interpersonal as well as organizational relationships (9). For example, ensuring that Veterans and Service members retain trust in their health care providers is considered to be of critical importance. Trauma from combat experiences in particular has been significantly associated with a variety of adverse mental health outcomes (10–12).

A diminished capacity for trust usually falls under the rubric of general psychopathology and can be indicative of any number of clinical disorders. Understandings of how impacted trust stands to affect the health of Veteran and Service member populations have largely focused on samples affected by post-traumatic stress disorder (PTSD). In general terms, a diminished capacity for trust hampers access to social capital and supportive services, contributing to a downward spiral of increasing social isolation and difficulty accessing vital services (13). These understandings, however, remain limited, highlighting a need to advance our knowledge by more closely examining how trust stands to impact health outcomes in select Veteran and Service member populations.

Disturbed trust is commonly encountered in cases of PTSD (14). Disturbed trust has been cited as a reason why some Veterans do not engage in health care services (15, 16) or feel uncomfortable with available treatment options (17, 18). Disturbed trust also affects such domains as relationship functioning (19) and experiences of spirituality/religion (20). Of note is that differences have been noted in clinical presentation, pathophysiology, therapeutic responsiveness, and screening sensitivity and specificity between combat-related and non-combat-related PTSD (21–23). Such differences arguably suggest that those affected by combat-related PTSD may have unique health care needs reflective of their impacted trust. Interestingly, no published data appears to be available directly examining experiences of trust, or any health implications thereof, in populations specifically affected by combat-related PTSD. Depending on the study population, the prevalence of combat-related PTSD among American Veterans is thought to range from 2 to 17% (24).

An emerging body of research into moral injury (MI) has also informed understandings of trust among Veterans and Service members. There is presently no clinical threshold or diagnostic standard to identify cases of MI. Further, there is no single, standardized definition of MI which would extend across clinical-therapeutic settings (25). Still, MI is recognized as a focus of clinical concern, conceptually and clinically distinct from PTSD (26). One frequently cited definition of MI is that of "a deep sense of transgression including feelings of shame, grief, meaninglessness, and remorse from having violated core moral beliefs" (27). Such transgressions occur in the context of potentially morally injurious events (e.g., violence, human carnage, painful loss, feelings of betrayal by one's leaders) (28–31). Compared to PTSD, the impact of MI on trust is thought to be much greater. Among those affected by MI, the capacity for trust is believed to be lost, impaired, or even destroyed (29, 32), leaving Veterans and Service members susceptible to an expectancy of harm, exploitation, and humiliation from others (33). No published prevalence estimates of MI are available, though combat Veterans have been found to have a high intensity of exposure to potentially morally injurious events (34). In some cases, PTSD and MI may also present as co-morbidities (26).

The aim of the present study is to examine and identify relationships linking general trust with select psychological, social, religious, and physical health outcomes in a mixed sample of Veterans and Service members in the United States. This study is unique in its use of a sample with a history of deployment to a combat zone as well as PTSD symptomatology. The present study adds to the extant literature by examining bivariate and multivariate relationships involving general trust, affording a more robust understanding of how trust stands to impact the health and well-being of Veterans and Service members with combat-related PTSD symptomatology. The findings could serve to inform future research aimed at developing interpersonal as well as organizational trust among combat Veterans and Service members, in addition to mitigating any adverse health effects resulting from having difficulty with general trust.

METHODOLOGY

Participants for this cross-sectional study were recruited from six different sites. This included a sample of $n = 373$ Veterans recruited from the Department of Veterans Affairs (VA) Medical Center (MC) in Durham ($n = 72$; North Carolina), VA Greater Los Angeles Healthcare System ($n = 99$; California), Charlie Norwood VAMC ($n = 119$; Augusta, Georgia), Michael E. DeBakey VAMC ($n = 48$; Houston, Texas), Audie L. Murphy VAMC ($n = 35$; San Antonio, Texas). A sample of $n = 54$ active duty Service members were recruited through Liberty University ($n = 54$; Lynchburg, Virginia). Only Veteran or active duty Service members, with a self-reported history of deployment to a combat theater, and exhibiting PTSD symptoms were included in this study.

The data analyzed here were drawn from a larger study examining the psychometric properties of a measure of moral injury. A detailed methodology of this larger study has been published elsewhere (35). In brief, after informed consent was obtained, paper questionnaires were completed in person at all sites except the Liberty University site where the questionnaire was completed online. Participants were compensated with a $25 gift card for their time. This study was approved by the institutional review boards (IRBs) and Research & Development (R&D) Committees at Duke University as well as at each data collection site. The demographic, military, social, religious, psychological, and physical health characteristics of the sample are presented in **Table 1**.

We applied several procedural remedies in an effort to mitigate any potential for common method bias (36). As part of the informed consent process, the sample was duly informed that responses would not be applied for diagnostic purposes nor would responses come to bear on the Veteran's or the Service member's provision of health care services or other benefits. Further, all responses were provided anonymously. The survey packet included a variety of questions and instruments with instructions designed to preclude any issues related to question order or "socially desirable responses." Lastly, our measurements were in large part limited to high-quality empirically validated and published instruments which have already been extensively used in research.

TABLE 1 | Sample characteristics and bivariate associations between trust (GTS) and demographic, psychological, social, and physical health outcomes.

	Mean (SD)/% (n)	Trust (r or t)
DEMOGRAPHIC		
Age, years	53.6 (14.7)	$r = 0.25$****
Gender, % male	88.7 (377)	$t = 1.1$
Race, % Caucasian	39.2 (165)	$t = 2.0$*
Education, years	14.1 (3.3)	$r = 0.10$*
Marital status, % married	49.2 (207)	$t = 1.2$
MILITARY		
Combat, % involved	69.3 (293)	$t = 0.5$
Combat theater, % Middle East	54.1 (229)	$t = -3.6$***
Time since deployed, years	23.0 (18.2)	$r = 0.16$**
SOCIAL		
Relationship quality (range 1–10)	6.4 (2.6)	$r = 0.39$****
Community involvement (range 1–10)	3.9 (2.6)	$r = 0.32$****
RELIGIOUS		
Christian affiliation, % Christian	82.8 (351)	$t = -0.9$
Religious commitment (BIAC) (10–100)	43.9 (20.9)	$r = 0.15$**
PSYCHOLOGICAL		
PTSD diagnosis (self-reported; % yes)	81.3 (340)	$t = -2.6$*
PTSD severity (PCL-5; 0–80)	52.3 (16.2)	$r = -0.20$****
Depressive symptoms (HADS; range 7–28)	16.6 (4.1)	$r = -0.36$****
Anxiety symptoms (HADS; range 7–28)	19.5 (4.1)	$r = -0.33$****
Alcohol use, % more than 2 drinks/day	11.1 (47)	$t = 0.2$
PHYSICAL		
Pain severity (range 1–10)	6.0 (2.6)	$r = -0.08$
Physical impairment (range 1–10)	5.7 (2.8)	$r = -0.05$

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, ****$p < 0.0001$.
GTS, 6-item General Trust Scale; PCL-5, PTSD Checklist–DSM5 Military Version; HADS, Hospital Anxiety and Depression Scale.

Measures

Demographic Characteristics

Respondents were asked their age, gender, race, education, and marital status. Respondents were also asked their religious affiliation, with the following answer options: Christian, Jewish, Hindu, Muslim, Buddhist, other, no affiliation, and atheist/agnostic.

General Trust

The 6-item General Trust Scale (GTS) was used to assess beliefs about the honesty and trustworthiness of others (37). The GTS has been extensively used in studies examining general trust (38–40). The original validation study provided Cronbach's alpha (α) values of 0.72 in a sample of American college students, 0.78 in an American general population sample, 0.76 in a sample of Japanese students, and 0.70 in a Japanese general population sample. In the present sample, $\alpha = 0.85$. This is the first known study to apply the GTS in a mixed sample of Veterans and active duty Service members. Factor structure and across-sample correlations of factor loadings were generally high. For the purposes of the present study, GTS response categories were expanded from a 5-point to a 10-point Likert-type scale, yielding a total composite GTS score range of 6–60, with higher scores indicative of greater trust. Principle components factor analysis of the GTS in the present study demonstrated a single factor explaining >90% of the variance in the GTS.

PTSD

The PTSD Checklist for DSM-5 (PCL-5) is a 20-item measure assessing for the symptoms required for a PTSD diagnosis per criteria outlined in the *Diagnostic and Statistical Manual, Fifth Edition* (41, 42). The PCL-5 has shown high reliability and strong associations with combat exposure and functional impairment in military personnel (43, 44). Scores on the PCL-5 above a cutoff of 31–33 are reported to have the highest quality of efficiency in determining a DSM-5 diagnosis of PTSD (sensitivity of 0.88, specificity of 0.69, and positive predictive value of 0.81). In the

present sample, $\alpha = 0.94$. Participants were additionally asked if they had ever received a formal clinical diagnosis of PTSD (yes or no).

Combat-Related Symptomatology

All respondents self-reported either (a) deployment to a combat zone, without combat involvement or (b) deployment and combat involvement. For the purposes of the present study, this is taken to be indicative of combat-related symptomatology. A variety of deployment-related stressors have been associated with adverse mental health outcomes (45–47). Respondents were also asked their theater(s) of combat (e.g., Middle East, Vietnam, Korea, WWII, etc.) and the number of years since their last deployment.

Depressive/Anxiety Symptomatology

The 14-item Hospital Anxiety and Depression Scale (HADS) assesses for anxiety and depressive symptoms, each measured by seven items (48). The HADS has been reported to have high internal reliability ($\alpha = 0.85$ for the anxiety subscale, $\alpha = 0.84$ for the depression subscale, and $\alpha = 0.89$ for the overall scale) (49). In the present sample, $\alpha = 0.86$.

Alcohol Use

Daily alcohol intake was measured using a single item on a 4-point scale, ranging from "none" to "a lot (>6 drinks/day)". For the purposes of data analysis, responses were dichotomized into (a) <2 drinks/day and (b) >2 drinks/day.

Social Involvement

Respondents were asked to respond to two questions asking about (a) the quality of their relationships with spouse, children, and friends and (b) their level of involvement in community activities (other than religious group participation). Each was rated on a scale from 1 (not good/not at all) to 10 (very good/a great deal). The scores on the two items were summed to create a composite score ranging from 2 to 20, where higher scores are indicative of greater social involvement. In the present sample, $\alpha = 0.57$.

Religiosity

The 10-item Belief into Action Scale (BIAC) is used to assess religious involvement (50, 51). This measure assesses degree of religious commitment, time spent in religious activity, and money given for religious causes. Each item is scored on a scale from 1 to 10, yielding a composite score range of 10–100, with higher scores indicating greater religiosity. In the original validation study, the internal reliability ($\alpha = 0.89$, 95% $CI = 0.86$–0.91) and test-retest reliability for the BIAC (intra-class correlation or ICC = 0.92, 95% $CI = 0.87$–0.95) were high. The scale has robust convergent, discriminant, and factor analytic validity (one factor explaining 94% of variance). In the present study, $\alpha = 0.90$.

Physical Health

Difficulty engaging in physical activity level was assessed with a single item rated on a 0 to 10 scale (0 = no difficulty with physical activity, 10 = great difficulty with physical activity). Current pain level was also assessed with a single question ("How much physical pain do you have on a daily basis?") likewise with ratings from 0 to 10 (0 = no pain, 10 = severe pain).

Missing Values

If more than 50% of responses were left unanswered on the GTS, then such individual cases were removed from data analysis by list-wise deletion. In cases of missing items, if participants answered at least 50% of items on a given scale, the average of items answered was substituted for the missing item value. Missing values had to be substituted in 2.4% of GTS cases (10 cases; nine involving a substitution of one item and one case involving two items), 9.9% of PCL-5 cases, 8.3% of HADS cases, <0.5% of the social involvement questions, and 5.9% of BIAC cases.

Statistical Analyses

Means (standard deviations) and frequency distributions were calculated to describe the sample. Associations between trust (6-item GTS) and demographic, military, social, religious, psychological, and physical health characteristics were examined using Pearson correlations for bivariate analysis of continuous variables and the Student's *t*-test for comparison of trust scores across dichotomized categorical variables. Multivariate regression was used to examine the association between trust and mental, social-religious, and physical health states, controlling for demographic and military characteristics. First, all demographic and military characteristics were included in full multivariate models; second, only characteristics associated with the outcomes at $p < 0.20$ were included in final reduced models. Statistical significance was set at $p < 0.05$. SAS (version 9.3; SAS Institute Inc., Cary, North Carolina) was used for all analyses.

RESULTS

A total of $n = 7$ (1.6%) individual cases were removed from data analysis owing to the omission of more than 50% of items on the GTS. The mean on the GTS was 35.1 ($SD = 11.0$) ranging from 6.0 to 54.0, with a median of 36.0 ($n = 420$). No significant difference on trust was found between Veterans and Active Duty Military on GTS scores (35.0, $SD = 11.1$, vs. 35.5, $SD = 9.9$, respectively). Those who were older, white Caucasian, more educated, deployed to combat theaters other than the Middle East (i.e., Vietnam, etc.), and deployed longer ago, all had higher trust scores (**Table 1**). With regard to social interactions, Veterans and Active Duty Military who scored higher on the GTS reported greater community involvement and better relationships with family and friends, and were significantly more religious as well. Greater trust was also associated with a lower likelihood of self-reporting having received a formal PTSD diagnosis and less severe PTSD symptomatology ($r = -0.20$, $p < 0.0001$), as well as less depression and lower levels of anxiety (**Figure 1**). Trust was not associated with alcohol intake, nor was it significantly related to either daily pain severity or impairments in physical functioning.

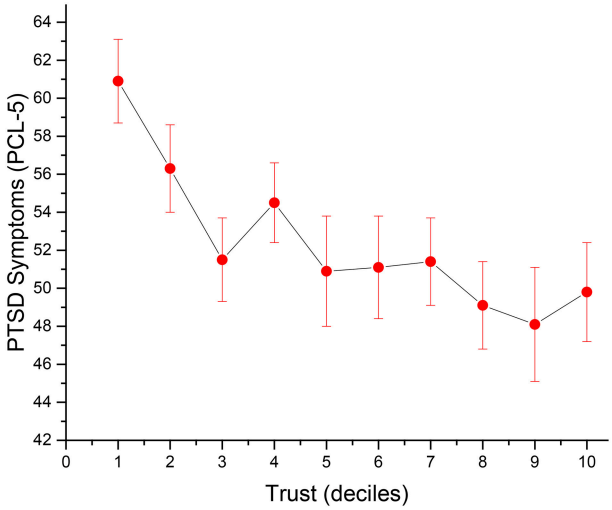

FIGURE 1 | Relationship between trust and PTSD symptoms (standard errors) (uncontrolled).

Multivariate Analyses

The relationships between trust and psychological, social, religious, and physical health were examined in multivariate regression models, controlling for demographic and military characteristics (**Table 2**).

PTSD Symptomatology

Among demographic and military factors in full models that included all of these characteristics, only two were related to PTSD symptom severity (at $p < 0.20$). Being non-White (i.e., Black or Hispanic, primarily) was associated with greater PTSD severity, as was a history of deployment to the Middle East combat theater. When controlling for both of these factors, however, trust remained strongly and inversely associated with PTSD symptoms ($B = -0.27$, $SE = 0.07$, $p = 0.0002$).

Depressive Symptomatology

In the full model, greater depressive symptoms were associated with less education, being married, not being Christian, and not being actively involved in combat. Reduced models controlling for these demographic and military factors indicated that greater trust remained inversely related to depressive symptoms and was the strongest of all correlates ($B = -0.14$, $SE = 0.02$, $p < 0.0001$).

Anxiety

In the full model, greater anxiety was respectively reported by younger participants, married respondents, and those deployed to the Middle East. Controlling for these factors, greater trust remained inversely related to anxiety symptoms, and again, was the strongest and only significant inverse correlate ($B = -0.11$, $SE = 0.02$, $p < 0.0001$).

Social Interaction

In the full model, social interaction was greater among those with more education, those who were actually involved in combat, and those who were not deployed to the Middle East (i.e., those indicating they served in Vietnam, Korea, World War II, or other theaters). Again, greater trust remained significantly related to, and was the strongest predictor for, greater social interaction, even after controlling for these factors ($B = 0.15$, $SE = 0.02$, $p < 0.0001$).

Religiosity

In the full model, those who were older, non-White, with more education, and Christian reported higher scores on religious involvement. After controlling for these factors in the reduced model, greater trust remained significantly correlated with greater religiosity ($B = 0.24$, $SE = 0.09$, $p = 0.005$).

Physical Health

Daily pain severity was related to older age and less education, most strongly in non-White race respondents, but was not related to level of trust in either the full model or the reduced model. Likewise, impairments in physical functioning were related to older age, less education, involvement in actual combat, most strongly in non-White race respondents, but was again unrelated to level of trust.

DISCUSSION

The aim of the present study was to examine the relationship between general trust and select health outcomes, controlling for potentially confounding variables, in a population of Veterans and Service members with combat-related PTSD symptomatology. Several significant relationships were identified, indicating an inverse relationship between trust and PTSD, depressive, and anxiety symptomatology. Greater levels of trust were also significantly associated with increased social interaction and religiosity. Lastly, no significant associations were identified with either physical functioning or pain level. To the best knowledge of the authors, these findings appear to be without precedent in the literature, underscoring a need for additional, hypothesis-driven research.

The present findings highlight how general trust is correlated with a variety of health outcomes in a sample of Veterans and Service members with combat-related PTSD symptomatology. As Service members continue to return from foreign theaters of combat and return back into the community as Veterans, developing understandings of the clinical importance of general trust will no doubt remain a focus of empirical attention. Irrespective of clinical condition, enhanced or diminished trust among Veterans and Service members has also been found to impact such domains as suicide risk screenings (52), employment (53), relationships (54), and psychosocial readjustment (55–57). Future research should invariably include a focus on identifying viable options and avenues for facilitating trust among those affected by combat-related PTSD symptomatology. At present, (re)establishing the capacity to trust is described as a secondary outcome of existing PTSD treatment options, with cognitive behavioral therapy being the most promising treatment for facilitating general trust (58–60).

TABLE 2 | Multivariate associations between trust, psychological, social, and physical health outcomes.

	PTSD *B (SE)*	Depression *B (SE)*	Anxiety *B (SE)*	Social *B (SE)*	Religiosity *B (SE)*	Pain *B (SE)*	Physical functioning *B (SE)*
Age, years	—	—	−0.04 (0.02)	—	0.04 (0.07)	0.03 (0.01)***	0.03 (0.01)**
Gender, female	—	—	—	—	—	—	—
Race, Caucasian	−5.85 (1.58)***	—	—	—	−5.92 (1.94)**	−1.19 (0.26)****	−1.06 (0.28)***
Education, years	—	−0.12 (0.06)*	—	0.15 (0.06)*	0.82 (0.29)**	−0.06 (0.04)	−0.07 (0.04)
Marital status, married	—	1.08 (0.38)**	0.69 (0.38)	—	—	—	—
Christian (yes)	—	−0.59 (0.49)	—	—	18.9 (2.5)****	—	—
Combat involved (yes)	—	−0.75 (0.40)	—	1.14 (0.42)**	—	—	0.41 (0.29)
Combat theater (ME)	0.32 (1.57)	—	0.37 (0.58)	−0.87 (0.40)*	—	—	—
Time since deployed (years)	—	—	—	—	—	—	—
Trust (6-item GTS)	−0.27 (0.07)***	−0.14 (0.02)****	−0.11 (0.02)****	0.15 (0.02)****	0.25 (0.09)**	−0.02 (0.01)	−0.01 (0.01)
Model R-square (n)	0.07**** (410)	0.17**** (403)	0.14**** (409)	0.20**** (404)	0.18**** (407)	0.10**** (410)	0.07**** (407)

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, ****$p < 0.0001$; ME, Middle East; GTS, General Trust Scale.Only variables associated with outcome at $p < 0.20$ in full models included in final models above.*

In the present sample, greater levels of trust were associated with both increased social interaction and greater religiosity. The implications of this finding potentially extend beyond combat-related PTSD symptomatology and may also serve to inform an emerging body of research into MI. For example, issues related to religion and spirituality have been posited as potential "root causes" of MI (25, 61). The negative affect encapsulated by MI may draw from faith-based standards of moral conduct violated in the course of a morally injurious event. Through social interaction (e.g., religious practice), those affected by MI are exposed to different sources of social capital that might help them rebuild trust (62). In the cases of both PTSD as well as MI, higher levels of trust intuitively suggest a salutary cycle of support, such as a propensity to engage with different sources of support, reinforcing and developing existing general trust, ultimately supporting favorable therapeutic outcomes.

Trust is dependent on a variety of factors. One might reasonably argue that some Veterans may have also had trust issues preceding their military service. For this reason, future research should also be guided by longitudinal data, including such variables as history of relationships with family of origin, any experiences of abandonment (e.g., "broken home," foster care), relationships with significant others, and marital history. It is not uncommon for Veterans to have difficult pre-military family experiences (63). Enlistment in the military services may, in some cases, be motivated by the desire for an alternative, more trustworthy "family experience" (64). In the United States, the issue of qualifying for Department of Veterans Affairs (VA) benefits also stands to tangibly impact general trust in this organization, with implications extending far beyond just populations affected by combat-related PTSD. In recent years, trust between Veterans and the VA health care system has been complicated by organizational issues and challenges (65–67). Another avenue for future research might include comparatively examining levels of general trust, inclusive of any associated health effects, among Veterans who have qualified for VA services vs. those who did not qualify.

The generalizability of the findings reported here and their interpretation is limited by several factors. This was a sample of convenience that involved volunteers who agreed to participate. As a cross-sectional study, it was impossible to determine causality (e.g., whether greater trust led to less PTSD, depression, anxiety, and better social relationships, or vice versa). Participants were recruited from sites located primarily in the southern United States, so these results may not apply to Veterans and/or Service members more generally, nor do they take into consideration certain regional, cultural, or contextual influences which may not be present in other parts of the country. Future research should consider diversifying sample recruitment across multiple military, civilian, and geographic regions/settings. The dynamic governing trust among Service members is presumably different from that of Veterans. Any such bias would have been mitigated by the inclusion of only a small subsample of active duty Service members ($n = 54$; 13% of the sample). The present study did not assess for different types of trauma experienced by the sample. Lastly, all data was self-reported and not verified by official government and/or clinical records.

Notwithstanding these limitations, the findings of this cross-sectional study provide an important degree of insight into the association between general trust and select health outcomes in a sample of Veterans and Service members with PTSD symptomatology. Understandings of how trust impacts health outcomes remain limited. Further, a paucity of evidence-based support options exist for building trust (68, 69). By drawing attention to the possibility that increasing trust may lead to more favorable health outcomes, the intention was to inform future research into trust-building clinical interventions. The strength of these findings is reinforced by the use of a large, multi-site sample inclusive of both Veterans and Service members with PTSD symptomatology, the use of psychometrically validated measures, and the careful assessment and control for numerous demographic and military characteristics. Future research should consider longitudinal studies of trust and health outcomes, developing comparative studies between combat- and

non-combat-related PTSD, and seeking to better understand the role of faith in the development of trust.

CONCLUSION

This cross-sectional study sought to examine the relationship between general trust and select health outcomes in a mixed sample of Veterans and Service members with PTSD symptomatology. The findings suggest that trust is correlated with a variety of health outcomes in this group. Several significant relationships were identified between trust and clinical symptomatology of PTSD, depression, and anxiety, respectively. Trust was also associated with social interaction and religiosity. The findings suggest several avenues for additional research into how disturbed general trust impacts the health of Veterans and Service members with PTSD.

ETHICS STATEMENT

This study was conducted in accordance with IRB and R&D Committee approval at Duke University as well as each data collection site. Prior to taking part, all participants gave written informed consent in accordance with the latest version of the Declaration of Helsinki.

AUTHOR CONTRIBUTIONS

MK, DA, and HK: Contributed to writing article. HK: Data collection, database maintenance, data analysis.

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Mechanisms of Moral Injury Following Military Sexual Trauma and Combat in Post-9/11 U.S. War Veterans

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Objective: Moral injury may result from *perpetration-based* and *betrayal-based acts* that violate deeply held norms; however, researchers and clinicians have little guidance about the moral injury syndrome's specific developmental pathways following morally injurious events. The present study's objective was to examine the direct and indirect pathways proposed in a frequently cited model of moral injury (1) in relation to two types of military-related traumas [experiencing military sexual trauma (MST) and combat exposure].

Methods: Secondary analyses were conducted within a sample of post-9/11 veterans at a Southwestern Veterans Health Care System ($N = 310$) across two time-points. Structural equation modeling tested the direct and indirect pathways from MST and combat to a PTSD-depression factor via betrayal, perpetration, guilt, and shame.

Results: Betrayal accounted for the association between MST and PTSD-depression ($\beta = 0.10$, $p < 0.01$, 95% CI $= 0.01 - 0.11$) and perpetration accounted for the association between combat and PTSD-depression ($\beta = 0.07$, $p < 0.05$, 95% CI $= 0.02 - 0.14$). The indirect path from combat to shame to PTSD-depression was significant ($\beta = 0.16$, $p < 0.01$, 95% CI $= 0.07 - 0.28$) but the path through guilt was not. The specific indirect paths through perpetration or betrayal to shame or guilt were non-significant.

Conclusions: Betrayal and perpetration are associated with PTSD-depression following MST and combat. Results suggest multiple pathways of moral injury development following different military traumas and morally injurious events. Implications for moral injury conceptualization and treatment are discussed.

Keywords: moral injury, military sexual trauma, veteran, posttraumatic stress disorder, depression, guilt, shame, combat trauma

INTRODUCTION

Moral injury describes the unique psychological harm of acting, failing to prevent, or witnessing actions that transgress one's deeply held values (i.e., perpetration-based morally injurious events) or being betrayed by a trusted authority figure in a high stakes situation [betrayal-based morally injurious events (1, 2)]. It was originally conceptualized to help account for the poorer functioning among combat veterans whose worst traumas involved acts of commission (e.g., killing) or omission (e.g., failing to prevent atrocities) over those whose worst traumas were life threat-based (3). Subsequently, Stein et al. (4) proposed that the construct be expanded to include noncombat betrayal-based experiences such as experiencing military sexual trauma (MST). Moral injury is thought to develop when veterans are unable to integrate the memories of their morally injurious events with their self-schemas and thus experience unresolved inner conflicts or moral dilemmas. These inner conflicts corrode their sense of self and engender guilt, shame, and rage (i.e., mechanisms of moral injury), which lead to the moral injury syndrome: depression, re-experiencing and avoidance trauma symptoms, substance abuse, spiritual/religious decline, and suicide (1, 3, 5).

There are a number of open questions in the moral injury field that directly impact clinicians' and researchers' ability to develop evidence-based, conceptually grounded assessment tools and psychotherapies. The boundary conditions of the perpetration-based or betrayal-based morally injurious event categories, (i.e., what counts as exposure to a potentially morally injurious event) are ill-defined and debated. There is little specific formulation about the relationships among perpetration and betrayal and the mechanisms of moral injury development such as guilt and shame, or their association with moral injury outcomes such as depression and PTSD. Thus, there is a great deal of unexamined heterogeneity in clinical presentations of moral injury and few empirical data to guide clinicians and researchers in developing either idiographic case conceptualizations of particular veterans or nomothetic evidence-based interventions for moral injury.

The current study tested whether the pathways that lead from two military traumas—combat exposure and MST—to PTSD and depression conformed to the moral injury framework. Specifically, we tested whether appraising MST and combat as either perpetration-based or betrayal-based morally injurious events leads to PTSD and depression, and whether guilt and shame accounted for any association between the military traumas, morally injurious events, and PTSD and depression. We conceptualized the betrayal-based and perpetration-based morally injurious events and guilt and shame as multiple mediating layers of the moral injury syndrome (here modeled as PTSD and depression) (1). Our goal was to identify potential modifiable mechanisms of moral injury that can be used to develop clinical profiles and, eventually, targeted treatments to help veterans relieve the burden of their moral injuries.

Military Sexual Trauma and Moral Injury

MST refers to any experience of sexual assault or repeated, threatening sexual harassment that occurred during a veteran's military service. MST can occur when the veteran was on or off duty, as well as on or off base, and could have been perpetrated by another service member or a civilian [definition from Federal law; Title 38 U.S. Code 1720D (6)]. A recent MST prevalence meta-analysis estimated that 24% of women and 2% of men reported military sexual assault and 53% of women and 9% of men reported military sexual harassment (7). MST is a risk factor for PTSD and depression, two psychological outcomes included in the moral injury syndrome, in both male and female post-9/11 veterans (8, 9).

Betrayal

Some moral injury researchers suggest that experiencing MST can be a morally injurious event because it may involve significant perceived betrayal by fellow service members (via within-rank violence) and military leadership in some circumstances (4, 10–12). In a sample of Army National Guard Soldiers redeploying from Afghanistan ($N = 935$), lifetime history of unwanted sexual activity (including pre-military and military time periods) was significantly correlated with perceived betrayal but not perceived perpetration (10). Two qualitative studies of morally injurious events in combat veterans' trauma narratives (4, 11) conceptualized MST as manifestations of within-rank violence or moral injury by others; however, neither coding guidelines nor examples of MST-related trauma narratives were provided. Thus, betrayal qualities of MST were difficult to evaluate. No studies have directly examined whether experiencing MST is associated with betrayal or if MST is associated with moral injury outcomes through its association with betrayal.

Shame and Guilt

A rich clinical and empirical literature has addressed the shame- and guilt-based reactions to sexual trauma, albeit in the context of PTSD and not moral injury (13–16). Shame and guilt have been described as an inherent reaction to the social subordination and degradation of being sexually assaulted (13) or as reflecting the internalization of underlying negative beliefs about oneself as a result of the trauma (15). The extent to which veterans feel shame vs. guilt after MST or betrayals, and whether shame vs. guilt accounts for any association between betrayal and PTSD and depression after MST is an open question.

Combat and Moral Injury

Combat is the primary context in which perpetration- and betrayal-based morally injurious events occur (3). Prototypical perpetration-based combat-related morally injurious events are killing enemies or non-combatants and participating in or failing to prevent excessive violence or atrocities. Among post-9/11 U.S. veterans, 40–65% of Army and Marine Iraq War veterans reported killing an enemy and ∼15% of Army and ∼30% of Marine Iraq War veterans reported killing a noncombatant [see (3) for a review]. The prevalence of morally injurious events have not been systematically assessed in post-9/11 veterans.

Perpetration and Betrayal

Perpetration- and betrayal-based morally injurious events are commonly assessed using the Moral Injury Events Scale [MIES (17)], which asks about perpetration of morally troubling acts by oneself or others and being betrayed by others. In a nationally representative sample of U.S. combat veterans, 10% reported perpetrations committed by the self, 25% reported perpetrations committed by others, and 25% reported being betrayed (18). MIES scores predicted higher odds of a current mental disorders (generalized anxiety, PTSD, and depression) and current suicidal ideation. Overall, morally injurious events are correlated with both PTSD and depression in samples of combat-deployed Marines (17), combat-deployed Army National Guard soldiers (10), and mental health treatment-seeking active duty Airmen (10).

Shame and Guilt

In the moral injury framework, the guilt and shame engendered by perpetrating morally injurious events are conceptualized as being, at some level, an appropriate and not irrational response (19, 20). Both guilt and shame may be salutary in that they may signal an intact conscience and promote prosocial reparative behavior and interpersonal reconnection (21, 22). A handful of studies have tested the associations between combat, guilt, and moral injury outcomes (23–26). Three found that combat-related guilt accounted for the association between perpetration-based combat experiences (e.g., killing in combat, participating in or observing atrocities) and moral injury-related outcomes such as PTSD, depression, or suicide (23, 24, 26). One found that perpetration was associated with state-based guilt, although guilt was not directly associated with PTSD (25). In general, few studies have distinguished between guilt and shame or attempted to parcel their relative contribution to outcomes following morally injurious events. Further, few studies have examined the associations among these variables over time.

Summary and Current Study

The current study's aim was to test proposed developmental mechanisms (guilt, shame) of moral injury (PTSD, depression) following two types of military trauma exposure (MST, combat) and two types of morally injurious events (betrayal, perpetration) within the context of a longitudinal parent study. Our goal was to provide empirically grounded preliminary guidance regarding clinical profiles of moral injury and potential modifiable factors that could be targeted in moral injury treatment. Overall, there are few exhaustive tests of the multiple intervening mechanisms in the moral injury model (e.g., testing relations from military trauma to appraisals of perpetration or betrayal to guilt and shame to moral injury outcomes). Few empirical data are available on experiencing MST within a moral injury framework and no studies have assessed whether experiencing MST is associated with PTSD and depression via betrayal. Likewise, few attempts have been made to integrate conceptualizations of perpetration- and betrayal-related guilt and shame within existing models of posttraumatic shame and guilt. Because exposure to combat trauma and MST is not mutually exclusive and both experiences may contribute to veterans' cumulative PTSD and depression (27–29), we included both types of military traumas in the current study to enhance ecological validity.

The key pathways representing the moral injury model were the indirect paths: (I) from MST through betrayal to a composite latent factor reflecting PTSD-depression, (II) from combat through betrayal to PTSD-depression, and (III) from combat through perpetration to PTSD-depression. The predicted direct pathways were numerically labeled to facilitate interpretation, as follows (see **Figure 1**). We predicted direct pathways from MST to betrayal (1), from combat to betrayal (2), and from combat to perpetration (3). We did not model the pathways from MST to perpetration because our measure of MST involved victimization only and thus a pathway through perpetration was neither conceptually nor clinically appropriate. To account for the guilt- and shame-based PTSD framework, we modeled the direct paths from MST to shame (4), from MST to guilt (5), from combat to shame (6), and from combat to guilt (7). We modeled the paths from betrayal to shame (8) and guilt (9), and from perpetration to shame (10) and guilt (11); these were considered exploratory. Because affective reactions to perpetration and betrayal other than shame and guilt may contribute to PTSD-depression [e.g., anger (25)], we also modeled the direct paths from betrayal to PTSD-depression (12) and perpetration to PTSD-depression (13). Given the established relations from guilt and shame to both depression (30) and PTSD, we modeled the paths from shame to PTSD-depression (14) and guilt to PTSD-depression (15). Based on the accumulated body of trauma literature, we expected significant direct pathways from MST to PTSD-depression (16) and from combat exposure to PTSD-depression (17).

MATERIALS AND METHODS

Participants and Procedures

This study was carried out in accordance with the recommendations of Central Texas Veterans Healthcare System Institutional Review Board. All subjects gave written informed consent in accordance with the Declaration of Helsinki consent prior to beginning the face-to-face baseline assessment. U.S. post-9/11 war veterans participated in a parent study of potentially modifiable psychosocial factors impacting adjustment over time following warzone service. Veterans were recruited using flyers posted throughout the medical center, letters mailed to a randomly selected listed of post-9/11 veterans enrolled in the local VA healthcare system, and through health provider referrals. Although veterans must have been enrolled in the VA healthcare system to participate, actual treatment seeking was variable and was not a requirement of eligibility. Specific populations (women, veterans with PTSD and depression) were over-sampled through targeted mailings; diagnoses for oversampling were based on the electronic medical record. Veterans were excluded if they had plans to relocate within the subsequent 4 months or met criteria for a psychotic or bipolar disorder. If veterans were receiving psychiatric care at the time of the baseline assessment, they were required to have reached treatment stabilization criteria for at least 3 months. Veterans were included in the current study if they were administered both the MST measure [DRRI; (31)] and the Moral Injury Events

Scale [MIES (17)] ($N = 310$). Data were gathered at two time points: MST and combat exposure were assessed at baseline; betrayal, transgression, shame, guilt, and PTSD, and depression were assessed 16 months later. Retention between time one and time two was extremely high (87%). Participants completed the self-report questionnaires at a VA medical center at baseline and by mail or online at the 16-month follow-up.

Measures

The Mini International Neuropsychiatric Interview (32) was used at baseline to screen for the excluded diagnoses of psychotic or bipolar disorders (Diagnostic and Statistical Manual for Mental Health Disorders, 4th Edition; *DSM-IV*; APA, 2000).

Combat Exposure was measured using 18-item Full Combat Exposure Scale (33). Items are rated on a 5-point scale ranging from 0 (*never*) to 4 (*10+ times*); the total summed score was used. In the current study, internal consistency using Cronbach's α was 0.92.

MST was measured using the 8-item Sexual Harassment Scale on the Deployment Risk and Resilience Inventory-2 (31). Items were scored on a 4-point Likert-style scale (1 = *Never* to 4 = *Many times*). In the validation sample of Iraq/Afghanistan veterans, internal consistency was $\alpha = 0.86$ (31). In the current sample, internal consistency was $\alpha = 0.89$. MST summed scores were used.

Betrayal and *perpetration* were measured using the 9-item Moral Injury Events Scale (MIES; 16). Items are rated on a 6-point Likert-style scale (1 = *Strongly agree* to 6 = *Strongly disagree*) scale. In the validation sample of combat-deployed Marines, internal consistency for the full measure was Cronbach's $\alpha = 0.90$ (17). In the current sample, the internal consistency of the betrayal factor was Cronbach's $\alpha = 0.85$; and of the perpetration factor was Cronbach's $\alpha = 0.94$.

Shame and *guilt* were measured using the 10-item State Shame and Guilt Scale (34). Respondents rated five guilt-related items (e.g., *I feel remorse, regret*) and five shame-related items (e.g., *I feel that I am a bad person*) on a 5-point Likert style scale (1 = *Not feeling this way at all* to 5 = *Feeling this way very strongly*) scale (see **Table 2** for item factor loadings). Estimates of internal consistency in a prior study of veterans were Cronbach's $\alpha = 0.69$ for the guilt subscale and Cronbach's $\alpha = 0.76$ for the shame subscale (35). In the current sample, guilt subscale Cronbach's α was 0.91 and shame subscale Cronbach's α was 0.91.

PTSD symptoms were measured at the 16-month follow-up assessment using the 20-item Posttraumatic Stress Disorder Checklist for DSM-5 [PCL-5 (36)]. Participants rated how much they were bothered by each of the 20 DSM-5 PTSD symptoms over the past month in relation to stressful military experiences on a 4-point Likert-style scale (0 = *Not at all* to 4 = *Extremely*). In the PCL-5 validation study, internal consistency was Cronbach's $\alpha = 0.95$ with a clinical cut-off of 33 to indicate probable PTSD (37). In the current study, internal consistency was Cronbach's $\alpha = 0.97$.

Depressive symptoms were measured at the 16-month follow-up assessment using the 9-item Patient Health Questionnaire-9 (38). Respondents indicated how often they have been bothered by symptoms of depression over the past 2 weeks on a 3-point Likert scale (0 = *not at all* to 3 = *nearly every day*). A PHQ-9 score of 10 is suggested as the cut-off for moderate depression (38). In the current study, internal consistency was Cronbach's $\alpha = 0.91$.

Data Analysis Plan

Preliminary analysis of study variables was conducted before testing our primary and secondary models. Approximately half of the items on the MST measure were skewed (0.99–5.06) and leptokurtic (-0.67–25.86) and so summed MST total scores were used. The summed total MST score was not significantly skewed (2.47) and was leptokurtic (6.05); however, non-normality is unlikely to affect parameter estimates when maximum likelihood estimation is used and sample sizes are larger than $N = 100$ (39).

The pattern of correlations among study variables was examined (**Table 1**). Next, we tested the full measurement model. Lastly, we tested the structural model assessing the direct and indirect pathways from MST and combat exposure to PTSD-depression via perpetration and betrayal, and guilt and shame. Model fit was determined using four indices: χ^2 test of model fit, comparative fit index (CFI), Tucker-Lewis fit index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). CFI and TLI values >0.90 and RMSEA and SRMR values of ≤0.08 are considered indices of good fit (40). Indirect paths were evaluated using the bias-corrected bootstrapped confidence intervals. SEM was conducted in Mplus Version 7.3, which estimated models using maximum likelihood estimation. All reported paths were standardized using the Mplus STDYX procedure.

RESULTS

The current sample was mostly male (76%, $n = 235$) and middle-aged ($M = 40.67$, $SD = 8.55$). Racial diversity reflected the geographic area: 57% white ($n = 177$), 32% African American ($n = 99$), 5% Asian American ($n = 15$), 6% American Indian/Alaska native ($n = 18$), 1% Hawaiian/Pacific Islander ($n = 3$), and 3% other ($n = 9$). Hispanic veterans (19%, $n = 60$) were also well-represented. Participants tended to be married (66%, $n = 205$) with some college experience but no degree (45%, $n = 138$). On average, participants enlisted in military service at 20.93 years old ($SD = 4.49$) and the majority served in the Army (90.3%, $n = 280$) on active duty (96.8%, $n = 300$) for an average of 13.50 years ($SD = 7.61$). The modal number of deployments to Iraq or Afghanistan was 2 ($SD = 1.11$, range = 1–7); 86.8% of participants had deployed to Iraq ($n = 269$) and 30% ($n = 93$) had deployed to Afghanistan (categories not mutually exclusive). The average PCL-5 total score was 35.68 ($SD = 21.22$), and 54.4% of the sample had PCL-5 scores at or above the clinical cutoff for PTSD. The average PHQ-9 total score was 11.50 ($SD = 7.03$), which is in the moderate depression range.

In total, 42.3% of the sample ($n = 131$; 28.9% of men, $n = 68$; 83.8% of women, $n = 62$; 100% of transgender veterans, $n = 1$) reported at least one experience of MST. The most common were being subjected to crude and offensive sexual remarks (38.1%, $n = 118$) and having negative rumors spread about the veteran's sexual activities (22.3%, $n = 70$). For MST involving threat or

TABLE 1 | Descriptive statistics and correlations.

	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.
Military sexual trauma	10.44	4.51	–	−0.08	0.42**	0.26**	0.23**	0.13*	0.19**	0.22**
Combat	21.57	14.00	–	–	0.08	0.18*	0.18**	0.25**	0.21**	0.31**
Betrayal	10.24	4.93	–	–	–	0.59**	0.37**	0.34**	0.44**	0.49**
Perpetration	17.91	8.40	–	–	–	–	0.50**	0.51**	0.48**	0.56**
Shame	9.82	5.42	–	–	–	–	–	0.82**	0.75**	0.70**
Guilt	9.79	5.42	–	–	–	–	–	–	0.65**	0.64**
Depression	11.50	7.03	–	–	–	–	–	–	–	0.81**
PTSD	35.68	21.22	–	–	–	–	–	–	–	–

*p <0.05; **p < 0.001 (2-tailed).

coercion, 12.3% ($n = 56$) of veterans reported being pressured into sex involving use of a position of authority; 7.4% ($n = 23$) reported being offered a specific reward or special treatment for participation in sex; and 8.1% ($n = 25$) reported being threatened with retaliation for not being sexual cooperative. Significantly more women than men reported each type of MST. Nearly all participants (98.7%, $n = 306$) were exposed to some form of combat. The combat exposure measure assessed two prototypical perpetration-based acts: being directly responsible for the death of an enemy combatant (28.2%, $n = 89$) and being directly responsible for the death of a noncombatant (12%; $n = 39$).

Measurement Model

Latent variables in the primary measurement model were betrayal, perpetration, shame, guilt, and PTSD-depression. First, the full measurement model was tested. The unmodified measurement model fit poorly, $X^2_{(1070)} = 4959.30$, p <0.001, RMSEA = 0.09, CFI = 0.79, TLI = 0.78, SRMR = 0.07. Modification indices suggested correlating pairs of MIES items that were correlated in Nash et al. (17). PTSD and depression were modeled as one latent variable due to the high correlation between the PCL-5 and PHQ-9 and to reflect the moral injury syndrome. Modification indices suggested significant model fit improvement by correlating pairs of PTSD and depression symptom items that either assessed similar aspects of PTSD symptoms within the same PTSD diagnostic criterion (B-E) or were a pair of PCL-5 and PHQ-9 items that assessed difficulty falling asleep. Perpetration and betrayal were correlated, as were shame and guilt, due to shared measurement variance. The modified measurement model yielded adequate fit, $X^2_{(1060)} = 3510.73$, p <0.001, RMSEA = 0.07, CFI = 0.87, TLI = 0.86, SRMR = 0.06. See **Table 2** for factor loadings and item and factor correlations.

Structural Model Testing Combat and MST Within Moral Injury Framework

Overall, the structural model provided good fit to the data, $X^2_{(1147)} = 3040.18$, $p < 0.001$. RMSEA = 0.07, CFI = 0.86, TLI = 0.85, SRMR = 0.07 (see **Figure 1**). We found mixed support for our primary pathways. MST was indirectly associated with PTSD-depression via betrayal (β = 0.10, $p < 0.01$, 95% CI = 0.04 −0.20) and combat was indirectly associated with PTSD-depression via perpetration (β = 0.07, $p < 0.05$, 95% CI = 0.02 −0.13). The indirect path from combat through shame to PTSD/depression was significant (β = 0.16, $p < 0.01$, 95% CI = 0.07 −0.27) although the path through guilt was not (β = −0.04, $p = 0.20$, 95% CI = −0.13 −0.02). Neither of the indirect paths from MST to PTSD/depression via moral injury mechanisms were significant (via shame, β = 0.10, $p = 0.08$, 95% CI = −0.003 −0.23; via guilt, β = −0.003, $p = 0.81$, 95% CI = −0.05 −0.01). The specific indirect paths from combat to perpetration to shame to PTSD-depression was not significant (β = 0.06, $p = 0.06$, 95% CI = 0.02 −0.16) and neither was the path through perpetration to guilt to PTSD/depression (β = −0.01, $p = 0.23$, 95% CI = −0.01 −0.003). Contrary to expectation, combat was not indirectly associated with PTSD-depression via betrayal (β = 0.04, $p = 0.07$, 95% CI = 0.01 −0.11). See **Figure 1** for all significant and non-significant direct paths.

DISCUSSION

This study's purpose was to test a frequently cited model of moral injury (1): whether MST and combat were associated with PTSD and depression via perpetration-based morally injurious events or betrayal-based morally injurious events and subsequent guilt and/or shame. Our critical test accounted for pathways suggested by the broader trauma literature; namely, that guilt and shame may contribute to PTSD and depression independent of perpetration or betrayal. We found mixed support for the key pathways of the moral injury model. Betrayal was a significant pathway from MST to PTSD-depression and perpetration was a significant pathway from combat to PTSD-depression; unexpectedly, betrayal did not have an indirect effect from combat to PTSD-depression. Shame, but not guilt, accounted for some of the association between combat and PTSD-depression.

Betrayal

Until this study, MST's betrayal aspects have not been studied using the moral injury framework, but have been conceptualized within the institutional betrayal literature. Institutional betrayal refers to "when institutional action or inaction exacerbates the

TABLE 2 | Factor loadings of measurement model.

Factor	Measure	Variable	Loading	S.E.
Betrayal	MIES	(7) I feel betrayed by leaders who I once trusted	0.75	0.04
		(8) I feel betrayed by fellow service members whom I once trusted	0.76	0.04
		(9) I feel betrayed by others outside the U.S military whom I once trusted	0.75	0.04
Perpetration	MIES	(1) I saw things that were morally wrong	0.49	0.05
		(2) I am troubled by having witnessed others' immoral acts	0.60	0.04
		(3) I acted in ways that violated my own moral code or values	0.80	0.03
		(4) I am troubled by having acted in ways that violated my morals	0.85	0.02
		(5) I violated my own morals by failing to do something…	0.87	0.02
		(6) I am troubled because I violated my morals by failing to do something…	0.88	0.02
Depression and PTSD	PHQ-9	(1) Little interest or pleasure in doing things	0.74	0.03
		(2) Feeling down, depressed, or hopeless	0.80	0.02
		(3) Trouble falling asleep, staying asleep or sleeping too much	0.63	0.03
		(4) Feeling tired or having little energy	0.67	0.03
		(5) Poor appetite or overeating	0.59	0.04
		(6) Feeling bad about yourself, feeling that you are a failure	0.75	0.03
		(7) Trouble concentrating	0.73	0.03
		(8) Moving or speaking noticeably slower or being so fidgety	0.66	0.03
		(9) Thinking that you would be better off dead	0.49	0.04
	PCL-5	(1) Repeated, disturbing, and unwanted memories	0.80	0.02
		(2) Repeated, disturbing dreams of the stressful experience	0.75	0.03
		(3) Suddenly feeling or acting as if it were actually happening again	0.76	0.02
		(4) Feeling very upset when something reminded you	0.83	0.02
		(5) Having strong physical reactions at reminders	0.80	0.02
		(6) Avoiding memories, thoughts, or feelings	0.76	0.03
		(7) Avoiding external reminders of the stressful experience	0.78	0.02
		(8) Trouble remembering important parts of the stressful experience	0.55	0.04
		(9) Having strong negative beliefs about yourself, people, world	0.77	0.02
		(10) Blaming yourself or someone else	0.73	0.03
		(11) Having strong negative feelings, e.g., fear, horror, anger,	0.85	0.02
		(12) Loss of interest in activities that you used to enjoy	0.82	0.02
		(13) Feeling distant or cut off from other people	0.82	0.02
		(14) Trouble experiencing positive feelings	0.81	0.02
		(15) Irritable behavior, angry outbursts, or acting aggressively	0.73	0.03
		(16) Taking too many risks	0.54	0.04
		(17) Being "superalert" or watchful or on guard	0.64	0.03
		(18) Feeling jumpy or easily startled	0.75	0.03
		(19) Having difficulty concentrating	0.77	0.02
		(20) Trouble falling or staying asleep	0.67	0.03
Shame	SSGS	(1) I want to sink into the floor and disappear	0.79	0.03
		(3) I feel small	0.77	0.03
		(5) I feel that I am a bad person	0.83	0.02
		(7) I feel humiliated, disgraced	0.80	0.02
		(9) I feel worthless, powerless	0.82	0.02
Guilt	SSGS	(2) I feel remorse, regret	0.76	0.03
		(4) I feel tension about something I have done	0.85	0.02
		(6) I cannot stop thinking about something bad I have done	0.90	0.01
		(8) I feel like apologizing, confessing	0.75	0.03
		(10) I feel bad about something I have done	0.88	0.02

(Continued)

TABLE 2 | Continued

Factor	Measure	Variable	Loading	S.E.
Factor Correlations		Betrayal with perpetration	0.63	0.06
		Shame with guilt	0.82	0.05
Modifications		*Correlated Items*		
		PCL-5 item 18 with PCL-5 item 17	0.64	0.03
		PCL-5 item 7 with PCL-5 item 6	0.62	0.04
		PCL-5 item 2 with PCL-5 item 3	0.54	0.04
		PCL-5 item 5 with PCL-5 item 4	0.56	0.04
		PHQ-9 item 4 with PHQ-9 item 3	0.40	0.05
		PCL-5 item 20 with PHQ-9 item 3	0.49	0.04
		MIES item 2 with MIES item 1	0.60	0.04
		MIES item 4 with MIES item 3	0.65	0.05
		MIES item 6 with MIES item 5	0.76	0.04
		MIES item 8 with MIES item 7	0.48	0.07

All reported loadings are standardized. MIES, Moral Injury Event Questionnaire; SSGS, State Shame and Guilt Survey; PCL-5, Posttraumatic Stress Disorder Checklist-5; PHQ-9, Patient Health Questionnaire-9. All reported loadings are significant at $p < 0.001$.

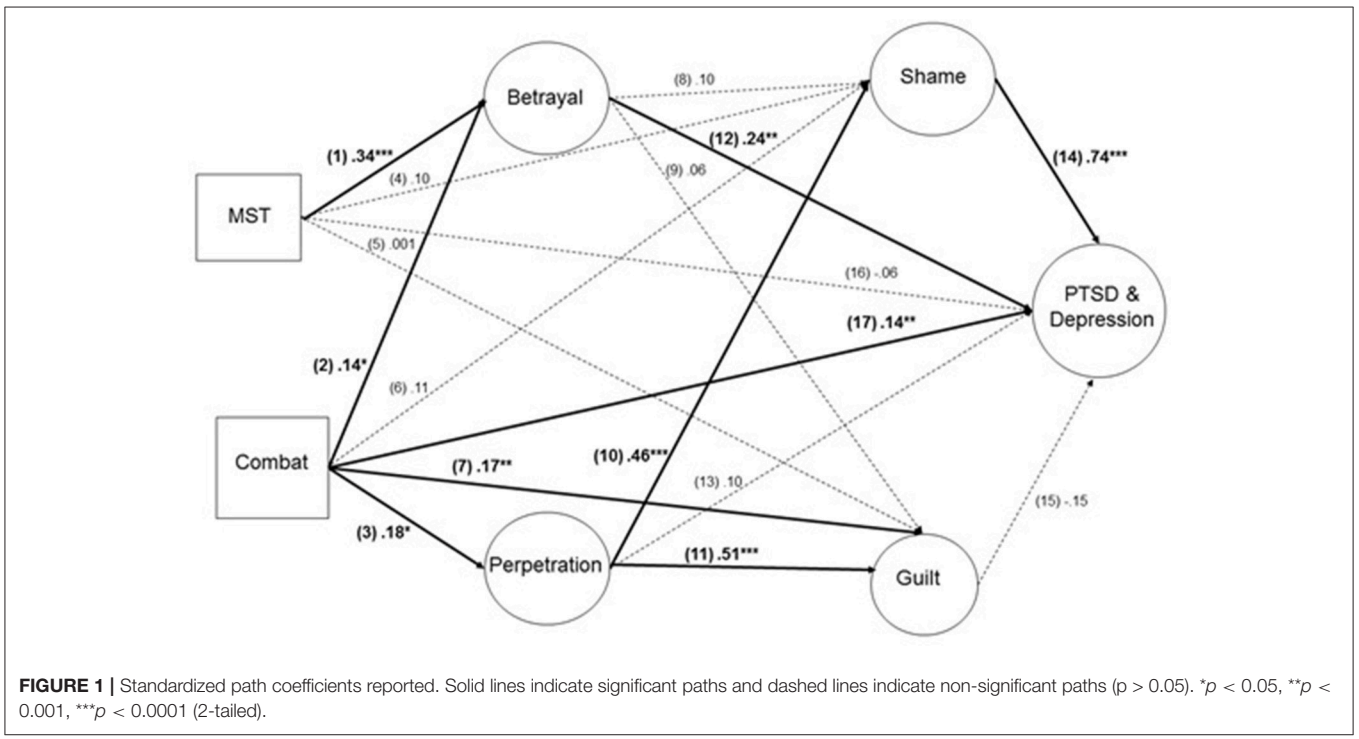

FIGURE 1 | Standardized path coefficients reported. Solid lines indicate significant paths and dashed lines indicate non-significant paths (p > 0.05). *$p < 0.05$, **$p < 0.001$, ***$p < 0.0001$ (2-tailed).

impact of traumatic experiences (p. 577)…or causes harm to an individual who trusts or depends upon that institution" [p. 578 (41)]. Thus, the definition of institutional betrayal is reminiscent of the moral injury field's definition of betrayal, i.e., "betrayal of what's right in a high stakes situation *by a trusted authority figure*" (2, 42). Consequently, MST may be a prototypical example of several key facets of both institutional betrayal and moral injury betrayal: failure to protect service members dependent on the military, disruption of belongingness in a close community by interpersonal violence, and institutional priorities that run counter to prosecuting sex crimes (43). In a sample of 49 male and female veterans, the majority perceived their MST as involving institutional betrayal and, notably, perceptions of institutional betrayal significantly predicted PTSD and depressive symptoms (44). To our knowledge, Monteith et al. is the only study that examined MST within the institutional betrayal framework. This suggests a largely unexplored and potentially fruitful lens through which to deepen understanding of and treatment for MST and the betrayal-like aspects of moral injury.

Combat was directly associated with betrayal, and betrayal was associated with PTSD-depression; however, combat was not associated with PTSD-depression via betrayal. The betrayal aspects of combat were originally articulated as

a reaction to situations in which service members found themselves perpetrating morally injurious acts, for instance, being sent to fight a war they perceived as unjust or unlawful, being sent to fight with inadequate weaponry (i.e., being sent to die), or being ordered to carry out unlawful actions (42). It may be that some combat traumas have both a betrayal-based morally injurious component—being disturbed by the consequences of leadership decision-making—as well as an institutional betrayal component—feeling that one's trust and dependency on the military was violated. Future research should test alternative conceptualizations of betrayal within the moral injury framework, such as testing betrayal as a moral injury outcome, or testing the institutional betrayal model more directly within the moral injury framework.

Betrayal was not directly associated with either guilt or shame. We speculate that betrayal may evoke reactions such as anger or self-disgust that were not directly assessed in the current study and that have known relations with PTSD and depression. In support of this hypothesis, a previous study of combat-deployed Marines found a significant direct association between betrayal and anger and an indirect association with PTSD via anger (25). Similarly, in a recent study of Israeli combat veterans, betrayal-based morally injurious events were associated with symptoms of posttraumatic stress, depressive attributions, and self-disgust (45). Thus, these results suggest that additional "mechanisms" of moral injury such as anger, rage, and disgust should be examined in future studies and potentially targeted in treatment.

Perpetration

Perpetration accounted for the association between combat and PTSD-depression and was associated with both shame and guilt, although the specific indirect paths from combat to perpetration to shame or guilt to PTSD-depression were not significant. Three previous studies have found a path from prototypical perpetration-type combat events (e.g., killing, atrocities) to negative mental health outcomes through combat-related guilt (23, 24, 26); however, these studies did not assess shame alongside guilt. Similar to our finding of a significant association between shame and PTSD-depression but not guilt and PTSD-depression, one of the few studies that examined both guilt and shame in combat veterans found that shame-proneness was positively associated with PTSD, but guilt-proneness was negatively associated with PTSD (46). In general, previous studies have examined just combat-related guilt or guilt-proneness. Our study is one of the first to compare the relative contribution of guilt vs. shame, and also to account for individual differences in veterans' appraisals of combat as perpetration-type morally injurious events.

We also found evidence for a direct path from combat to guilt distinct from appraisals of betrayal or perpetration. Clinical literature has described the ways that combat-related guilt can function: as an "honoring" impulse so that people who were killed or wronged are not forgotten, or, as a way of assuming responsibility and thus lessening one's sense of helplessness after uncontrollable or chaotic situations (47, 48). A sufficient conceptual and empirical model of moral injury must account for the non-specific occurrence of guilt and shame following traditional life-threat traumas as well as morally injurious events. Future models of moral injury also need to account for guilt and shame's cumulative effects as well as their unique effects.

The role of MST within the moral injury framework needs additional theoretical consideration and clarification. The current study established that experiencing MST may be a betrayal-based morally injurious event that may benefit from a moral injury-focused intervention approach. At the same time, *perpetrating* MST, such as rape of civilians or fellow service members, falls well within the domain of potential perpetration-based morally injurious event that could lead to moral injury. Including both experiencing and perpetrating MST within the morally injurious events domain could raise complicated theoretical issues and troubling clinical scenarios. In terms of theory, currently, the moral injury model does not consider guilt and shame as necessarily irrational or dysfunctional responses to morally injurious events. A consequence of including experiencing MST within the morally injurious events category will be to make the moral injury model agnostic as to whether guilt and shame are appropriate or inappropriate responses to morally injurious events. In terms of clinical approaches, at face value, guilt, shame, self-disgust, and rage in response to perpetrating MST would necessitate a different treatment approach than guilt, shame, self-disgust, and rage in response to the betrayal of experiencing MST. Moreover, there would be potential for iatrogenic harm if MST survivors were treated in the same clinical settings as MST perpetrators. Thus, how MST fits into the moral injury domain remains both a pressing theoretical and clinical concern for the field.

Strengths of the study included the two-time point design, which diminished potential for ambient measurement variance contributing to significant results, and psychometrically strong measures of hypothesized constructs. However, interpretation of results should be tempered by study limitations. Secondary data analysis limited the range of tested moral injury mechanisms. For example, the parent study did not include measures of anger or disgust, which may be additional intervening variables between betrayal and PTSD-depression (25, 45). We had relatively lower endorsement of MST compared to combat, and thus future studies may benefit from oversampling for veterans who have experienced MST. The parent study did not directly assess perceptions of institutional betrayal. Future studies should include a measure of institutional betrayal, which could clarify the relation between perpetration and betrayal and moral injury outcomes; this is relevant given that our sample was comprised of veterans who were willing to be enrolled in the local VA healthcare system, which may limit generalizability. Specifically, some veterans may not be willing to seek VA services due to feelings of institutional betrayal, and thus, future research should include a broader sample of veterans who seek services within and outside of VA. The combat exposure variable oversampled potentially fear-based experiences (e.g., experiencing incoming rocket attacks) and under sampled for potentially morally

injurious acts (e.g., failing to prevent atrocities) and so direct and indirect paths from combat exposure to moral injury-related variables may have been attenuated. Lastly, this study did not include a pre-trauma assessment and thus was not designed to test prospective predictive relations among study variables.

This study contributes to boundary clarification of the moral injury construct, suggests potentially modifiable mechanisms of moral injury that can become treatment targets or guide the development of moral injury-focused psychotherapies, and points to the institutional betrayal literature as a novel and complementary framework for studying and treating moral injury. The moral injury field is evolving and going through the normative process of boundary setting and construct formation. This current movement is similar to the movement in the PTSD/trauma field during the DSM-IV-TR revision to the PTSD diagnosis when the field debated what constitutes a traumatic event, how to conciliate objective and subjective definitions of trauma, and whether "bracket creep" (i.e., expanding the definition of trauma) is a problem and how to handle it [e.g., (49)]. Our hope is that this current study poses directions for future research that can continue to assist clinicians and researchers in identifying and testing potential mechanisms of moral injury development and treatment.

AUTHOR CONTRIBUTIONS

SF conducted the analyses and wrote the first draft of the manuscript. EM, SM, BD, and NK designed the study and acquired funding. All authors provided feedback (SF, BD, SM, NK, HLB, EM) provided feedback on early idea development, contributed to revising the manuscript, and have approved the final article.

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Challenges Associated With the Civilian Reintegration of Soldiers With Chronic PTSD: A New Approach Integrating Psychological Resources and Values in Action Reappropriation

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Background: In light of the psychological changes in an individual suffering from chronic Posttraumatic Stress Disorder (PTSD), questions are being raised in order to understand and facilitate recovery and a return to work. This is particularly challenging for soldiers suffering from chronic PTSD, who are often young individuals suffering from moral conflicts. A French military rehabilitation program proposes the broadening of the relationships between recovery and reintegration by incorporating approaches from the field of positive psychology for soldiers with chronic PTSD. The aim of the study was to evaluate (i) the psychological resources which remain sustainable for these trauma exposed soldiers according to their PTSD symptoms, (ii) the dynamics of resource reappropriation after the military rehabilitation program, which focuses on values in action (VIA) as character strengths, and (iii) how these resources and their reappropriation facilitate civilian professional reintegration.

Method: We conducted a prospective study with 56 trauma exposed soldiers with a clinical diagnosis of chronic PTSD. PTSD severity and psychological resources (optimism, mindfulness, well-being, motivation, self-esteem, and VIA) were assessed before and after the rehabilitation program. After the identification of resource profiles, we analyzed the impact of the program on resource levels and successful reintegration into a civilian job.

Results: 3 profiles were identified based on the psychological resources of the soldiers. Profiles 1, 2, and 3 differed in terms of clinical severity (PCL5). Profile 1 exhibited both the highest level of resources and the lowest clinical severity of PTSD but did not modify its resources after the intervention program when compared to profile 3. Profile 3 was characterized by the lowest level of resources, the highest clinical severity of PTSD and the highest reappropriation in all VIAs. This profile was associated with the highest rate of reintegration success 1 year after the intervention.

Conclusions: This paper aims to broaden the relationship between recovery and reintegration by incorporating approaches from the field of positive psychology for soldiers with PTSD. VIA appears to be an important factor for reintegration. Our results highlight the importance of taking into account the existing needs of the patient and the optimization of the modalities of individual, collective, and institutional rehabilitation for patients suffering from PTSD in order to better understand the dynamics of the recovery process of a chronically afflicted individual.

Keywords: recovery, reintegration, positive psychology, post-traumatic stress disorder, quality of life, mental illness, values in action, military

INTRODUCTION

Post-traumatic Stress Disorder (PTSD)

PTSD is a debilitating mental disorder that may develop after experiencing or witnessing a life-threatening event. The main characteristics of PTSD are re-experiencing symptoms, avoiding situations that recall the event, increased negative beliefs and feelings and hyperarousal (1). This suffering is associated with impairment in social, occupational and other domains (2). Furthermore, strong associations are commonly described between PTSD and comorbid conditions, which include: depression, substance use disorders, and general physical health effects (3, 4). To be diagnosed with PTSD, a person must experience those symptoms for at least 1 month. Once the symptoms have been observed for 3 months, PTSD is considered as a chronic disorder (5).

PTSD has a prevalence ranging from 1 to 7% in Europe (4). A clinical review on PTSD (6) mentioned how *"emphasis is being placed on identifying factors that explain individual differences in responses to trauma and promotion of resilience."* It also mentioned a higher prevalence, ranging from 25 to 50% depending on the type of trauma. PTSD prevalence in military settings is highly dependent on the violence of the mission; the higher the combat exposure, the higher prevalence of PTSD (up to 20%) (7).

With appropriate care, treatment efficiency is variable and around 20% of the patients do not respond to psychological treatment (Nice 2016). On the one hand there is little research to indicate which treatments are most effective for which patients. On the other hand, a 20-year longitudinal study on a cohort of 214 veterans showed how initial combat stress reaction could lead to volatile chronic stress, with ∼40% of recovering subjects relapsing within 1 year of remission (8).

Unresolved, PTSD can become chronic, causing anguish and suffering in the primary victim and their loved ones. Due to the relatively high prevalence of PTSD in the population, particularly the military, there is an urgent need for treatments that effectively improves recovery. Such statements imply the establishment of an integrated system for the intake of chronic PTSD patients and the evaluation of its impact on the usual impairments of occupational and academic functioning (9–12), marital and family functioning (11, 13, 14), parenting (15, 16), and friendships and socializing (17).

Such impairments are common among military personnel deployed in combat overseas, and particularly among cases of chronic military PTSD (11, 18–20). They contribute to homelessness and unemployment (21, 22). This point is all the more important for French soldiers with chronic PTSD, who have to leave the military institution when their authorized sick leave is over, which can be between 3 and 8 years depending on their military status.

French Military Rehabilitation Intervention Management

In 2016, the French Army developed a rehabilitation intervention program to help the trauma exposed soldiers with a clinical diagnosis of chronic PTSD. This program is coordinated by a specific Army office called the *Cellule d'Aide aux Blessés de l'Armée de Terre* (CABAT; support office for wounded soldiers). This so-called *omega* project is based on an integrative program using psychosocial interventions, sporting activities, coaching, and human resource supports. It also provides administrative support and legal advice. Some civilian partner companies participate in the *omega* project. To enter the omega program, a soldier must be referred by the French Military Health Service after approval by a psychiatrist (**Figure 1**). Soldiers exhibiting complex PTSD or psychosis after psychiatric examination were not included in the *omega* project.

The project began with a 9-days training session (called Human Resources Training—HRT). The HRT took place in a natural environment that focused on body reappropriation (with daily sporting activities), coaching and human resources practical workshops, and group challenges (**Figure 2**). Ten to 15 people with chronic PTSD were included in each HRT session. After the 9-days training session, each person had an individual professional reintegration project plan. This professional project plan included an outline of the scope of the plan and its objectives, as well as key milestones. In order to succeed in this process, each participant had a monthly follow-up to examine administrative and legal needs. They also received guidance in order to correctly settle in to their new professional environment (either in partner companies or in others companies of interest for the individual reintegration project). They also continued to have a monthly psychiatric follow-up.

In order to help trauma exposed soldiers with chronic PTSD to deal with daily worries and stress during their

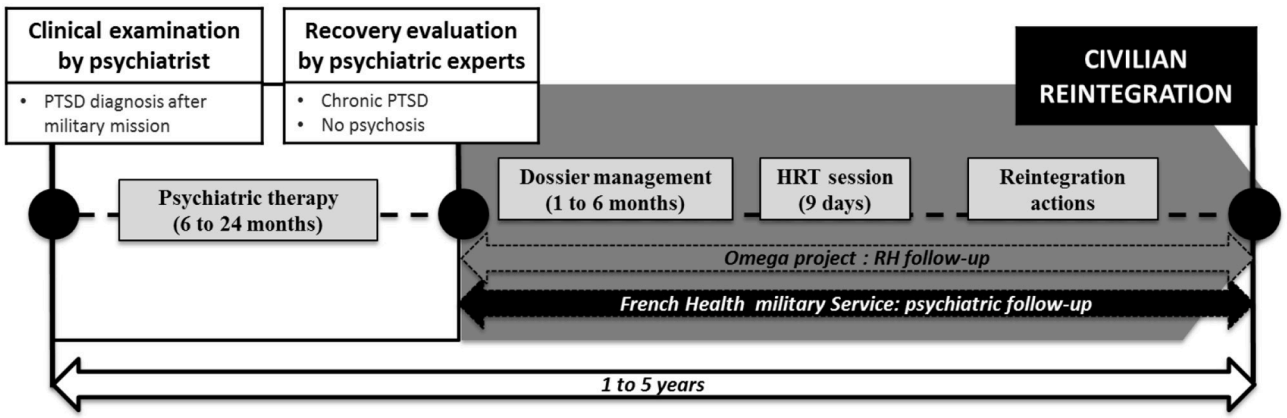

FIGURE 1 | French military rehabilitation for PTSD from diagnosis to reinsertion: position of the *omega* project. HRT: Human Resources Training.

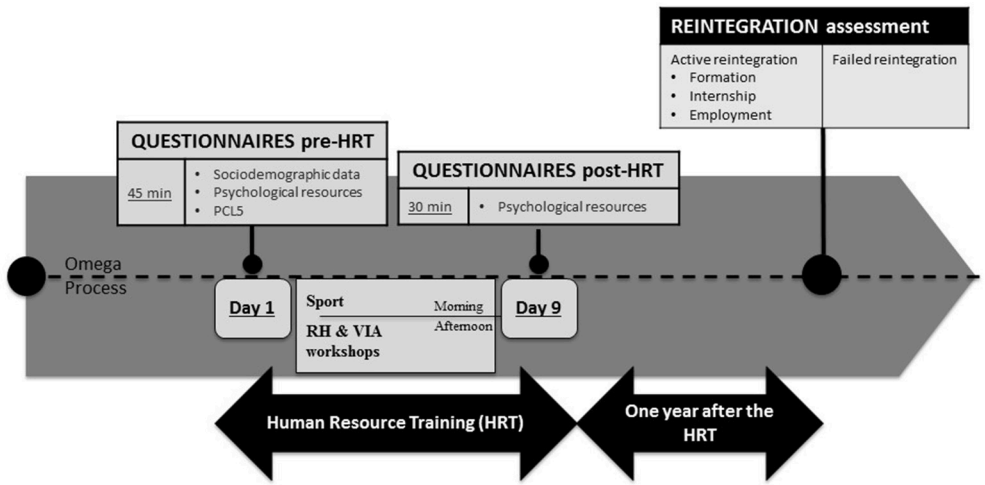

FIGURE 2 | Experimental protocol with the distribution of the three sessions: first day of the Human Resource Training (pre-HRT), the last day of the HRT (post-HRT), and 1 year after.

reintegration program, two main positive psychology approaches were used during the 9-days training program. The first consisted of focusing the attention (daily 5-min exercises and verbal reinforcement of appropriate behaviors) on psychological resources such as self-esteem, optimism, mindfulness and mind-body connections, openness, attention to the natural environment, and team building. The second focused on personal strengths and values related to the main objective in order to help them to reappropriate their own strengths and values (23). For this, they attended a curriculum vitae workshop based on the narrative of military actions to highlight military and civilian competences as well as to detect moral conflicts that they could have faced during military deployment. Moral conflicts are known to induce moral stress by acting in conflict with one's own conscience, e.g., when one knows the right thing to do but institutional constraints make it difficult to act in a way that is consistent with one's morals (24). The workshop is face-to-face and can be divided into several sessions over the 9-days training period. Thus, at the end of the workshop each participant has a civilian curriculum vitae and has also identified which values in actions (VIA) are important for them (using the narrative reappropriation of their military acts in their personal history).

In the next step of the reintegration process, individual VIAs were taken into account in order to choose either immersion or reintegration into a company that matched those values, so as to avoid any conflicts between company values, micromanagement values, and personal values. This is important because conflict situations can induce moral stress, which is a risk factor for relapse (25).

To face the challenges of recovery and reintegration into civilian society for trauma exposed soldiers with chronic PTSD, we conducted a prospective study to assess the relationship between psychological resources and chronic PTSD profiles. We aimed to evaluate (i) which resources remain sustainable

based on the chronic PTSD profiles, (ii) the dynamics of resource reappropriation after the military rehabilitation program (focusing on VIA as character strengths), and (iii) whether or not resources and their reappropriation facilitate civilian professional reintegration.

MATERIALS AND METHODS

Participants

Sixty voluntary French trauma exposed soldiers with chronic PTSD related to military deployment were included in a prospective study. Diagnosis was established through a clinical psychiatric exam conducted by a military psychiatrist. They were recruited from within the CABAT process after psychiatric therapy, when the psychiatrist considered the recovery appropriate enough to take part in the *omega* project. All soldiers included in this study were on sick leave for at least 6 months due to chronic PTSD and were waiting for a military invalidity committee pension. They were all engaged in the first step of the *Omega* project and had a 9-days HRT training session planned.

Data collection was carried out during 6 HRT programs between May 2016 and May 2017. Four individuals were excluded from the analysis due to missing data (they did not complete the questionnaires). This study received the agreement of the ethics committee of the French military health service. All the subjects received information on the protocol and gave their written consent prior to their participation.

The HRT Program

A HRT was organized for a group of 10 participants. It took place in "les Ecrins National park" in a small village in the countryside. Each morning, from 9 a.m. to 12 p.m., participants had sporting activities: mountain walking, mountain biking, climbing, canyoning, and collective orienteering running. From 3 p.m., they had individual and collective practical workshops based on PTSD psychoeducation, human resources competences and coaching, including a curriculum vitae workshop. During their free time, they could take part in collective activities like table football, pool, party games, or have a rest. Relaxation exercises were proposed every day after the sporting activity and before dinner. During the last 2 days of the HRT, families were invited to share a mountain walk and have psychoeducation on PTSD and its evolution.

Civilian or military experts in human resources and social reintegration conducted the workshops. A military psychologist was present throughout the HRT in order to provide support for anxiety or symptoms of substance dependence symptoms. None of the subjects left the HRT.

Psychological Variables

The following socio-demographic data were collected: age, gender, social environment, and the number of major stresses encountered in professional and personal environments over the patient's life (**Table 1**).

Psychological Functioning

Among the 10 self-reporting questionnaires evaluating psychological functioning, one focused on the severity of the PTSD, one on self-esteem, four on psychological resources (optimism, motivation and the Life Orientation Test–Revised), two on body-mind connection (mindfulness and body consciousness), one on VIA, and one on well-being.

The questionnaire used for PTSD severity was the PTSD Check List Scale (PCL-5) (1, 26). It assesses the following four symptoms: re-experiencing symptoms, avoiding situations that recall the event, hyperarousal, and impairment of cognitive and emotional functioning. Two cutoff points have been proposed by the National Center for PTSD: above or equal to 33 or above or equal to 38. We chose the highest of these two thresholds, which have previously been proposed in the literature, in order to increase the specificity of our PTSD diagnosis (26, 27). Individuals with a threshold above or equal to 38 were then considered as suffering from PTSD.

Self-esteem was measured using the Rosenberg Self Esteem Scale (SES) (28). This 10-item self-assessment scale evaluates overall self-worth by measuring both positive and negative feelings about self. All items are answered using a 4-point Likert scale ranging from (1) "totally disagree" to (4) "totally agree." A score below 15 is considered as a low self-esteem whereas a score between 15 and 25 is considered as a normal self-esteem.

The Orientation to Happiness questionnaire [OTH, (29, 30)] is an 18-item self-report assessment with six items for each of the three dimensions: hedonism/pleasure, engagement, and meaning of life (29). The 12 items in the meaning of life and pleasure dimensions are in line with the hedonic vs. eudemonic conceptions of happiness observed in previous research (29). The

TABLE 1 | Sociodemographic characteristics of the subjects.

Gender	
Male (%)	53 (94.64)
Female (%)	3 (5.36)
Mean age in years (standard deviation)	34.5 (±9.3)
Marital status	
Living with a partner (%)	35 (62.5)
Single (%)	21 (37.5)
Military seniority (years)	13 (±8.6)
Military rank (%)	
Soldiers	20 (35.71)
Non-commissioned officers	33 (58.93)
Officers	3 (5.36)
Reported stressful event throughout the patient's life (%)	
Yes (%)	2 (3.54)
No (%)	54 (96.46)
Traumatic military deployment (%)	
Yugoslavia	3 (5.36)
Afghanistan	32 (57.14)
Mali	12 (21.43)
Central Africa	9 (16.07)
Sick leave duration (months)	22 (±7.4)

remaining six items, which measure engagement, are based on the work by Csikszentmihalyi (31) and characterize the "flow" state of absorption in a task. The responses are given on a five-point Likert scale ranging from (1) "very much unlike me" to (5) "very much like me."

The Global Motivation Scale [GMS, Guay et al. unpublished manuscript] measures the overall motivation that people have to do things in their life. The Motivation scale appoints "a hypothetical intra-individual strength, which can have multiple internal and/or external determiners, and which helps to explain the direction, the release, the obstinacy and the intensity of the behavior or the action" (32). Motivation is a multidimensional concept, which is explained by the continuum of the Self-Determination Theory (SDT). SDT proposes three categories of motivation in this continuum of self-determination (33): the intrinsic motivation (IM), the extrinsic motivation (EM), and the amotivation (AM). Intrinsic motivation represents the highest level of self-determination, while the amotivation corresponds to a deficit of self-determination. The three basic psychological needs of the SDT are: competence (32), relatedness (34, 35), and autonomy (33). The GMS assesses three sub-factors of intrinsic motivation (knowledge, stimulation and accomplishment) (36–38), three sub-factors of extrinsic motivation (identified, introjected, and external regulation), and amotivation. There are 28 items, i.e., 4 for each of the 7 sub-scales. Every statement is measured on a Lickert scale ranging from (1) "does not correspond at all" to (7) "corresponds completely."

The Life Orientation Test–Revised [LOT-R; (39, 40)] evaluates the dispositional optimism. The LOT-R is a 6-item self-report measure (with four filler items) that evaluates the respondent's generalized expectations of positive (three items) and negative (three items) outcomes. For each item, the subject has to indicate if it characterizes their feelings using a 5-point Likert scale ranging from (0) "totally disagree" to (4) "totally agree."

The Freiburg Mindfulness Inventory-14 (FMI) is a short form of 14 items developed for people without any background knowledge of mindfulness (41, 42). It constitutes a consistent and reliable scale evaluating the state of mindfulness and two subfactors (43): "acceptance" as an ability to embrace unwanted thoughts and "feelings" as an alternative to experiential avoidance and being present, which characterizes being in non-judgmental contact with environmental events as they occur. Each self-descriptive statement is evaluated using a 4-point Likert scale ranging from (1) "strongly disagree" to (4) "strongly agree."

The Body Connection Scale [BCS, (44)] is a 20-item scale designed to assess body awareness with a two-faceted sensory awareness and bodily dissociation. Sensory awareness evaluates the ability to identify and experience inner sensations of the body and the overall emotional/physiologic state of the body, such as bodily changes/responses to emotions and/or the environment (12 items). The concept of bodily dissociation is characterized by the avoidance of internal experience. Bodily dissociation has experiential aspects, including normal everyday experiences, e.g., distraction from bodily experience or emotional disconnection (8 items). Each self-descriptive statement is evaluated using a 4-point Likert scale ranging from (0) "strongly disagree" to (3) "strongly agree."

The Warwick-Edinburgh Mental Well-Being Scale [WEMWBS; (45, 46)] covers both affective constructs (including the experience of happiness) and constructs representing psychological functioning and self-realization (47). This is a 14-item scale on thoughts and feelings over the past week; each item ranges from (1) "none of the time" to (5) "all of the time."

The Values in Action Inventory of Strengths (VIA-IS) is a self-report assessment designed to identify an individual's possession of 24 character strengths. Those character strengths contribute to the six main VIA (23): wisdom, courage, humanity, temperance, justice, and transcendence. We used the French 24-item brief scale of the Values in Action (48). The subject was asked to rate each of the 24 items on a 5- scale point Likert ("1 = very much unlike me" through "5 = very much like me").

Reintegration Assessment

In agreement with the officer directing the CABAT, 1-year reintegration success was evaluated. Each subject was classified in either the "active reintegration" group (AR) or in the "failed reintegration" group (FR). The AR group corresponded to subjects who managed to undergo a formation related to their professional objective or to have correctly settled in to a chosen company (internship or employment). The FR group included subjects who did not reach one of these two professional objectives.

Experimental Procedure

Each HRT started on a Saturday. **Figure 2** sums up the experimental protocol. There were two evaluation sessions during the HRT: pre-HRT session (first day) and post-HRT (last-day) and a third session 1-year after the HRT program with the director of CABAT office.

Statistical Analysis

The data were recorded in Excel 2010 (Microsoft®, Redmond, WA, USA) and analyzed with Stata® V13 (StataCorp LP, texas, USA).

To assess the relationship between psychological resources and chronic PTSD, a mixed Ascending Hierarchical Classification was applied to first identify psychological profiles from the pre-HRT session variables (SES, optimism, motivation, LOT, FMI, BCS, WEMWBS, and values in action). The differences in the PCL-5 scores (and sub-factors) between the profiles were assessed using an Analysis of Variance followed by Newman-Keuls's *post-hoc* test in order to determine if the differences were statistically significant. Fisher exact tests were applied to compare the percentage of subjects with a PTSD between the profiles.

To evaluate the dynamics of resource reappropriation after the military rehabilitation program, score variations (between pre- and post-HRT) were calculated for each of the recorded variables (SES, optimism, motivation, LOT, FMI, BCS, WEMWBS, and VAI). A percentage change of more than 20% was considered as a relevant/significant change, meaning either a relevant/significant decrease for scores that were reduced after the HRT or a relevant/significant increase for scores that were improved after the HRT.

Whether or not the resources and their reappropriation facilitated civilian professional reintegration was assessed using Fisher exact tests to compare changes between the three profiles and to evaluate the impact of the HRT on the success of reintegration based on the chronic PTSD profile at the pre-HRT session.

In all cases, a difference was considered significant when $p < 0.05$.

RESULTS

Study Population

Table 1 summarizes the bio-demographic characteristics of the 56 subjects.

71.43% exhibited a PCL5 score above 38 (M 45.8 ± 15.3). No differences were found in the PCL5 score according to gender, marital status, military rank, or deployment where the trauma occurred.

Psychological Profiles

Three profiles were identified by the psychological functioning assessment performed on the first day of the HRT: profile 1 consisted of 32 subjects, profile 2 consisted of 10 subjects and profile 3 consisted of 14 subjects. **Table 2** sums up the psychological functioning for each of the three profiles.

As described in **Table 3**, total PCL5 score and sub-factor scores were different between the profiles (**Table 3**). Profile 1 has a lower PLC-5 score (and sub-factors) than profiles 2 and 3. Differences between profiles 2 and 3 were only observed for intrusive symptoms with the highest score being for profile 2. The number of subjects with PTSD, defined by a PCL5 score above the threshold of 38, was different between the profiles ($Chi^2 = 9.01$; $p = 0.012$) with 16 subjects (50%) in profile 1, 10 subjects (100%) in profile 2, and 12 subjects (85.71%) in profile 3.

Impact of the HRT on Psychological Functioning According to the Profiles

No difference was observed between the three profiles in terms of the percentage of subjects exhibiting a significant (20%) change in the scores for the following psychological resources: well-being, body awareness, and bodily dissociation, and orientation to happiness (and sub-factors).

TABLE 2 | Psychological scores in the pre-HRT session according to the three profiles obtained by the mix Ascending Hierarchical Classification.

		Profiles		
		P 1 ***n*** **=32 (57.14%) M (± SD)**	**P 2** ***n*** **= 10 (17.86%) M (± SD)**	**P 3** ***n*** **= 14 (25%) M (± SD)**
Self-esteem		29.1 (±4.76)	22.6 (±2.68)	21.7 (±3.60)
Orientation to happiness	Hedonism/pleasure	22.6 (±3.24)	20.5 (±1.17)	20.1 (±3.76)
	Engagement	17.2 (±3.05)	15 (±3.46)	13.8 (±4.29)
	Meaning of life	28.1 (±3.32)	24.8 (±3.45)	24 (±4.45)
Motivation	IM Knowledge	23.2 (±2.88)	16 (±2.66)	17.1 (±6.15)
	IM Accomplishment	22.5 (±3.82)	17.8 (±3.64)	16.9 (±6.08)
	IM Stimulation	21.3 (±4.36)	15.8 (±1.93)	16.2 (±5.25)
	EM Identified	20.3 (±3.87)	16.8 (±3.01)	13.6 (±4.76)
	EM Introjected	16.5 (±6.04)	15.1 (±4.77)	15 (±5.30)
	External regulation	15.1 (±5.23)	13.3 (±4.24)	14 (±3.63)
	Amotivation	11.4 (±5.38)	11.7 (±2.86)	14 (±5.18)
Optimism		22.5 (±2.83)	16.8 (±2.58)	19.6 (±3.41)
Mind-fullness	Total	36.3 (±6.46)	26.2 (±4.13)	25.3 (±3.19+)
	Presence	16.7 (±3.46)	11.7 (±2.66)	12.2 (±3.11)
	Acceptation	19.6 (±3.53)	14.5 (±1.95)	13 (±2.20)
Body connection	Body awareness	21.5 (±5.56)	29.1 (±6.65)	19.7 (±6.85)
	Bodily dissociation	15.3 (±5.01)	17.1 (±4.10)	12.3 (±5.96)
Well-being		46.2 (±8.83)	34.3 (±4.82)	31.6 (±7.45)
VIA	Wisdom	3.4 (±0.77)	2.8 (±0.51)	1.6 (±0.76)
	Courage	3.5 (±0.78)	3.6 (±0.72)	1.7 (±0.91)
	Humanity	3.4 (±0.74)	3 (±0.79)	1.9 (±0.93)
	Justice	3.4 (±1.36)	3.9 (±0.66)	1.3 (±1.06)
	Temperance	3.2 (±0.73)	2.8 (± 0.74)	2.1 (±0.87)
	Transcendence	3.1 (±0.76)	2.9 (±0.32)	1.6 (±0.75)

P, profile; n, number; M(±SD), mean (±standard deviation).

TABLE 3 | PCL5 scores in the pre-HRT session according to the three profiles.

		Profile 1 $n = 32$ (57.14%) M (±SD)	Profile 2 $n = 10$ (17.86%) M (±SD)	Profile 3 $n = 14$ (25%) M (±SD)	p
PCL5	PCL 5 TOTAL	37.8 (±17.56)	56.9 (±10.18)	50.1 (±14.16)	$p = 0.003$
	PCL (Repetition)	10.1 (±5.8)	15.2 (±3.33)	11.5 (±4.93)	$p = 0.042$
	PCL (Avoidance)	8.25 (±3.97)	12.2 (±2.53)	10.57 (±3.88)	$p = 0.012$
	PCL (Hyperarousal)	9.4 (±5.3)	13.8 (±2.82)	13 (±4.13)	$p = 0.016$
	PCL (cognitive and emotional dysfunctions)	10.06 (±5.13)	15.7 (±2.66)	15 (±4.04)	$p = 0.006$

N = number; M(±SD): mean (±standard deviation); M, mean; SD, standard deviation.

TABLE 4 | Percentage of subjects in each profile for the psychological resources with significant changes at the post-HRT compared to the pre-HRT session.

		Profile 1			Profile 2			Profile 3			*p*
		= (%)	↗ (%)	↘ (%)	=(%)	↗ (%)	↘ (%)	= (%)	↗ (%)	↘ (%)	
Mindfulness		52.4	19	28	28.6	71.4	0	44.4	55.5	0	0.04
Optimism		92.3	7.7	0	33.3	66.7	0	60	40	0	0.02
Self-esteem		87.5	4.2	8.3	50	37.5	12	66.7	33.3	0	0.04
VIA	Wisdom	72	24	4	37.5	37	25	11.1	88	0	0.01
	Courage	60	28	12	62.5	0	37	33.3	66	0	0.02
	Justice	69.6	13	17.4	66.7	0	33.3	28.6	57.1	14.3	0.06
	Temperance	56.5	21.7	21.7	66.7	16.7	16.7	12.5	75	12	0.07
	Transcendence	58.3	20.8	20.8	83.3	0	16.7	37.5	62	0	0.08

=, no change above 20%; ↗ : increase in the score of more than 20%; ↘ : decreased score of more than 20%.

Table 4 summarizes the psychological resources with a pertinent change after the HRT, which differed between profiles in the percentage of subjects. Significant differences in the percentage of subjects exhibiting pertinent changes were observed for mindfulness, optimism, self-esteem, and both wisdom and courage VIA. There was a tendency for differences in the percentage of subjects with pertinent changes for justice, temperance, and transcendence VIA.

When regarding pertinent decreases in psychological resources after the HRT, we observed that, whatever the profile, no subject experienced a decrease in the optimism resource after the HRT program. No subject in profile 3 had a decrease >20% after the HRT program for mindfulness, self-esteem, optimism, and wisdom, courage, and transcendence VIA. However, a decrease of more than 20% was observed for justice and temperance VIA.

Impact of the Profiles on Reintegration Success at 1 Year

Differences were observed between profiles in terms of reintegration ($Chi^2 = 8.03$; $p = 0.03$), with more profile 3 subjects in AR. For profile 1, 60% were categorized as FR and 40% in AR; for profile 2, 80% were categorized as FR and 20% as AR; and for profile 3, 28.6% were categorized as FR and 71.4% as AR.

DISCUSSION

This study focused on the challenges of recovery and reintegration into civilian society for soldiers with a clinical diagnosis of chronic PTSD due to trauma experienced during overseas deployments. Firstly, at the beginning of the HRT program, results showed different profiles of sustainable psychological resources. According to the hierarchical classification of the results, three profiles were identified in terms of mindfulness and body connection, optimism, orientation to happiness, motivation, well-being, and VIA. The first profile exhibited the highest resources compared to the other two, particularly in terms of mindfulness, optimism, self-esteem and values in action. Profile 2 and profile 3 were different in terms of VIA, with the lowest levels for wisdom, courage and justice observed in profile 3 compared to profile 2. The lowest PTSD symptoms, irrespective of the symptom clusters, were observed for profile 1. Differences between profiles 2 and 3 were only observed for intrusive symptoms, with the highest score for profile 2. Although all soldiers included in the study were on sick leave for at least 6 months because of chronic PTSD, around 29% did not have a PCL5 score above the threshold at the beginning of the HRT. The number of soldiers with a psychometric diagnosis of PTSD was different between profiles; with the lowest number for profile 1 compared to profiles 2 and 3. The differences between the profiles must be taken into account as PTSD is not only a fluctuant disorder with periods of remission, but is also volatile from 1 day to another in terms of symptoms (8). Moreover, inter individual differences in the efficiency of the psychiatric therapy must be taken into account when considering the discordance between subjects. Altogether, these results showed that the lowest clinical suffering was associated with the highest sustainable psychological resources for soldiers with chronic PTSD (profile 1). Furthermore, differences in terms

of VIA were found in the high clinical suffering profiles (profile 2 and profile 3), with profile 2 exhibiting higher levels of VIA than profile 3. Taken together, these statements demonstrate that psychological functioning is not systematically linked with the severity of the disorder in soldiers with chronic PTSD. This must be taken into account when customizing the recovery management program for chronic PTSD to the patient's available psychological resources.

Secondly, we observed different resource reappropriation dynamics after the military HRT program. Resource reappropriation was defined as an increase of more than 20% in the score at the end of the HRT program. Differences between the profiles were observed in resource reappropriation for mindfulness, self-esteem, optimism, and values in action, and in particular for wisdom, courage, and justice; with the highest reappropriations for profile 3. Interestingly, except for justice and temperance VIA, subjects in profile 3 exhibited no pertinent decreases in psychological resources in post-HRT, whereas this profile was characterized by low scores in VIA at pre-HRT program. Two other results should be highlighted. The first is that, whatever the profile, optimism was not associated with a pertinent decrease after the HRT program. The second is that no pertinent changes were observed between the profiles for motivation. One explanation for this latter could be that a scale focusing on general motivation assessed motivation. The assessment of motivation to a specific task (reintegration program, physical activities, or practical workshop) could provide different results.

Finally, reintegration success 1-year post HRT was different between profiles. A higher percentage of reintegration success was observed for profile 3, which was characterized on the one hand by a low level of resources associated with a high level of PTSD severity at the beginning of the HRT, and on the other hand by a higher number of subjects with resource reappropriation after the HRT. These results suggest that reappropriation of resources, particularly VIA, facilitate civilian professional reintegration for military personnel with chronic PTSD. These exploratory data, focusing on psychological positive resources and PTSD reintegration, showed that (i) psychological functioning is affected in different ways in chronic PTSD depending on the soldier, (ii) successful reintegration was associated with the ability to reconnect with personal resources, and (iii) soldiers who reconnected themselves were not suffering less.

Altogether, these results raise several questions. The first concerns the interindividual differences for the resource reappropriation. The assessed psychological resources belong to positive psychology, which is "the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions" (49). Specifically, positive psychology grew largely from the recognition of an imbalance in clinical psychology, where most research focuses on mental illness. From its individual point of view, positive psychology focuses on understanding how human strengths can lessen the damage of disease, stress and disorder. It defines Post-Traumatic Growth (PTG) as "the experience of positive change that occurs as a result of the struggle with highly challenging life crises. It is manifested in a variety of ways, including an increased appreciation for life in general, more meaningful interpersonal relationships, an increased sense of personal strength, changed priorities, and a richer existential and spiritual life" (50). PTG is supposed to emerge from cognitive processes and can have functional and dysfunctional aspects. How PTG is related to specific psychological variables and if there are biological variables linked to PTG is still poorly understood. A recent systematic review of the literature indicated that trauma survivors with PTSD exhibit more PTG than those without PTSD and that PTG can be intensified during the therapeutic process (51). Whether positive correlations between PTG and PTSD are reported, no evidence of a quadratic relationship between PTG and PTSD was found. Results of two studies suggest that when the level of post-traumatic stress reaches the threshold of the diagnostic criteria, the momentum for growth seems to be hindered (52). Moreover, findings regarding the association of PTG with psychological variables are mixed (51). However, Calhoun suggests that a form of wisdom occurs for most patients with PTSD (53). Calhoun showed that people who have dealt with major events develop specific skills such as: an ability to balance between reflection and action; an ability to weigh the known and the unknown; a better ability to accept the paradoxes of life; and a better ability to ask the fundamental questions of their existence in a more open and satisfying way. Whether reintegration is considered as applied PTG or not, our results suggest that for the profile 3, which exhibited high levels of suffering, PTG was reached through resource reappropriation, and that the HRT helped as a generator of internal resources, particularly VIA.

A second question concerns the importance of VIA in the success of the reintegration program. Little information can be found in the literature about the prognostic relationship between VIA and PTSD severity. Psychiatric classification primarily describes negative aspects of a patient's life and provides little information on a patient's psychological strengths, such as the values in action (54). Recently, moral injury has appeared in the spectrum of PTSD, defined as a syndrome characterized by psychological and religious/spiritual symptoms of inner conflict. The presence of psychological or religious/spiritual symptoms may depend on whether the service member is spiritual and religious or spiritual but not religious, or neither (55). Litz proposed that moral injury occurs when "perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs" (56). Moral injury can lead to experiencing "a deep sense of transgression, including feelings of shame, grief, meaninglessness, and remorse from having violated core moral beliefs" (57). Individuals suffering from moral injury appear to struggle with their personal values. In line with this, one hypothesis is that our profile 3 patients may suffer from moral injury. Further research is needed to assess this proposition and to evaluate whether the HRT program is an efficient intervention to decrease symptoms with respect to moral injury confrontation.

The third question constitutes a more applied question and focuses on the best way to provide recovery in chronic PTSD, with reintegration being one of the recovery dimensions. The HRT program failed to reintegrate around half of the

soldiers with chronic PTSD 1 year after the program. It is important to identify soldiers who are not helped by the care in order to improve the practical workshops and follow-up that exists in the omega process. Nevertheless, it constitutes an original care management approach for recovery by promoting a salutogenic approach which is based on positive mental health (58). Its aim is to characterize the condition of the sick individual on a positive mental health continuum, which is part of the comprehensive mental health (59). Thus, the salutogenic approach is complementary to the usual pathogenic vision, which is oriented on clinical result "indicators directly and only associated with the disease." A systemic approach for recovery and reintegration should involve general psychiatric rehabilitation (pathogenic approach) that integrates, in its interventions, some tools aimed at "spreading and developing" positive resources which are part of positive psychology (salutogenic approach) (60). The HRT program is in line with these positive integrated approaches of recovery. It needs to be refined to improve its benefits on recovery and reintegration. For instance, some improvements of the HRT program may focus on cognitive and emotional remediation exercises (mind-body connection interventions).

This study has shown several limitations. Firstly, diagnosis was established through a clinical exam conducted by a military psychiatrist before inclusion into the *omega* project. In this study, status related to PTSD were assessed using the PCL5 and 29% of these soldiers did not have a PCL5 score above the threshold at the beginning of the HRT. The use of the gold standard assessment [Clinician-Administered PTSD Scale for DSM-5; (61)], which is not yet validated in French, would refined and confirm or not the PTSD diagnosis at the beginning of the HRT. Secondly, the study included mainly male subjects, thus requiring the reproduction of these results in a female population. This is all the more important as gender difference is well-described in PTSD (6). Thirdly, the sustainability of reintegration was not evaluated. Relapses are frequent for chronic PTSD (8) and knowing how soldiers who were reintegrated into civilian jobs deal with daily stress is important to improve their remission. Fourthly, we did not evaluate moral injury, which appears to be an important factor in understanding recovery from chronic PTSD (62). Whether the HRT program is efficient for chronic PTSD with moral injury cannot really be evaluated. Finally, no information was available about which practical workshop in the HRT program was the most effective for resources, VIA, and reappropriation.

CONCLUSION

In this paper, we propose the broadening of the relationships between recovery and reintegration in PTSD by integrating approaches from the field of positive psychology. Positive resources that are still available are linked to clinical severity despite the psychic wounds of the soldiers. Some resources (i.e., VIA, mindfulness, optimism, etc.) appear to be more efficient in helping the reintegration of soldiers with chronic PTSD. Altogether, our results highlight the importance of taking into account the existing needs of the patient and optimizing the modalities of individual, collective and institutional rehabilitation of individuals suffering from PTSD in order to better understand the dynamics of the recovery process. This suggests that future programs focusing on salutogenic recovery interventions and reintegration for traumatized soldiers could develop and validate more practical workshops for improving resources, particularly VIA.

AUTHOR CONTRIBUTIONS

CB and MT conceived the study. All authors actively took part in the process. AD, JT, and MT planned and participated in the statistical analysis. All authors read and approved the final manuscript.

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Chaplaincy, Spiritual Care and Moral Injury: Considerations Regarding Screening and Treatment

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Moral injury is a complex trauma related syndrome involving a correlation of biological, psychological, social, and spiritual symptoms that can have substantial impact upon health and well-being. This paper argues for a holistic bio-psycho-social-spiritual approach to moral injury, by including chaplaincy in the screening and treatment of moral injury among actively serving military members and retired veterans. As part of the moral injury treatment process, and in alignment with the World Health Organization's Spiritual Intervention Codings, a new technique is proposed, "Pastoral Narrative Disclosure" (PND), as a guide for chaplains and others trained in spiritual care to assist those suffering from moral injury.

Keywords: moral injury, public health, chaplains, holistic care, spiritual care, religion, rehabilitation

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INTRODUCTION

Over the centuries, chaplains have been educated, commissioned, and professionally engaged to provide religious and pastoral care to military members and veterans (hereafter "personnel") who have survived the traumatic effects of war. Across the Western World, chaplaincy as a profession remains substantive to the present day, providing ministry to a range of personnel within a variety of contexts (1). Moving beyond the traditional terminology associated with religious or pastoral care, the revision of the WHO-ICD-10 "Pastoral Intervention Codings" (2, 3) subsequently led the World Health Organization (2) reaffirming the various chaplaincy services into five categories of "spiritual intervention" codings (colloquially abbreviated as the "WHO-SPICs"; refer **Table 1**).

The WHO-SPICs are useful for chaplains and other spiritual carers to formally notate their spiritual screening and treatment interventions used to assist the health and well-being of their clients. It is arguable however, that the naming of the WHO-SPICs and associated interventions were only possible given a common understanding and consensus definition of the term "spirituality": "Spirituality is that aspect of humanity which refers to the way individuals seek and express meaning and purpose and the way they experience their connectedness, to God, to self, to others, to nature, and to the significant or sacred" [(6), based on (7)]. While not all academics and health care practitioners agree with this definition, nevertheless it has (or similar variations) become increasingly utilized across medical, nursing and allied health professions (including chaplaincy) by providing a common understanding internationally of what "spirituality" means.

TABLE 1 | WHO spiritual care intervention codings ("WHO-SPICs").

Summary Table (WHO-ICD-10-AM/ACHI/ACS, July,2017)[a]		
IBN[b]	**Procedure code**	**Spiritual care intervention descriptor[c]**
1824	**96186-00**	**Spiritual assessment**—Initial and subsequent assessment of wellbeing issues, needs and resources of a client. This intervention can often lead to other interventions. Includes: informal explanatory dialogue to screen for immediate spiritual needs including religious and pastoral issues and/or the use of a formal instrument or assessment tool.
1869	**96086-00**	**Spiritual counseling, guidance, or education**—An expression of spiritual care that includes a facilitative in-depth review of a person's life journey, personal or familial counsel, ethical consultation, mental health, life care, and guidance in matters of beliefs, traditions, values and practices.
1915	**96187-00**	**Spiritual support**–The provision of a ministry of presence and emotional support to individuals or groups. Includes: companioning of person(s) confronted with profound human issues of death, dying, loss, meaning, and aloneness, emotional support and advocacy, enabling conversations to nurture spiritual wellbeing and healing, establishing relationships and hearing the person(s) narrative.
1915	**96240-00**	**Spiritual ritual**—All ritual activities both formal and informal. Includes: anointing, blessing and naming, dedications, funerals, meditation, memorial services, private prayer, and devotion, public and private worship, rites, sacraments, seasonal and occasional services, weddings, and relationship ceremonies.
1916	**95550-12**	**Allied health intervention—spiritual care** (Generalized Intervention) [Includes: any spiritual care intervention undertaken that is not specified or not else-where classified].

[a]*Summary Table developed from: (i) Australian Consortium for Classification Development (ACCD) (4), p. 235 and (ii) Australian Consortium for Classification Development (ACCD) (5). Spiritual: (i) assessment, p. 262; (ii) counseling, guidance and education, p. 272; (iii) support, p. 291; (iv) ritual, p. 291; (v) allied health intervention—generalized intervention (listing only), p. 291.* [b]*IBN, Intervention Block Number;* [c]*Tabular listings previously classifying "pastoral care" or "religious" interventions are now indexed under the above "spiritual care" procedural codes.*

While the term "spirituality" seems to have reached a definable consensus, this is not the case with moral injury. Defining "moral injury" has proven a difficult task. Lancaster et al. [(8), p. 15] note that there have been at least 18 different conceptualizations regarding moral injury since the original concept by Shay, (9, 10). It is not however, the intent of this paper to revisit all the various definitions which have previously been reviewed (11). Essentially, what is important for chaplains, and the chaplaincy profession, is that a definition of moral injury be holistic and multi-disciplinary based upon a twenty-first century bio-psycho-social-spiritual paradigm (12, 13). The definition of moral injury, for the purposes of this paper, is an amalgamation of the reviews of both Jinkerson (14) and Hodgson and Carey (11), namely:

> "Moral injury is a trauma related syndrome caused by the physical, psychological, social and spiritual impact of grievous moral transgressions, or violations, of an individual's deeply-held moral beliefs and/or ethical standards due to: (i) an individual perpetrating, failing to prevent, bearing witness to, or learning about inhumane acts which result in the pain, suffering or death of others, and which fundamentally challenges the moral integrity of an individual, organization or community, and/or (ii) the subsequent experience and feelings of utter betrayal of what is right caused by trusted individuals who hold legitimate authority.
>
> The violation of deeply-held moral beliefs and ethical standards—irrespective of the actual context of trauma—can lead to considerable moral dissonance, which if unresolved, leads to the development of *core* and *secondary* symptoms that often occur concurrently. The core symptoms commonly identifiable are: (a) shame, (b) guilt, (c) a loss of trust in self, others, and/or transcendental/ultimate beings, and (d) spiritual/existential conflict including an ontological loss of meaning in life. These core symptomatic features, influence the development of secondary indicators such as (a) depression, (b) anxiety, (c) anger, (d) re-experiencing the moral conflict, (e) social problems (e.g., social alienation) and (f) relationship issues (e.g., collegial, spousal, family), and ultimately (g) self-harm (i.e., self-sabotage, substance abuse, suicidal ideation and death)".

Moral Injury and Post-traumatic Stress Disorder

Some attempts have been made to distinguish moral injury from post-traumatic stress disorder (PTSD). Essentially however, this can be a difficult task, because there exists a degree of overlapping issues. Trauma-related conditions arise from exposure to a trauma event, which in the case of PTSD, results in the altered belief about safety (e.g., "the world is a dangerous place in which I live in fear"), as distinct from moral injury which is multifaceted and involves a person's altered beliefs about meaning, purpose, faith or spirituality (e.g., "there is no hope"). That is, PTSD is essentially a fear based anxiety disorder caused "after a person is exposed to actual or threatened death, serious injury or sexual violation" [(15), p. 43], whereas moral injury is a "broad bio-psycho-social-spiritual sequeala," which we believe can exist as an independent syndrome and can indicate a "risk factor for impaired life functioning and development, or worsen several psychiatric disorders" [(13), p. 2446].

While some suggest a non-syndromal approach to classifying moral injury [e.g., (16), p. 392], nevertheless we argue, that for appropriate screening and treatment, moral injury should be understood as an "eclectic of injuries"—involving "biological/physiological injury," "psychological/emotional injury," "social/familial injury," and "spiritual/religious injury"—each having a variety of symptoms, some of which are in-common, while other symptoms are unique to a particular "injury" (**Table 2**). That is to say, in order to screen for moral injury and understand the functional impact of moral injury upon the individual—so as to subsequently

TABLE 2 | Moral injury—Bio-psycho-social-spiritual symptoms[(a)].

Biological/ physical injury	Psychological/ emotional injury	Social/ familial injury	Spiritual injury
• Insomnia • "Startle-reflex" • Alcohol abuse • Drug addiction • Loss of memory • Self-sabotage / • Self-harm • Suicide	• Anger & Betrayal • Shame, Guilt, Sorrow • Loss of trust in self • Loss of trust in others • Fear and Anxiety • Re-experiencing the moral conflict/Flashbacks • Nightmares • Gambling addition • Sexual/Porn Addiction • Self-deprecation • Loss of self-worth • Depression • Suicidal ideation	• Spousal/Partner Disconnection • Child-Parent Disconnection • Family Disconnection • Collegial Disconnection • Occupational dysfunction • Professional Disconnection • Legal and disciplinary issues • Community/Cultural Disconnection • Social Alienation	• Anger & Betrayal • Shame, Guilt, Sorrow • Loss of trust in self • Loss of trust in others • Loss of faith/ belief • Moral pain /dissonance • Questioning morality • Self-condemnation • Spiritual/existential crisis • Loss of purpose in life • Fatalism • Loss of caring • Ontological loss of meaning. • Feeling "haunted"

Source: [(a)]Hodgson and Carey (17).

engage appropriate treatment—it is essential to identify the key symptoms. What is also essential to understand, for the screening and holistic treating of moral injury, is that moral injury is not simply physiological, nor solely psychological, or just social/cultural, nor is it purely based upon spiritual injury or moral pain, but rather moral injury is a four dimensional bio-psycho-social-spiritual infliction with a variety of interwoven symptoms.

MORAL INJURY SCREENING AND CHAPLAINCY

As indicated by the definition (noted earlier), moral injury should be regarded as a complex phenomenon involving physiological, psychological, social, and spiritual issues, so perhaps it should not be surprising that as yet there still remains no single validated instrument ideally recommended for chaplains that can be readily utilized for the screening of moral injury and spirituality. There is however, literature which supports the involvement of chaplains undertaking screening evaluations for moral injury prior to or during their intervention of spiritual counseling. Indeed some literature indicates that chaplains can be an important and initial "port-of-call" for screening veterans who may potentially be suffering a moral injury.

For example, Nieuwsma et al.'s research (18), surveying US Veteran Affairs' chaplains ($n = 440$) and US Department of Defense chaplains ($n = 1{,}723$) indicated that 14% of DoD chaplains and approximately 45% US Veteran Affairs, had *"frequently"* met with and provided support to personnel suffering from moral injury. While the majority of DoD chaplains (59.5%) acknowledged being only involved "sometimes" with military personnel whom they believed were suffering a moral injury, this nevertheless indicates that a substantial number of military chaplains were connecting (even if only "sometimes") with personnel potentially showing symptoms and/or signs of moral injury. It seems logical that both military chaplains and veteran affair chaplains should be considered valuable front-line "reconnaissance" for identifying and helping to formally screen those with potential symptoms and signs of a moral injury.

Indeed, medical specialists involved in veteran care, such as Kopacz et al. (19), suggest that chaplains should at least utilize spiritual screening scales that are currently available [e.g., "Spiritual Distress Scale"—SDS; (20)], so that chaplains can empirically identify those personnel who are "at risk" [e.g., suicide ideation behavior; (21)], and thus "allow chaplains to be more responsive" to the spiritual and pastoral needs of those for whom they are required to provide care (19). As reviewed by Drummond and Carey (22); Carey et al. [(23); p. 12], there are in fact numerous evaluations that can be used by chaplains for the screening and assessment of religious and spiritual issues affecting the health and well-being of their clients. Amidst these instruments, there are a number of tools that chaplains could utilize which focus specifically upon factors/symptoms relating to moral injury—examples of these instruments are provided at **Table 3**.

While some chaplains may be open to undertaking moral injury screenings as part of their pastoral ministry/spiritual care, others may need educating about the benefits of undertaking screenings as part of a recognized WHO-SPIC spiritual assessment intervention (refer **Table 1**). Of additional value would be chaplains becoming involved in, or even initiating, the development of instruments to assist with the screening and treatment of moral injury. For example, to identify those "at risk" and to enable chaplains to be more responsive to those personnel potentially suffering moral injury, the first exploratory research undertaken within the Australian Defence Force (ADF) was initiated, not by psychiatrists, not by psychologists, nor social workers, but implemented and supported by chaplains who were genuinely concerned about the well-being of war veterans (17).

A 100 item "Modified-Military-Moral-Injury-Questionnaire" (M3IQ) was initiated by chaplains to implement a preliminary screening to assess whether or not any Australian military personnel had experienced a potentially morally injurious event while on deployment. Whereas a number of previous studies regarding moral injury focused upon military personnel who

TABLE 3 | Examples of moral injury spiritual screening tools accessible/utilized by chaplains[(a)].

Instrument	Key focus		Specialty
Spiritual injury scale/index (24)	• Guilt • Anger or resentment • Grief or sadness • Lack of meaning or purpose • Despair or hopelessness	• Feeling that God/life abandoned • Religious doubt or disbelief • Fear of death	• Mental Health • Spiritual Injury • Moral Injury
Impact of Event Scale—Revised (IES-R) (25)	• Traumatic Events • Intrusion into life	• Hyper-arousal • Avoidance	• Mental health • Military & veterans • PTSD/Moral injury • Health & emergency service personnel
Moral Injury Events Scale (MIES) (26)	• Betrayal • Morality	• Immorality • Ethics	• Mental health • Military & veterans • PTSD/Moral injury
Spiritual Distress Scale (19)[(a)]	• Guilt • Sadness/grief • Resentment	• Anger/ • Despair/hopelessness	• Mental Health • Military & Veterans • PTSD/Moral Injury • Suicide
Moral Injury Questionnaire—Military (MIQM) (27)	• Betrayal • Guilt • Retribution • Humanization	• Violence • Destruction • Death	• Mental Health • Military & Veterans • PTSD/Moral Injury
Modified Military Moral Injury Questionnaire (M3IQ) (11)[(b)]	• Immoral acts (witnessed and/or perpetrated) • Death/injury (civilians, military, enemy) • Betrayal (self & others)	• Ethical dilemmas (decision-making, humanization) • Disproportional violence/retribution • Grief, shame and unresolved issues	• Moral injury • Existential/spiritual • Ethics/morality • Military & veterans
Moral Injury Symptoms Scale—Military (MISS-M) (28)	• Betrayal • Guilt • Shame • Moral concerns • Religious struggles	• Trust • Meaning/purpose • Forgiveness • Self-condemnation	• Mental Health • PTSD • Moral Injury • Military & Veterans

[(a)]*Instruments presented in chronological order* [(a)]*(29) developed from (24) Spiritual Injury Scale;* [(b)]*M3IQ: Based on the MIES (26) and the MIQM (27).*

were already diagnosed with post-traumatic stress disorder, the uniqueness of the M3IQ was its focus upon those personnel who had ***not*** been diagnosed with PTSD, yet the majority still evidenced symptoms of a "moral injury" post-deployment (17). While the analysis of the M3IQ research results are currently being undertaken and will be of interest to medical, nursing, and allied health professionals alike, nevertheless the involvement of chaplains at the initial screening level helps to ensure a truly holistic bio-psycho-social-spiritual approach as part of a continuum of care—from screening to treatment—which includes the involvement of chaplains as part of a multidisciplinary approach toward moral injury rehabilitation. It is important to note however, that while chaplains may be involved in the screening for moral injury, this does **not** mean that chaplains would solely be responsible for diagnosis or subsequent treatment. Effective intervention needs both the appropriate mental health professional and the chaplain working in collaboration. Indeed a chaplain failing to make reference to mental health professionals could potentially cause harm, as could mental health professionals by not referring appropriately to chaplains. Wortmann et al. [(30), p. 258] summarize recommendations for when clinicians should consult with and/or refer to chaplains/clergy regarding the treatment of moral injury. These include when personnel show symptoms and/or signs of (i) persistent guilt or shame after perpetration, (ii) anger and/or mistrust after betrayal, (iii) intense, chronic negative self-evaluation linked to religious/spiritual beliefs and (iv) alienation from the community. While these are good recommendations for referral/consulting with chaplains/clergy, we would add (given that chaplains are often regularly involved in the lives of personnel) that clinicians should also consult/refer to chaplains/clergy (v) given personnel performance work place issues and (vi) familial issues.

MORAL INJURY TREATMENT AND CHAPLAINCY

While there is considerable international variation with regard to the nomenclature for classifying a "chaplain," nevertheless when discussing issues in relation to health care treatment, it is important to distinguish for the purposes of this article, between "community clergy" (e.g., parish clergy, assistant and/or volunteer spiritual carers, etc.) and a "chaplain" (e.g., certified/clinically trained health care chaplains, military chaplains, veteran affairs chaplains, etc.). The majority of chaplains have completed additional training (specific to their industry/sector) beyond the standard religious, theological,

and/or parish education/experience. While there is evidence of community clergy receiving and/or providing moral injury training in collaboration with mental health and other specialists (31, 32), nevertheless most of the literature regarding the beneficial and influential role of chaplains, has been within the health care sector (33, 34)—even more so with respect to mental health care (23, 35, 36).

Some of the health care literature has considered the specialist role of military and veteran affair chaplains. Hale (37), for example, surveying US Navy personnel, found that the majority (n = 213/250: 85.2%) either "agreed" or "strongly agreed" that their "chaplain/pastoral care service was best qualified to treat their spiritual/moral injury". Nieuwsma et al.'s research [(18); noted earlier] indicated that the majority of both DoD (62%) and VA chaplains (66.4%) believed that their chaplaincy training made them "very prepared" to provide pastoral support for those experiencing moral injury [(18), p. 132]. Kopacz et al. (38) was one of the first to argue that "those affected by [moral injury] may benefit from more than just conventional mental health services'. They noted four distinct advantages of pastoral care that may be helpful by: (i) resolving some of the dynamic issues underpinning moral injury (such as forgiveness and guilt), (ii) assisting military and veteran personnel who have embraced a religious/spiritual identity with coping/resilience, (iii) providing familiarity, given that personnel within the military are (via the role of the chaplain) accustomed to such a supportive role which, (iv) does *not* encompass an imposition of values or beliefs but is sensitive to the individuals own spirituality and sense of meaning and purpose [(38), p. 31].

In responding to the condition of moral injury, many chaplains have in the past, as part of their pastoral/spiritual care ministry to those of religious beliefs, used a confessional process (of one kind or another), traditionally called the Sacrament of Penance *(or "Sacrament of Reconciliation"*, seen as a sacrament of healing) which is considered "*sacrosanct*" (i.e., too important or valuable to be altered) and encouraged personnel to name their experience of moral injury and seek forgiveness. Such a ritual process may still have merit today, as it can complement other therapeutic processes of various health carer practitioners.

Traditionally, the Christian religious confessional process consisted of: (i) contrition, (ii) confession, (iii) penance, and (iv) absolution [(39), p. 165–166]. In comparison Litz et al. have carefully crafted "Adaptive Disclosure Therapy" (ADT) (40, 41), which is an adapted or "secularized form of the 'sacrament of penance' modified with the critical exclusion of the priest" [(42), p. 1]. However, given the religious, spiritual, existential and ethical issues associated with moral injury, the role of the clergy/chaplain may be critical, and thus there is a need to reconsider traditional practices, and utilize new terms that embrace the spirituality of all personnel—whether they be of a religious faith or none.

PASTORAL NARRATIVE DISCLOSURE

The sacrament of penance recognized and acknowledged the moral pain of returned military personnel which encouraged them to return to families and the community—absolved, forgiven, and cleansed. Such sacramental practices applied today however, would be foreign to the social and cultural experiences of many present day personnel and possibly seem meaningless or even inappropriate to those of non-Christian religions. Nevertheless, given that moral injury seems to transcend religious/spiritual perspectives (43), and that chaplains are quite apt at providing cross-cultural ministry to those of no faith and those of any faith (44, 45), chaplains could uniquely adapt aspects of these traditional practices to help present day personnel address their moral injury.

While there exists some excellent therapy techniques that could be used to model a moral injury intervention [e.g., Religiously Integrated Cognitive Behavior Therapy; RCBT (46)], nevertheless similar to Litz et al's ADT (41), we have developed a "*Pastoral Narrative Disclosure*" (PND) intervention specifically for use by chaplains. PND is based on a liturgical confessional model empirically evaluated by Joób and Kettunen (39) and includes the work of Verkamp (47) regarding the "moral treatment of returning warriors". The three locutions of "pastoral," "narrative" and "disclosure" are deliberately used. Firstly, "pastoral" which embraces the individual holistically, secondly "narrative," which embraces the individuals story as part of their being, and finally "disclosure," which is a more modern term for confession.

PND is fundamentally a revised confessional model that has been in place for centuries and is largely still utilized (in one form or another) by many clergy/chaplains. PND is not a theological discourse but a health care intervention which seeks to provide a model for the effective application of spiritual and pastoral care. We have categorized the PND model into eight stages to gain feedback from the wider professional community and to make the PND process statistically assessable and testable for validity so as to ensure PND credibility. The eight "R" phases of PND (summarized at **Table 4**) identify the chaplain's role in order to help personnel explore the experience of moral injury, consider guilt and shame, seek forgiveness, and reconnect with themselves, their family and their community. Consisting of eight (proposed) 60–90 min sessions, each of the phases presented are sequential in order, nevertheless it may be appropriate at times to return to previous phases depending on the progress and issues raised by personnel.

Rapport

Military chaplains are uniquely appointed within their respective defense force to provide confidential counseling services sailors, soldiers and airmen/airwomen, ensuring personnel can wholeheartedly trust their chaplains in what they discuss with them without fear of reporting, reprimand or reprisal (48). For example, in the United States military, "Rule 503: Communication to Clergy," states "a communication is 'confidential' if made to a clergyman in the clergyman's capacity as a spiritual adviser or to a clergyman's assistant in the assistant's official capacity and is not intended to be disclosed to third persons" [(49), p. III-24]. Thus, US military chaplains cannot be ordered by the chain of command to write assessments or reveal any information about particular personnel. This is also the case,

TABLE 4 | Pastoral narrative disclosure (PND)[(a)]—Eight stage summary for the spiritual counseling and education[(b)] of personnel experiencing moral injury.

Stage	Summary explanation
1. Rapport	Developing rapport/trust between personnel/service member and chaplain, who ensures (caveats permitting) absolute confidentiality.
2. Reflection	Personnel/service member provides an account either oral, written or by other medium, reflecting upon operational life journey and their morally injurious experience.
3. Review	Indepth review of personnel/service member's reflection regarding their morally injurious experience by examination of conscience—considering past thoughts, words, actions, and omissions, particularly with regard to self-accusation/s.
4. Reconstruction	Reconstruct the moral/ethical issue relating to the event and address feelings of grief, guilt, shame, anger, betrayal, trust, and forgiveness.
5. Restoration	Restoration is sought regarding grievances, which if possible, are heard by the perpetrator or organizational representative.
6. Ritual	Rituals, either formal or informal, secular or religious rites, expressing regret, naming mistakes, change of heart, and seeking self-forgiveness and/or forgiveness from a significant or sacred source.
7. Renewal	Engaging in renewal by personnel/service member making amends and doing activities that are meaningful/purposeful in life by relinking with family, friends, workplace, community, the sacred/divine/God.
8. Reconnection	Reconnection involves personnel/service member engaging support and resources to reconsider or implement future values, career plans and personal goals relevant for themselves and significant others so as to develop resilience and sustain themselves long term.

*[(a)]Source: Carey and Hodgson, this paper; [(b)]WHO-ICD-10-AM Spiritual Intervention Coding "Spiritual Counseling and Education" (refer **Table 1**).*

for example, within other defense forces such as the UK Armed Forces, Australian Defence Force, and the New Zealand Defence Force, whose chaplains provide "absolute confidentiality" (with certain caveats) for all personnel [(50), p. 5; (51, 52)]. Overall, given such a level of privacy held by the chaplain, combined with their military experience, helps to increase trust, which has been argued to be particularly important so as to lead to more favorable health outcomes (53).

Reflection

Due to the rapport developed, personnel returning from deployment, may share or disclose with a military chaplain their experience of operations (warlike or non-warlike). Needing to "offload" a narrative that is immersed with guilt, shame or anger, is an important cathartic step, as a moral injury can potentially define and consume their entire being. Reflective spiritual care "begins with lamenting the shared anguish of moral injury" [(45), p. 1] and involves personnel providing either oral, written or other type of medium (e.g., pictures, video clip) about their morally injurious experience.

Particular themes (e.g., betrayal or perpetration) and/or symptoms (e.g., anger, guilt or shame) would be identified by the chaplain which then permits a review process. Recognizing the pivotal role that narrative has in understanding personnel's operational experience, such praxis provides a conjuncture between their "war story," their "previous stories," "community stories," and "faith stories". It is important that personnel "own their story" by embracing all the anguish and hurt which it may cause, coming to an acceptance that progresses toward their cleansing and wholeness. Overall PND involves not just stories told, but stories of "one's being" or "one's self" and about the meaning of their life. Given the powerful effect of the reflective process, it is of course important that chaplains have access to additional resources and health care personnel. This is to ensure a safety barrier so as to effectively address the negative emotions from some personnel given the indepth re-telling of their morally injurious event/s. Potentially there is a real risk of producing further trauma by the re-telling of traumatic events. However the process of reflection and the essential importance of the chaplain's role with regard to moral injury, predominantly concerns the person's faith, beliefs, or framework for meaning, rather than purely traumatic events. Bussing et al's research among military personal, has indicated that "...the process of life reflection and subsequent intention to solve conflicting situations and experiences, can be considered as a process to cope with one's own failures, guilt, and mistakes" (54). This reflective stage provides the opportunity to consider the moral and spiritual impact of failures, guilt and sense of betrayal rather than just focusing on the trauma.

Review

Following a person's reflection, an in-depth critical self-review of their operational life experience should be undertaken. It would involve an examination of conscience by personnel, facilitated by the chaplain, to critique their or other's conduct on operations. Any reflective self-accusation would be noted by the chaplain who would identify particular symptoms and themes. A further concept for consideration is collective guilt, whereby personnel associate their examination of conscience with their nation state's participation in an event and its culpability. Additionally, personnel can associate their examination of conscience, whereby their behavior could be considered against particular ethical principles or sacred texts (if appropriate) that provide precise relevance and personal meaning [(47), p. 96, (55), p. 3, (56), p. 37].

After concluding an examination of conscience, personnel may identify that they have done nothing wrong and their feelings of anger, shame, or guilt are largely undeserved. With the help of chaplains, social workers or psychologists, personnel will need to be taught how to accept such feelings. It is also quite possible that personnel, after examining their conscience, may realize that their deep sacred beliefs have been violated by themselves. Even if their actions are within the rules of engagement or the laws of armed conflict, they may still struggle with their conscience [(47), p. 98]. This leads to the need for moral reconstruction.

Reconstruction

Reconstruction, with regard to moral injury, is the rebuilding of a person's belief system which has been fractured by their morally injurious experience. Most military chaplains have a solid academic foundation as a result of their theological training in ontology, moral theology, ethics and reflective praxis. Given their additional specialist military training and active service experience, chaplains can help personnel to explore their moral conscience and why a morally injurious event has affected them. The chaplain's role requires that he/she be conscious of the needs of the whole person, including their physical, psychological, social, and spiritual issues, which can emerge as a result of a morally injurious event. The military chaplain can help personnel explore the ethics and morality behind the event and the person's involvement. As part of the reconstruction phase, the chaplain can address with personnel the issues of grief, guilt, shame and anger, plus rebuild the values of trust, and forgiveness (45).

Restoration

To respond to moral injury issues that involve betrayal, a restorative process may be necessary if possible. Betrayal is considered a fundamental "assault on human dignity and brings with it powerful disappointment and discouragement" (57). The issue of betrayal, be it by others or self-betrayal, requires a restoration to allow the person to have their grievance heard either by those directly involved in the incident (e.g., perpetrator/chain of command) or a senior defense member representing the defense institution/service. Such a process enables a reciprocal conversation of truth and understanding to take place, whereby the person may confirm their experience or gain further information to better understand the wider context. Most importantly restoration enables the possibility for the relationship between the person and the institution/service to be restored, as "repair is not only material loss or damage, but a state of relationship that has been shaken, broken, distorted, or fouled" [(58), p. 209]. This phase will preferably involve a verbal acknowledgment or apology from the perpetrator or from a senior defense representative, however if it is not possible for a face-to-face meeting, a written document may suffice.

Ritual

Even though not all personnel are religious, many have had a spiritual upbringing or influence, where religion has played a fundamental or at least a serendipitous role in the development of their moral worldview. Thus, whether consciously or unconsciously, many personnel would associate their morality based on one or more narratives of a traditional faith structure (e.g., Buddhist, Christian, Hindu, Islam, Judaism, etc) or an idiosyncratic combination of religious beliefs. Traditionally throughout the ages, military members often sought a priest/cleric/chaplain/rabbi (or equivalent) to conduct a ritual such as a prayer of confession (or equivalent disclosure). By clearing their moral conscience, a first step was taken toward reversing their potential debilitation. Whether the type of moral injury is betrayal or perpetration, particular types of rituals according to different faith/religious perspectives, can be utilized to help personnel treat and cleanse their moral injury. Following a "confession," personnel may seek absolution from a cleric/chaplain. This may include not only a petition for forgiveness from a divine being/God but also forgiveness from others.

An additional challenge for personnel is also the struggle to forgive themselves and even to forgive God (or other divine entity) for failing to intervene [(47), p. 103–104]. As part of the prayers of forgiveness, other rituals can be utilized such as (in the Christian tradition), the chaplain/priest sharing the eucharist, anointing personnel with oil and/or conducting prayers of restoration. As noted by Hughes (59), prayer can help personnel to "feel empowered to heal and/or to be reconciled with the divine, the faith community, or significant relationships in his or her life" (p. 58). As a matter of authenticity, genuineness and integrity, and irrespective of the religious/spiritual tradition, this ritual role should be undertaken by an authorized serving religious practitioner (e.g., cleric/chaplain).

Renewal

Renewal, colloquially expressed, means commencing life "a new" with a "clean slate". Using a "ritual of penance" (i.e., "making amends") or similar, is a method to help personnel engage in doing new activities that are life enriching. Penance provides a means or "route away from self-destructive patterns and toward life-affirming strategies" [(60), p. 79].

One of the consequences of a moral injury is that it causes a rupture in relationships between working personnel, family members, community or religious/spiritual affiliations, and thus potentially leading to alienation. This relational-rupture may be due to a perception of self-agency (e.g., "I could and should have done something") or through a loss of faith in God (e.g., "Why did God allow this?"), or perhaps a loss of trust in the community or a damaged anthropology (e.g., "All people are evil"). Regardless, the impact of this rupture evidences the need for utilizing PND to encourage healing and renewal.

Renewal involves ensuring personnel achieve effective working and supportive relationships in: (i) the workplace; (ii) with their spouse/partner, children and extended family; and (iii) in the wider text such as faith communities, thus encouraging opportunities for communication and developing relationships (61, 62). For example personnel may spend preplanned weekends away with their family to encourage positive communication opportunities, or engage in community activities together.

Reconnection

Reconnection involves personnel considering and engaging support and resources to reconsider their current and future values, plans and goals relevant for themselves and their significant others. This may involve revisiting and reconsidering previous work of the initial PND process (e.g., reflection and review) so as to discern any unresolved issues and/or plan strategies to move forward. To enable future stability, personnel are encouraged by the chaplain to connect with wider support and resources. With the approval of the person concerned, additional support from general practitioners, nurses, psychologists, social workers, community clergy, chaplains, and other allied health professionals, will assist the member to maintain their progress and develop their resilience.

CONCLUSION AND RECOMMENDATIONS

No doubt some clinicians, for the purpose of seeking to maintain and extend their professional boundaries, will believe their unilateral conceptual frameworks of addressing moral injury are exclusively correct—they will prefer frameworks that are not truly holistic, failing to endorse a multidisciplinary approach. Some will attempt to exclude or minimize the role of chaplains or clergy down to occasional referrals or argue that the chaplaincy role can be accomplished by non-religious personnel or even replace the chaplain with an empty chair! Given the complexity of moral injury however, it is important for "medical, nursing and allied health personnel to work alongside chaplains to assist with moral injury rehabilitation. This will ensure that healthcare departments/facilities do not 'adopt a stance that excludes the significance of spirituality,' nor minimizes spiritual interventions due to professional demarcation at the expense of client wellbeing" [(63), p. 245; (64), p. 40]. Most certainly PND itself is intended to be used, not in isolation, but as part of a multidisciplinary approach.

This is particularly important if personnel have post-traumatic stress disorder combined with moral injury, thus requiring the effective intervention of both the appropriate health care professional and the Chaplain in addressing dual conditions.

Another advantage of PND, is that while some religious traditions (and individual chaplains or personnel), might be more comfortable with a traditional "confessional" model, an adapted application such as PND, can be utilized across different traditions and faith paradigms, making it quite versatile. Further, as it is unlikely that health care professionals will become more resourceful by undertaking theological education, it is recommended therefore that chaplains "have to be proficient in at least three languages to work alongside medical, nursing and other allied health practitioners; namely, *clinical* language, *cultural* language and the language of the *personal/spiritual*. Holding these three languages in creative tension is vital for genuine person-centered and holistic care" [(63), p. 246]. This will allow chaplains to be multi-literate so as to facilitate collaborative teamwork.

As noted earlier however, some chaplains may be reluctant to utilize any moral injury screenings or PND. A duty of care however, may warrant the need for chaplains to be educated about the benefits of using available screening instruments—not for the purposes of reporting, *per se* (for this would be a breach of confidentiality), but rather to assist chaplains to more empirically assess the narratives of their clients and ultimately assist their client's needs. In order, however, for chaplains to progress their clients beyond screenings and assessment interventions, there is also a need for chaplains to develop and utilize a systematic method of providing spiritual counseling and education, plus incorporate ritual activities to address moral injury. The proposed PND technique is one way that chaplains may be able to encourage and achieve the appropriate spiritual care interventions, that will ultimately provide personnel with the beneficent support which they need to address their moral injury.

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All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication. The PND technique forms part of the Ph.D. research of the co-author TH.

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German Soldiers' Needs to Clarify Open Aspects in Their Life, to Talk About Fears and Worries, and to Forgive and to Be Forgiven as a Matter of Life Reflection

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Background: In missions, soldiers are confronted with difficult situations which may impair their physical and mental health. As the resulting problems are commonly regarded as stigmata, soldiers may obviate talking about their experiences and try to oppress them. It was aim of this study to clarify whether soldiers do perceive needs to reflect back on life, to seek release from "open aspects" of their life, and to talk with others about fears and worries, to forgive others or to be forgiven. Further we intended to clarify whether these needs were related to stress perception, post-traumatic stress disorders (PTSD) symptoms and reduced life satisfaction on the one hand, and religious trust as a resource to cope on the other hand.

Methods: Cross-sectional survey of 1,097 German soldiers (92% men). Existential/spiritual needs and mental health indicators, including stress perception, PTSD symptoms, life satisfaction, were assessed using standardized questionnaires.

Results: For 30% of soldiers it was important to reflect on life, 23% had a strong need to clarify open aspects of life, 30% had a strong need to talk with others about their fears and worries, 13% had strong needs to forgive, and 13% had a strong need to be forgiven. Soldiers' needs to clarify open (and probably conflicting) aspects of life were moderately related to their intention to forgive others and to be forgiven ($rs > 0.35$). Soldiers treated in the hospital for psycho-mental trauma had significantly higher needs scores than soldiers still serving on active duty, particularly for the need to talk with others ($F = 39.1$; $p < 0.0001$) and to be forgiven ($F = 26.0$; $p < 0.0001$). Across all soldiers the best predictors of these needs were PTSD symptoms and stress perception, albeit with relatively weak predictive power ($\beta s < 0.25$; $R^2 s < 0.24$).

Conclusions: The process of life reflection and subsequent intention to solve conflicting situations and experiences can be considered a process of coping with one's own failures, guilt, and mistakes. It should be noted that these needs were significantly stronger in soldiers with trauma. Addressing unmet needs may help them to communicate and to reject the stigma of "weakness."

Keywords: soldiers, forgiveness, moral injury, stress perception, PTSD symptoms, life satisfaction

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INTRODUCTION

In missions, soldiers are confronted with difficult situations which may impair their own physical and mental health. For soldiers it was stated that "the danger of spiritual and moral trauma is real, and it can initiate a downward spiral of physical, psychological, and behavioral problems in the service member" (1). Soldiers with these types of problems are commonly stigmatized (2, 3) even though help seeking behavior is generally encouraged and chaplains and other mental health service providers are available to offer support (4). As a result of being stigmatized soldiers may obviate talking about their experiences and, moreover, try to oppress them. Such burdening experiences may persist and interfere with adaptive coping strategies for dealing with Post-traumatic Stress Disorders (PTSD), or develop into a "moral injury." Moral injury results from "acts that transgress deeply held moral beliefs" (5) with resulting "feelings of shame, grief, meaninglessness, and remorse from having violated core moral beliefs" (6). In these cases soldiers may either decide to call for professional help (i.e., psychologists, chaplains) or they may try to manage the situation by themselves either by ignoring the problem, suppressing emotions, or attempting to solve the underlying problems. The numbers of soldiers receiving counseling or therapy for mental health issues or substance abuse therapy is estimated to be 17–21% (4, 7). Morgan et al. (4) found that the most often stated reasons for mental health consultations were problems with the family, depression and anxiety, stress and anger management.

When soldiers are actively aware of these problems and are able to talk with others about their perceptions, it is much easier to provide support and help. However, when the perceptions are emotionally "separated" and not emotionally "processed," it is much more likely that they do not talk about their problems to avoid the stigma of "weakness."

It was thus recently suggested that soldiers' psychosocial, existential and spiritual *needs* should be addressed, instead of assessing and treating only their mental health conditions (i.e., depression, anxiety, PTSD symptoms) (8). Research with the *Spiritual Needs Questionnaire* (SpNQ) in a sample of German soldiers has shown high levels of psychosocial, existential and spiritual needs and found that particularly the needs to be connected with partner and family and to find "inner peace" were of relevance and less so religious or existential needs (9). An important theme in that study was soldiers' needs to communicate their own fears and worries (9), which may be a helpful means to find states of inner peace.

It is worthwhile to focus on soldiers' needs (either actively expressed or not) to reflect back on life and clarify open aspects of their lives and to talk with others about fears and worries. These fears and worries may be due to either disturbing experiences during their missions or interpersonal conflicts with partners, comrades, or superiors. When soldiers experience guilt, failure, shame and ultimately moral injury, they may have forgiveness needs. When they experience other persons' failures or interpersonal conflicts, they may need to forgive and thus to resolve the conflicts by starting a process of reframing perceived harm and reducing resentment.

Interpersonal conflicts and violence may have long-term effects in the life of the offended or injured person. Meanwhile there is a rich body of evidence, that "forgiveness therapy" may improve psychological health (10–12). A recent meta-analysis found that these interventions reduced anger and hostility, stress and distress, and improved positive affect (12). Similarly, in workplace conflicts, forgiveness was moderately related to less mental health problems and unproductivity (13). The positive effects of forgiveness are partially mediated by reducing stress due to workplace offensiveness, and "forgiveness may be an effective means of coping following being emotionally hurt on the job that may promote good health, well-being, and productivity" (13).

Related research also shows that in terror attack victims the tendency to forgive was associated with problem-focused coping strategies instead of avoidance coping, and problem-focused coping was related to less PTSD symptoms (14). Interestingly, in the same study emotion-focused coping strategies were related to higher PTSD symptoms. For soldiers, active and cognitive processing focused on addressing the underlying problems (which may contribute to their burdening symptoms) might be a more healthy process instead of avoiding feelings. Here we have to assume both, situational demands and conflicts on the one hand, and personal traits ("tendency to forgive") on the other hand (15).

With respect to self-forgiveness, a recent meta-analysis summarized its effects on physical and mental health and found moderate positive effects on mental health and physical health across 65 and 18 studies, respectively (16). Toussaint et al. (17) reported that in cancer patients and their caregivers self-forgiveness was negatively related with self-blame and distress, but positively with hope. Interestingly, "self-forgiveness was indirectly associated with psychological distress through hope"; an effect that was stronger in the caregiver than in the patients. Even when the caregivers may have the best intentions to care for their patients, they may nevertheless often feel that it was not enough or that they have failed to be more aware, or that they cannot fully help the suffering person. Forgiving oneself can be a complicated process, particularly when one may perceive "guilt" without "fault" (18).

Similar processes can be assumed for soldiers, too, and thus forgiveness as a coping process might be interesting as soldiers have to deal with emotionally burdensome situations and in several cases "moral injury" or inner conflicts. But these processes require an active will to face these problems and find solutions to deal with them. However, it is also true that repressing guilty feelings may prevent the initiation of self-forgiveness, and this could negatively influence recovery and future behaviors in similar situations. Accepting responsibility when things went wrong and also accepting feelings of guilt and shame, even when there was no objective wrong in the concrete situation, is nevertheless painful.

Therefore, it is of importance to clarify whether soldiers do perceive any "needs" to reflect back on their life, to seek release from open aspects of their life, and to talk with others about their fears and worries, and further whether they see any need to forgive others or to forgive oneself. The present study

examined if soldiers have unmet reflection, clarification, and forgiveness needs and how strong these needs are. Further the present study clarifies whether these needs are related to stress perception, PTSD symptoms and reduced life satisfaction on the one hand, and religious trust as a resource to cope on the other hand.

METHODS

Participants

This is a cross-sectional study of German soldiers assessed between November 2011 and February 2012 ($n = 816$ in the first phase) and December 2012 to December 2013 ($n = 281$ in the second phase) (9). Ethical approval was obtained by the IRB of Witten/Herdecke University (#109/2011). The German Ministry of Defense (BMVg, PSZ III 6) approved and registered the study (#2/04/12).

The questionnaires were administered to German soldiers (mainly explosive ordnance disposal unit, military police/personal security and medical services in the first phase, and regular soldiers of army, air force and navy in the second phase) and military personnel treated as in-patients for post-traumatic stress disorder in the German Armed Forces Military Hospital Hamburg (Department of Psychiatry and Psychotherapy). The response rate of the first phase was 38%, while we have no information on the response rate of the second phase.

Data entry was performed at the German Armed Forces Joint Support Command, Cologne, and Bonn.

Measures

Needs to Reflect, Clarify, And Forgive

To measure a person's psychosocial, existential and spiritual needs, we used the SpNQ (19, 20). From this instrument we used five items addressing the needs to (1) reflect back on life (N4W), (2) clarify open aspects (N5W), (3) talk about fears and worries (N2W), (4) forgive someone (N16W), and (5) be forgiven (N17W). These five items can be combined to a single factor ("Forgiveness and Clarification"; explaining 47% of variance) with acceptable internal consistency (Cronbach's alpha = 0.71) in this sample.

From the SpNQ-20 we also took the *Inner Peace Needs* subscale (Cronbach's alpha = 0.73) (20) which uses four items: wish to dwell at places of quietness and peace (N7W), plunge into the beauty of nature (N6W), finding inner peace (N8w), talking with others about fears and worries (N2W). In this sample, the subscale had acceptable internal consistency (Cronbach's alpha = 0.74).

All items were scored with respect to the intensity of needs on a 4-point scale from disagreement to agreement (0—not at all; 1—somewhat; 2—strong; 3—very strong).

Life Satisfaction

Life satisfaction was measured using the Brief Multidimensional Life Satisfaction Scale (BMLSS) (21). The items of the BMLSS address intrinsic (oneself, life in general), social (friendships, family life), external (work situation, where one lives), and prospective dimensions (financial situation, future prospects) of life satisfaction as a multifaceted construct. The internal consistency of the instrument was found to be good in the validation study (Cronbach's alpha = 0.87) (21). In this study the 10-item version was employed that includes satisfaction with the health situation and abilities to deal with daily life concerns (BMLSS-10). The scale exhibited a good internal consistency in the present sample (Cronbach's alpha = 0.83).

All items were introduced by the phrase "I would describe my level of satisfaction as …," and scored on a 7-point scale ranging from dissatisfaction to satisfaction (0—terrible; 1—unhappy; 2—mostly dissatisfied; 3—mixed (about equally satisfied and dissatisfied); 4—mostly satisfied; 5—pleased; 6—delighted). The BMLSS-10 sum scores refer to a 100% level ("delighted"). Scores >60% indicate higher life satisfaction, while scores <40% indicate dissatisfaction, and scores between 40 and 60 indicate indifference.

Perceived Stress Scale

Cohen's Perceived Stress Scale (PSS) measures a person's self-perceived stress level in specific situations during the last month (22). Four items of the 10-item version (PSS-10) use a reverse scoring. Internal reliability of the original PSS-10 was moderate (alpha = 0.78) (22). Within this sample, the German language version of the PSS-10 has a good internal reliability (Cronbach's alpha = 0.85).

All items refer to emotions and thoughts and how often one may have felt or thought a certain way. The scores range from 1 (never) to 4 (very often); higher scores would thus indicate greater stress.

Stressful Military Experiences/Post-traumatic Stress Disorders

Stressful military experiences in terms of PTSD were measured with the German version of a modified PTSD Checklist-Military Version (PCL-M) (23). The checklist addresses problems associated with psychological distress that soldiers and veterans may experience such as repeated, disturbing memories, thoughts, images or dreams of a stressful military experience, physical reactions when reminded of a stressful military experience, avoidance of activities or situations because they reminded the soldier of a stressful military experience, being "superalert" or watchful or on guard, etc. (24, 25).

The internal reliability of the 17-item German language version was very good in this sample (Cronbach's alpha = 0.93). For this modified version, the respective items were formulated as whole sentences instead of reduced sentences.

The respective items were scored on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). The total symptom severity score may range from 17 to 85. We did not use the checklist to diagnose PTSD, but to screen individuals for perceived stressful experiences.

The PCL-M scores can be categorized in three groups "low" (PCL-M scores 17–33), "moderate" (scores 34–43), and "high" (scores 44–85) (26).

Religious Trust

To analyze a person's religious Trust, we used a specific subscale of the SpREUK questionnaire (SpREUK is an acronym for the German translation of "Spiritual and Religious Attitudes in Dealing with Illness") (27–29). This Trust scale has good internal consistency (Cronbach's alpha = 0.84) and addresses a person's trust in spiritual guidance for their life, their feeling of being connected with a higher source, trust in a higher power which carries through whatever may happen, and conviction that death is not an end. In this sample, the scale's internal consistency is good (Cronbach's alpha = 0.88).

The instrument scores items on a 5-point scale from disagreement to agreement [0—does not apply at all; 1—does not truly apply; 2—don't know (neither yes nor no); 3—applies quite a bit; 4—applies very much]. For all analyses, we used the mean scores of the respective scales described above. These scores are based on a scale of 100% (transformed scale score). Scores >60% indicate higher agreement (positive attitude), while scores <40% indicate disagreement (negative attitude), and scores between 40 and 60 an indifferent attitude.

Statistical Analysis

Descriptive statistics as well as analyses of variance, first order correlations and stepwise regression analyses were computed with SPSS 23.0.

Mediation modeling was performed using SPSS 23.0 following the conceptual theory from Hayes (30). The mediation analysis allows the researcher to investigate not only a direct effect from a variable on another but it is also possible to learn the indirect effect that a variable may have in a model. This relationship between variables and their direct and indirect effects on each other is analyzed with mediation models.

Despite the exploratory character of this study, the significance level was set at $p < 0.001$. With respect to the observed correlations (Spearman rho), we regarded $r > 0.5$ as a strong correlation, an r between 0.3 and 0.5 as a moderate correlation, an r between 0.2 and 0.3 as a weak correlation, and $r < 0.2$ as no or a negligible correlation.

RESULTS

Characteristics of Enrolled Soldiers

The enrolled soldiers ($N = 1,097$) were predominantly male (92%), were living with a partner (76%), and had a Christian affiliation (66%). Most were between 26 and 35 years of age (46%). All further details are depicted in **Table 1**.

With respect to quality of life measures, stress perception, and PTSD symptoms scores were low in the sample, while their life satisfaction was in the "satisfied" range (**Table 1**). Religious Trust was very low, indicating that religiosity had little relevance for most of the soldiers, while their inner peace needs were in the "somewhat" range.

Needs to Reflect, Clarify, and Forgive

A large percentage (30%) of soldiers had strong to very strong needs to reflect back on their lives, while 51% had no such needs (**Table 2**). The intention to clarify open aspects of their life (whatever these might be, i.e., perceived guilt, failures, conflicts) was found to be strong/very strong in intensity in 23% of soldiers, while 63% had no such needs. Although the topic was not explicitly addressed, 30% had strong to very strong needs to talk with someone about their fears and worries (56% not), indicating that there are hidden conflicts or inner struggles. These talks are often a first and important step to cope with the underlying burdening situations, experiences, or straining worries.

TABLE 1 | Characteristics of soldiers in the sample ($N = 1,097$).

GENDER (%)	
Men	92
Women	8
AGE (%)	
<26 years	12
26–30 years	26
31–35 years	20
36–40 years	14
41–45 years	12
>45years	15
PARTNER STATUS (%)	
Living with partner	76
Without partner	23
RELIGIOUS DENOMINATION (%)	
Christian	66
Other	1
None	33
Days at mission (d)	319 ± 284
TRAUMATA (%)	
Psycho-emotional	8
In hospital for treatment	4
HEALTH ASSOCIATED VARIABLES (MEAN ± SD)	
Life Satisfaction (BMLSS-10; range: 0–100)	73.5 ± 13.9
Perceived Stress (PSS-10; range: 0–40)	15.4 ± 6.7
PTSD scores (PCL-M; range: 17–85)	27.0 ± 10.7
Religious Trust (SpREUK-10; range: 0–100)	23.0 ± 26.6
Inner Peace Needs (SpNQ; range: 0–3)	1.0 ± 0.8

TABLE 2 | Intensity of needs in the sample of soldiers.

	Intensity of needs			
	Not at all (%)	**Somewhat (%)**	**Strong (%)**	**Very strong (%)**
Reflect back on life (N4W)	51	19	23	7
Clarify open aspects (N5W)	63	14	13	10
Talk about worries and fears (N2W)	56	14	22	8
Forgive someone (N16W)	80	9	7	5
Be forgiven (N17W)	81	7	7	6

Further steps to cope with personal guilt or perceived failures (whether they are true or not) were reflected in the need to be forgiven, or when guilt and failures were attributed to others, intentions to forgive others. However, 12% of soldiers had strong to very strong needs to forgive others (80% not), and 13% strong to very strong need to be forgiven (81% not) (**Table 2**).

Needs to Reflect, Clarify, and Forgive and Their Association With Sociodemographic Variables

Gender related differences in the intensity of the five needs were found particularly for the need to talk with someone about worries and fears (N2W; $F = 15.99$, $p < 0.0001$) which was stronger in women than in men, and slightly also for the need to forgive someone (N16W; $F = 7.71$, $= 0.010$) which was lowest in men (**Table 3**). Regarding age, there were no significant differences in the intensity of needs (data not shown) except that the need to reflect back showed some inconsistent age differences ($F = 2.53$, $p = 0.019$).

Significantly higher needs were found in the rather small group of divorced soldiers, compared to those living with a partner or even those living as singles. However, the needs to forgive or be forgiven have rather low intensity in this group, although these differences are nevertheless statistically significant (**Table 3**).

Soldiers treated in hospital for trauma had significantly higher needs scores than those at work ("regular duties"), particularly for the needs to talk with others ($F = 39.1$; $p < 0.0001$) and to be forgiven ($F = 26.0$; $p < 0.0001$).

To analyze whether talking with someone about worries and fears (N2W) might be a mediator of the effects between soldiers' needs to clarify open aspects (N5W) and to be forgiven (N17W) or to forgive others (N16W), we performed a simple regression to N17W and N16W. Both models and coefficients are presented in **Table 4**. In both models, all three statistical paths were significant—total, direct and indirect effects. The indirect effects of N5W on N17W mediated by N2W is $\beta = 0.05$ ($p < 0.001$) and of N5W on N16W mediated by N2W is $\beta = 0.04$ ($p < 0.001$)—they are small yet relevant and represent around 18 and 15%, respectively of the direct effect model's coefficients (**Figures 1A,B**).

Interconnections Between Needs to Reflect, Clarify, and Forgive and Health Indicators

One may assume that soldiers who have experienced burdening situations or interpersonal conflicts may have stronger needs to reflect, clarify, and forgive than soldiers who do not have experience with such trauma or who are able to cope. In fact soldiers who are treated in the Department of Psychiatry and Psychotherapy had significantly higher needs to reflect, clarify, talk, forgive, and be forgiven (**Table 3**). Here, the strongest differences were found for the needs to talk about their fears and worries, to be forgiven, and to reflect back on their life, while the difference to forgive someone were less strong compared to the other soldiers. This may indicate that these soldiers have to deal with inner conflicts ("fears and worries"), may perceive failures and guilt ("be forgiven") and still have to deal with burdening experiences ("reflection" and "clarification").

Correlation analyses (**Table 5**) indicate that the needs to clarify open aspects are moderately related to the needs to talk with someone about fears and worries, to be forgiven and to forgive on the one hand, and moderately related with reduced life satisfaction, and further weakly related with stress perception and PTSD symptoms on the other hand. The intended clarification process is clearly related with the resolving talks and own forgiveness (whatever the underlying reason might be). In contrast, the need to reflect back on life is only weakly related to both forgiveness needs, and weakly to low life satisfaction, stress perception and PTSD symptoms.

Needs to Reflect, Clarify, and Forgive and Their Association With Health Indicators

The need to talk with someone about one's own fears and worries is moderately related to stress perception, PTSD symptoms and low life satisfaction, while these talks may not necessarily relate to needs to forgive or be forgiven, as these associations were weak. Rather it is the intention to clarify "open aspects in life" which is much more related to forgiveness. Interestingly, both forgiveness needs are marginally to weakly related to stress perception, PTSD symptoms or reduced life satisfaction (**Table 5**).

The intentions to reflect and clarify are moderately related to soldiers' needs for inner peace, which is sound from a theoretical point of view as it indicates strategies to resolve problems and struggles, to let go and to find states of inner peace again. Also both forgiveness needs are weakly to moderately related to inner peace needs, but much weaker.

Detailed analyses with the sub-dimensions of life satisfaction revealed several weak associations, particularly with satisfaction with oneself and life in general, and abilities to manage daily life concerns (**Table 5**). These were mainly related with the clarification and talking needs.

Religious trust, as an indicator of intrinsic religiosity, was marginally related to the needs to reflect, clarify and forgive (**Table 5**), and is thus not of outstanding relevance as a resource to cope.

The forgiveness/clarification needs scale was strongly related with inner peace needs, and moderately with stress perception, PTSD symptoms and reduced life satisfaction (particularly with satisfaction with oneself, life in general, and abilities to manage daily life concerns), and weakly with religious trust (**Table 5**).

Predictors of Needs to Reflect, Clarify, and Forgive

Because both stress related variables (PSS and PCL-M), but also life satisfaction (with the three more relevant sub-dimensions), religious trust, and also being divorced were significantly related to the five needs variables, we performed

TABLE 3 | Intensity of needs related to gender and hospital treatment.

		Reflect back on life (N4W)	Clarify open aspects (N5W)	Talk with someone about worries and fears (N2W)	Forgive someone (N16W)	Be forgiven (N17W)
All soldiers	Mean	0.87	0.71	0.82	0.37	0.38
(*n* = 1,084)	*SD*	1.01	1.04	1.03	0.82	0.86
GENDER						
Men	Mean	0.87	0.70	0.78	0.35	0.38
(*n* = 999)	*SD*	1.01	1.03	1.03	0.80	0.85
Women	Mean	0.82	0.76	**1.25**	0.59	0.46
(*n* = 85)	*SD*	0.99	1.11	**1.01**	0.98	0.96
F-value		0.16	0.26	15.99	7.71	0.81
p-value		n.s.	n.s.	<0.0001	0.010	n.s.
FAMILY STATUS						
Married	Mean	0.89	0.65	0.81	0.33	0.32
(*n* = 549)	*SD*	1.02	1.01	1.05	0.76	0.78
With partner	Mean	0.70	0.67	0.83	0.30	0.45
(*n* = 273)	*SD*	0.94	1.02	1.01	0.76	0.95
Divorced	Mean	**1.37**	**1.22**	**1.04**	0.71	0.75
(*n* = 52)	*SD*	**1.01**	**1.22**	**1.03**	1.14	1.15
Single	Mean	0.90	0.77	0.75	0.48	0.38
(*n* = 204)	*SD*	1.01	1.06	1.00	0.91	0.84
F-value		7.04	5.09	1.09	5.46	4.57
p-value		<0.0001	0.002	n.s.	0.001	0.003
PHYSICAL TRAUMATA						
With	Mean	**1.06**	0.79	0.97	0.45	0.48
(*n* = 33)	*SD*	**1.03**	1.08	1.03	0.94	0.94
Without	Mean	0.86	0.71	0.81	0.36	0.38
(*n* = 1,054)	*SD*	1.00	1.04	1.03	0.81	0.86
F-value		1.27	0.18	0.72	0.40	0.46
p-value		n.s.	n.s.	n.s.	n.s.	n.s.
MENTAL TRAUMATA						
With	Mean	**1.39**	**1.10**	**1.71**	0.55	0.91
(*n* = 82)	*SD*	**1.12**	**1.19**	**1.14**	1.03	1.26
Without	Mean	0.82	0.68	0.75	0.35	0.34
(*n* = 1,003)	*SD*	0.98	1.02	0.99	0.80	0.81
F-value		24.61	12.26	69.53	4.39	34.46
p-value		<0.0001	<0.0001	<0.0001	0.036	<0.0001
HOSPITAL TREATMENT						
Hospital	Mean	**1.56**	**1.32**	**1.80**	0.73	**1.05**
(*n* = 41)	*SD*	**1.23**	**1.33**	**1.11**	1.14	**1.32**
At work	Mean	0.84	0.69	0.78	0.35	0.36
(*n* = 1,048)	*SD*	0.99	1.02	1.01	0.80	0.83
F-value		20.80	14.71	39.09	8.41	26.00
p-value		<0.0001	<0.0001	<0.0001	0.004	<0.0001

Needs with scores >1.0 were highlighted (bold).

stepwise regression analyses to identify the best predictors (**Table 6**).

Soldiers' needs to reflect back on life (N4W) were predicted best by PTSD which explains 8% of variance; reduced satisfaction with oneself, religious trust, stress symptoms and being divorced would add further 5% of explained variance.

Needs to clarify open aspects (N5W) were predicted best by reduced life satisfaction which explains 11% of variance; stress perception, religious trust, PTSD symptoms and being divorced would add 5% of further explained variance.

Needs to talk with someone about worries and fears (N2W) were predicted best by PTSD symptoms, which explains 15% of variance; further 4% were explained by stress perception, and additional 4% by religious trust, low life satisfaction and mental trauma.

TABLE 4 | Model coefficients for N2W as a mediator.

Variables	M = Mediator (N2W)			Y (N17W)			Y (N16W)		
	β	SE	*p*-value	β	SE	*p*-value	β	SE	*p*-value
X (N5W)	0.38	0.03	<0.001	0.27	0.02	<0.001	0.26	0.02	<0.001
Mediator (N2W)	–	–	–	0.14	0.02	<0.001	0.12	0.02	<0.001
Constant	0.55	0.03	<0.001	0.08	0.03	0.01	0.09	0.03	<0.01
		$R^2 = 0.14$			$R^2 = 0.17$			$R^2 = 0.16$	
		$F_{(1, 1,075)} = 179.42$			$F_{(2, 1,074)} = 113.05$			$F_{(2, 1,072)} = 105.05$	
		$p < 0.001$			$p < 0.001$			$p < 0.001$	

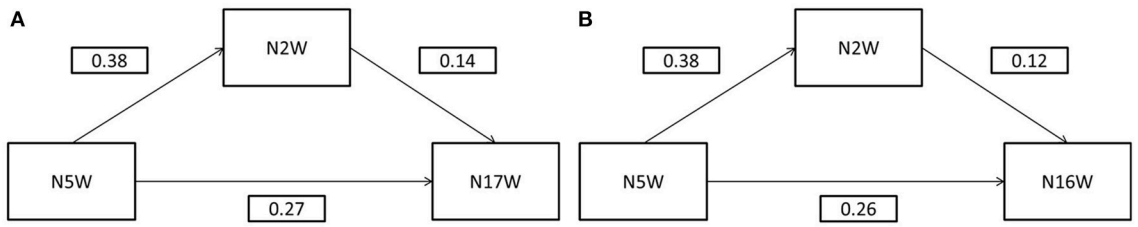

FIGURE 1 | (A) Mediation Model for N17W. **(B)** Mediation Model for N16W. N2W, Talk with someone about worries and fears; N5W, clarify open aspects (N5W); N16W, forgive someone; N17W, be forgiven; scores are β values.

TABLE 5 | Correlation between needs and indicators of health and spirituality.

	Reflect back on life (N4W)	Clarify open aspects (N5W)	Talk with someone about worries and fears (N2W)	Forgive someone (N16W)	Be forgiven (N17W)	Forgiveness/ Clarification Needs Scale
Reflect back on life (N4W)	1.000					
Clarify open aspects (N5W)	0.298**	1.000				
Talk about worries and fears (N2W)	**0.309****	**0.358****	1.000			
Forgive someone (N16W)	0.216**	**0.357****	0.253**	1.000		
Be forgiven (N17W)	0.238**	**0.359****	0.259**	**0.466****	1.000	
Inner Peace Needs (SpNQ)	**0.394****	**0.366****	0.647**	0.298**	0.289**	**0.635****
Stress perception (PSS)	0.239**	0.289**	**0.348****	0.216**	0.250**	**0.413****
PTSD symptoms (PCL-M)	0.259**	0.251**	**0.322****	0.152**	0.209**	**0.373****
Religious Trust (SpREUK)	0.149**	0.143**	0.194**	0.125**	0.129**	0.231**
Life satisfaction (BMLSS)	−0.257**	**−0.300****	**−0.328****	−0.152**	−0.216**	**−0.393****
Family life	−0.178**	−0.229**	−0.217**	−0.136**	−0.147**	−0.281**
Friends	−0.134**	−0.143**	−0.175**	−0.031	−0.078**	−0.192**
Work place	−0.105**	−0.085**	−0.142**	−0.067	−0.094**	−0.148**
Myself	−0.240**	−0.239**	−0.270**	−0.134**	−0.219**	**−0.345****
Where I live	−0.117**	−0.223**	−0.177**	−0.059	−0.164**	−0.226**
Life in general	−0.221**	−0.265**	−0.275**	−0.142**	−0.198**	**−0.332****
Financial situation	−0.121**	−0.206**	−0.136**	−0.124**	−0.150**	−0.223**
Future perspectives	−0.194**	−0.179**	−0.199**	−0.102**	−0.146**	−0.254**
Health situation	−0.101**	−0.134**	−0.200**	−0.075	−0.097**	−0.193**
Management daily life concerns	−0.179**	−0.255**	−0.296**	−0.160**	−0.194**	**−0.326****

***p < 0.0001 (Spearman rho); moderate to strong correlations were highlighted (bold).*

Soldiers' needs to forgive someone (N16W) were predicted best by stress perception, which would explain 7% of variance, while religious trust, PTSD symptoms and being divorced would add further 2% of explained variance. This prediction model is much too weak to draw any relevant conclusions.

TABLE 6 | Predictors of needs to reflect, clarify, and forgive.

	β	T	*p*
Dependent variable: N4W			
$F = 29.6$, $p < 0.0001$; $R^2 = 0.13$			
(Constant)		3.077	0.002
PTSD symptoms (PCL-M)	0.165	4.513	< 0.0001
Satisfaction with myself (BMLSS)	−0.135	−3.816	< 0.0001
Religious Trust (SpREUK)	0.108	3.611	< 0.0001
Divorced	0.099	3.330	0.001
Stress symptoms (PSS)	0.090	2.303	0.021
Dependent variable: N5W			
$F = 39.9$, $p < 0.0001$; $R^2 = 0.16$			
(Constant)		3.379	0.001
Life satisfaction (BMLSS)	−0.185	−4.734	< 0.0001
Stress symptoms (PSS)	0.138	3.471	0.001
Religious Trust (SpREUK)	0.102	3.458	0.001
PTSD symptoms (PCL-M)	0.107	2.871	0.004
Divorced	0.079	2.694	0.007
Dependent variable: N2W			
$F = 60.8$, $p < 0.0001$; $R^2 = 0.24$			
(Constant)		2.333	0.020
PTSD symptoms (PCL-M)	0.142	3.628	< 0.0001
Stress symptoms (PSS)	0.174	4.626	< 0.0001
Religious Trust (SpREUK)	0.167	5.920	< 0.0001
Life satisfaction (BMLSS)	−0.150	−4.064	< 0.0001
Mental traumata	0.115	3.603	< 0.0001
Dependent variable: N16W			
$F = 31.6$, $p < 0.0001$; $R^2 = 0.09$			
(Constant)		−3.142	0.002
Stress symptoms (PSS)	0.249	8.168	< 0.0001
Religious Trust (SpREUK)	0.130	4.270	< 0.0001
Divorced	0.065	2.144	0.032
Dependent variable: N17W			
$F = 32.9$, $p < 0.0001$; $R^2 = 0.14$			
(Constant)		−0.080	0.936
PTSD symptoms (PCL-M)	0.181	4.962	< 0.0001
Stress symptoms (PSS)	0.145	3.779	< 0.0001
Religious Trust (SpREUK)	0.097	3.275	0.001
Satisfaction with Life in general (BMLSS)	−0.095	−2.714	0.007
Divorced	0.076	2.558	0.011
Dependent variable: FCNS			
$F = 89.1$, $p < 0.0001$; $R^2 = 0.31$			
(Constant)		2.906	0.004
Stress symptoms (PSS)	0.209	5.834	< 0.0001
PTSD symptoms (PCL-M)	0.203	6.053	< 0.0001
Religious Trust (SpREUK)	0.179	6.732	< 0.0001
Life satisfaction (BMLSS)	−0.181	−5.149	< 0.0001
Divorced	0.099	3.738	< 0.0001

FCNS, Forgiveness/Clarification Needs Scale. In none of the models: Satisfaction with management of daily life concerns was significant.

Needs to be forgiven (N17W) was predicted best by PTSD symptoms, which would explain 10% of variance, while stress perception, religious trust, low satisfaction with life in general, and being divorced would add further 4% of explained variance.

With respect to the condensed forgiveness/clarification needs scale, the best predictors were stress perception, which would explain 20% of variance, PTSD symptoms would further explain 5% of variance, and reduced life satisfaction, religious trust and being divorced would add further 6% of explained variance.

Stress Perception and PTSD Symptoms and Intensity of Needs

When soldiers stress perception and PTSD symptoms were identified as relevant variables associated with the needs to reflect, clarify, and forgive, it is worthwhile to clarify their role in this process.

Both stress related variables are moderately associated ($r = 0.47$). Soldiers with high stress level may have high PTSD symptoms, but it does not have to be that way. In fact, in this sample 37% of soldiers with high stress scores had high PTSD symptoms, 26% moderate PTSD symptoms and 38% low PTSD symptoms. Those with moderate stress scores have moderate or high PTSD scores of 13 and 5%, respectively. Thus, both variables might be related, but may refer to different situations and underling processes.

As shown in **Table 7**, soldiers with high stress perception scores had significantly higher needs to talk about fears and worries, reflect back on their life and to clarify open aspects; also their forgiveness needs are higher compared to those with moderate or low stress scores, but the intensity is nevertheless rather low. The pattern for soldiers with PTSD symptoms is similar (**Table 7**), but here also persons with moderate PTSD scores had relatively high needs to reflect and talk with someone about their fears and worries, while their forgiveness needs are similar to that of soldiers with PTSD symptoms.

DISCUSSION

While it is true that most soldiers avoid talking about burdening experiences and try to find private ways to silently cope to avoid stigmatization, it is important to find *indicators* to identify persons in need (31). Addressing and supporting soldiers' psychosocial, existential and spiritual needs might help soldiers who are in need of assistance (9). In the present study we assumed that some persons may need to reflect back on life with the intent to clarify past conflicts or burdening situations particularly when these needs are still vital and have a negative impact on life concerns. As a consequence, these soldiers may have the need to talk with others about their fears and worries, and needs to be forgiven or to forgive others. Therefore, it is important to assess who may have these needs, which variables may contribute to these needs, and how these needs are related to quality of life outcomes.

We found that among German soldiers about one third have strong reflection, clarification and talking needs, while the more explicit forgiveness needs were expressed by only 13% with strong emphasis and 80% do not have forgiveness needs at all. This is consistent with research showing moderate levels of a personality trait that describes a characterological tendency to take offense at others' behaviors (32), but it contrasts considerably

TABLE 7 | Needs related to stress perception and PTSD symptoms.

		Reflect back on life (N4W)	Clarify open aspects (N5W)	Talk with someone about worries and fears (N2W)	Forgive someone (N16W)	Be forgiven (N17W)	Forgiveness /Clarification Needs Scale
All soldiers (n = 1,089)	Mean	0.87	0.71	0.82	0.37	0.38	0.63
	SD	1.01	1.04	1.03	0.82	0.86	0.65
STRESS PERCEPTION (PSS)							
Low (score 0–9) (15%)	Mean	0.58	0.37	0.45	0.12	0.17	0.34
	SD	0.87	0.81	0.84	0.44	0.59	0.49
Moderate (score 9–22) (70%)	Mean	0.81	0.64	0.72	0.35	0.32	0.57
	SD	0.96	0.98	0.96	0.78	0.76	0.57
High (score 23–37) (15%)	Mean	**1.43**	**1.39**	**1.66**	0.73	0.90	**1.22**
	SD	**1.13**	**1.24**	**1.12**	1.12	1.27	**0.65**
F-value		35.3	49.1	75.3	23.9	38.4	101.5
p-value		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PTSD SYMPTOMS (PCL-M)							
Low (score 2–32) (75%)	Mean	0.75	0.62	0.64	0.31	0.28	0.52
	SD	0.94	0.98	0.92	0.74	0.72	0.57
Moderate (score 33–42) (13%)	Mean	**1.06**	0.79	**1.21**	0.41	0.50	0.80
	SD	**1.02**	1.07	**1.09**	0.85	0.92	0.64
High (score 43–79) (9%)	Mean	**1.51**	**1.51**	**1.78**	0.86	**1.22**	**1.37**
	SD	**1.21**	**1.28**	**1.20**	1.27	**1.38**	**0.88**
F-value		28.0	31.9	70.4	19.1	54.0	87.2
p-value		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Needs with scores >1.0 were highlighted (bold).

with research showing relatively high levels of forgiveness needs in pain patients (33). Interestingly, the effect of the clarification needs on soldiers' forgiveness needs was mediated to some extent by their need to talk with someone about worries and fears. Talking about their problems seems to be crucial. This may reflect an underlying need for social support that may explain the association between clarification needs and forgiveness needs. That is, it is in seeking clarification that soldiers invoke social support resources that in turn facilitate forgiveness needs. Indeed, forgiveness has been theorized to be closely connected to social support because forgiveness may be a crucial component in maintaining social ties (34). These aforementioned "starter needs" (reflection, clarification, and talking) were particularly high in divorced soldiers and soldiers with mental trauma. The need to talk about fears and worries was strongly related to inner peace needs and moderately with stress perception and PTSD symptoms. The strongest talking needs were found in soldiers with mental trauma and in those who were treated for mental traumata in the hospital, and the best predictors were stress, PTSD symptoms, mental trauma, reduced life satisfaction, and religious trust. This means that these indicators point to the fact that they have experienced difficult and burdening situations or conflicts which are still challenging for their mental stability. Even when they may have started to talk with others about their fears and worries and tried to find strategies to cope, this specific need is still unmet and they require further support.

Only a small percentage of soldiers had needs to be forgiven which might imply that they were coping with failure, guilt or shame with other methods. But it is important to note that soldiers may be coping in maladaptive ways with these self-condemning feelings (35) and the need to be forgiven could motivate a process of self-forgiveness or seeking forgiveness through a religious ritual or finding other ways to feel forgiven by others for wrongdoing. Often these forgiveness motives go hand in hand (36). Similarly, a small percentage of soldiers had needs to forgive others which might imply that others may have failed in specific situations or are the cause of conflicts but soldiers were effectively dealing with these interpersonal issues. But again, not all methods of coping with conflicts and interpersonal issues are adaptive. Revenge-seeking, condoning, denial, etc. may all appear on the surface as effective means of dealing with problems caused by other people, but often these are maladaptive or perpetuate a cycle of harm (37). For 80% of soldiers these needs are not perceived, while for 12–13% these needs are strong to very strong, and for 7–9% somewhat relevant. Although persons with mental trauma or a hospital stay had significantly higher needs to be forgiven, the intensity of this need was rather moderate compared to the "no-needs" scores of the other soldiers. Predictor analyses would indicate that PTSD symptoms and stress perception are of some relevance as they explained at least 12% of variance. However, for soldiers' needs to forgive others, the prediction model would point to stress perception as relevant variable,

but the predictive power is much too weak to have much confidence in. Nevertheless, this is consistent with research showing connections between changes in stress and changes in forgiveness (38).

The present simple instrument could be helpful in identifying soldiers in need. The five analyzed indicator items could be used as a single scale termed "Forgiveness/Clarification Needs." This condensed scale had acceptable internal consistency (Cronbach's alpha = 0.74), and stress and PTSD symptoms were the best predictors of these needs (explaining 25% of variance). Reduced life satisfaction, religious trust and being divorced added an additional six percent of explained variance.

Why religious trust was among the weaker predictors is unclear. Thirty-three percent of soldiers in this sample had no religious affiliation and 66% were nominally Christians. Nevertheless, their religious trust scores were rather low indicating that this resource is not of general relevance, but may be important for only some soldiers. In fact, 13% had scores >60 indicating religious trust. Even in this small group, forgiveness needs were weak (N16W score: $M = 0.55$, $SD = 0.93$; N17W: $M = 0.52$, $SD = 0.93$), but significantly higher compared to other soldiers ($F = 7.0$, $p = 0.001$ and $F = 3.9$, $p = 0.020$, respectively), while their needs to talk with others about fears and worries were much stronger (N2W: $M = 1.20$, $SD = 1.15$), and significantly higher compared to the others ($F = 12.0$; $p < 0.0001$). All these needs were only marginally related to religious trust ($r < 0.20$). For religious persons one could expect that the need to be forgiven is a religious matter in terms of confession and repentance, but it seems not in this sample of relatively young soldiers. This finding again underscores what is seemingly a paradox in the relationship between religion and forgiveness (39). In a sense, religious people ought to value forgiveness more highly, but this does not always translate into greater levels of forgiveness of specific people or events and in the present case religious affiliation may not translate into greater perceived needs to forgive others. Thus, religious trust as a resource may have some marginal influence, but its relevance for the reflection and clarification processes should not be over-emphasized.

It seems that reflecting back on life and talking about fears and worries is a strategy to cope with burdening experiences, but not necessarily related to the perception of one's *own* guilt, failures, or moral injury which may subsequently result in needs to be forgiven. Instead it seems that the *intensity* of burdening experiences (PTSD symptoms) is related with needs to let go feelings of guilt, perceived failures, or moral injury as it is clearly related to the needs to be forgiven rather than to forgive others (**Table 7**). One may assume that soldiers' Inner Peace needs might motivate actual forgiveness—but not necessarily *needs* to forgive. This could be seen as a pathway to health which should be addressed in future studies.

Limitations

We have no specific information about the underlying causes of soldiers' burdening situations or conflicts resulting in the expression of these needs. Whether these needs may have arisen from moral injury, personal failures, or other reasons of perceived guilt, weakness, or shame remains unclear and was not focus of this study. This remains to be addressed in future studies. We had only limited access to soldiers treated for PTSD, and thus a specific study among this group of soldiers would be of importance. Further, this is a cross-sectional study and inferences about causality cannot be made. Needs may precede or follow the development of burdening situations and conflicts. As this is a sample of German soldiers, generalizations to broader populations of civilians should not be made.

CONCLUSIONS

The process of life reflection and subsequent intention to solve conflicting situations and experiences can be considered as a process to cope with one's own failures, guilt, and mistakes. It should be noted that these needs, which were of strong relevance for up to one-third of soldiers, were significantly stronger in soldiers with trauma. Addressing unmet needs may help them to communicate and to reject the stigma of weakness.

AUTHOR CONTRIBUTIONS

AB has designed the study, performed statistical analyses and has written the manuscript. DR performed mediator analyses. LT contributed to write the manuscript.

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"Opening a Door to a New Life": The Role of Forgiveness in Healing From Moral Injury

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For military veterans struggling with moral injury, forgiveness can become both an animating concern and a potential path to healing. In this perspective piece, we draw on our clinical work and research findings to examine why forgiveness matters to veterans who feel guilt and shame about their actions in war, what type of forgiveness is attainable and meaningful, and what role clinicians can play in facilitating forgiveness. We conclude by reflecting on the potential, as well as the limits and tensions, of forgiveness work in the context of military moral injury.

Keywords: moral injury, military veterans, forgiveness, self-forgiveness, psychotherapy

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> "[Moral injury] is the raw primitive feeling I did something terribly wrong and I just don't know whether I was justified or whether I can be forgiven. The cure has to involve the honesty to acknowledge, yes, I did this."—Father Thomas Keating, *Almost Sunrise* [quoted in (1)]

If healing from moral injury begins with an honest acknowledgment of one's actions, how can mental health professionals support the multi-faceted healing process to follow? We argue that forgiveness—especially self-forgiveness—is the cornerstone of this process, helping veterans to work through their guilt and shame, honor their violated values, re-engage with family and community, and gradually restore an integrated moral identity. In this perspective piece, we describe why forgiveness is both difficult and crucial for military veterans who feel guilt and shame about their actions in war. We explore what type of forgiveness is attainable and meaningful, how the forgiveness process unfolds, and what role clinicians can play in facilitating forgiveness. We conclude with brief reflections on the potential and limitations of forgiveness work in addressing military moral injury.

Throughout, we reference the Impact of Killing (IOK) treatment program (2), a 10-week psychotherapy intervention developed by San Francisco VA clinicians and researchers to help military veterans struggling with moral injury after killing in war. We base our recommendations on our clinical experience with morally injured veterans, our prior research on military moral injury, and the voices of veterans who participated in our mixed-methods IOK studies (3–6).

WHAT DOES FORGIVENESS HAVE TO DO WITH MORAL INJURY?

> "All I knew is I hurt inside and I didn't know why… I didn't know why I should feel so bad if I didn't do anything wrong. And then struggling with, well, did I do something wrong?"—combat veteran, IOK study

Wounds to the spirit or soul[1] can be among the most devastating and enduring wounds of war. In recent decades, scholars have worked to characterize these moral wounds and to describe their impact on the lives of military veterans (10–12). From their work, we have learned that veterans can be ashamed, alienated, and disillusioned after returning from war, sometimes questioning their worth and goodness as human beings. Combat veterans can feel like war awakened their "dark side"—a "beast" or a "monster" that remains within, belying any sense of the self as a good person, a kind spouse or parent, a gentle and caring friend (5). Some morally injured veterans engage in years, even decades, of self-punishing behavior, often with only a vague sense of what is driving it. Some sabotage their relationships, employment, or other sources of potential happiness, feeling that they don't deserve anything positive or fulfilling in life. They may find themselves emotionally numb or racked with anger or despair that has no clear cause or target. Those with the most serious moral wounds isolate themselves from intimate relationships and avoid people and things that once had meaning for them, sometimes losing themselves in the haze of drugs, alcohol, or prescription medications (5, 13, 14). Some consider ending their own lives, and some ultimately do so (15).

The central premise of this paper is that recovering from the most serious moral wounds of war entails seeking and receiving forgiveness—particularly self-forgiveness. In the context of military moral injury, this is a complex and controversial claim. After all, to suggest that healing from moral injury entails forgiveness is to imply that there is some wrong to forgive, and this is often ambiguous. In combat, violent actions that are considered immoral in most other contexts become, instead, one's duty. These actions become, also, the basis for protecting oneself and one's fellow soldiers[2] from grave harm. Often, warriors must make split-second decisions—for instance, to shoot or not to shoot—with life-or-death consequences. Those decisions are often fraught with moral complexity and are made under intense pressure. In these contexts, right-and-wrong is by no means black-and-white.

War entails lethal violence, but moral principles like public service and personal responsibility, as well as civic ideals like freedom and democracy, can underlie the choice to serve for many young men and women. When they do serve, values of loyalty, compassion, and camaraderie often motivate their actions, especially when they act to defend the lives of their fellow soldiers. In war, these affirmative moral values can become reasons to do violence, to kill, or to take other actions that would be considered serious moral violations in civilian life. Yet, the very same values can also create compassion for the human beings serving in the opposing army and for the civilians whose lives are affected by war. The very same values can cause soldiers to wonder whether they did or did not have a choice when they followed troubling orders. The very same values can cause some to question the underlying mission of the war they are fighting—are they really serving freedom, democracy, and justice?

Questions like these may not arise until long after the battle, or even the war, is over. Like all humans, soldiers are not only moral creatures; they are also embodied beings, whose actions may be shaped by fear and adrenaline as much as conscious thought. In the heat of combat, a soldier may make the choice to shoot or kill, realizing only afterward that he did so prematurely and an innocent person died as a result. Or an officer may issue orders that she once believed would serve a greater good, but later finds herself doubting whether the ends justified the means. Many of the men and women who go to war are young adults thrust into an environment that is literally and figuratively foreign. They may find themselves facing serious threats to life and limb, watching their comrades face the same, and bound to follow orders or face punishment, disgrace, and ostracism. If they volunteered for duty, they may find themselves in this situation by virtue of their own choices—a layered moral universe where the matter of responsibility is not easily settled.

Given the moral complexities of war and the pressures that soldiers face when serving their country, can they be deemed morally responsible for actions they took or failed to take in war? Can be they be considered guilty of any moral wrong that needs to be forgiven? In many cases, we have found, only the soldier can answer these questions, and only after a sincere and thoughtful reckoning with the moral questions deferred in the heat of combat. For some, that reckoning results in a cognitive reappraisal that, in itself, eases guilt, shame, and suffering, revealing that there really is no deep moral failing to forgive. But, for others, there remains a debt to settle, and the price of that debt may be the enduring guilt and shame of moral injury.

War does, after all, entail moral choices. Those choices may be made under extraordinary constraints and pressures, but they are made by individuals with varying degrees of agency and freedom. An evaluation of one's actions in war may indeed lead to the considered and thoughtful conclusion that a wrong was committed. Sometimes, those wrongs are serious and unequivocal; other times, more subtle and nuanced. But no context, even war, provides blanket absolution for human actions and their consequences.

[1]We use the words "spirit" and "soul" in a general, inclusive sense without embracing a single definition. Here, spirituality might be thought of as a capacity for (or even a need to) find meaning and purpose in life. This meaning or purpose is often rooted in a sense of inter-connection with others or a belonging to a larger whole that is endowed with significance beyond one's own life. Spirituality is often, but not necessarily, tied to religious faith or beliefs. In the VA healthcare system (where we work), spiritual wellbeing is recognized as a core component of human health and wellness, and we seek to provide holistic "whole health" care that embraces the biological, psychological, social, and spiritual components of life and health (7). "Biopsychosocial-spiritual" care models (8) of this kind are advocated as a means to advance more integrated, person-centered healthcare (9).

[2]We use the term "soldier" in the generic, cross-cultural context to refer to anyone serving in a military.

We argue that, when the wounds that one suffers from are indeed moral wounds—when the guilt and shame consuming one's conscience stem from actions that one took or failed to take in war—the healing process must involve moral growth and reconciliation. Here, we speak of a reconciliation between the values one wants to hold and the actions one has taken; between the person one wants to be and the person one has been; between the ethos of a soldier at war and that of a veteran who has returned home. As Father Keating suggests, the process of reconciliation begins only when one looks at his own actions with eyes wide open (1). If he assesses that he did in fact make choices or take actions that are not compatible with the person he wants to be, we argue that he must seek and find forgiveness before he can heal.

WHAT SORT OF FORGIVENESS IS ATTAINABLE AND MEANINGFUL?

> "I hated myself for what I did and all these years I've taken that hatred with me."—combat veteran, IOK study

We speak of forgiveness as a process of emotional growth, release, and transformation that can facilitate reconciliation in the aftermath of a significant moral violation. It is an active, morally-engaged process that requires both acceptance *and* change. As Webb et al. (16) have written, "Forgiveness occurs over time and is a deliberate, volitional process involving a fundamental shift in affect, cognition, and/or behavior;" this shift entails releasing "ill will… without condoning, excusing, or denying the transgression(s)" (p. 220).

Whether forgiveness is needed and, also, what sort of forgiveness is necessary and meaningful, is a deeply personal matter and one that often requires painful exploration of the consequences of one's actions and the harm done to others. Sometimes, a veteran will feel that he needs the forgiveness of those he harmed or killed in combat; sometimes, the forgiveness of his God or a higher power; sometimes, the forgiveness of loved ones he has alienated after returning home. But the veteran is likely to find no clear subject who is positioned to forgive the combat actions at the heart of his moral injury. After all, who can and should offer forgiveness for wrongs committed against anonymous others half a world away—others who may be alive or dead?

We contend that, with whomever else a veteran feels he must reconcile, the heart of healing from moral injury is a process of forgiving the *self*—that is, of reaching an inner reconciliation where one acknowledges and attempts to makes amends for any harm done, while also recognizing the self as a fallible person engaged in continuing moral growth and development. For Cornish and Wade (17):

> "[S]elf-forgiveness [is] a process in which a person (a) accepts *responsibility* for having harmed another; (b) expresses *remorse* while reducing shame; (c) engages in *restoration* through reparative behaviors and a recommitment to values; and (d) thus achieves a *renewal* of self-respect, self-compassion, and self-acceptance" (p. 97).

Here, self-forgiveness is definitively not about excusing one's actions, explaining them away, or simply forgetting them and moving on. That would constitute an inauthentic forgiveness that is not compatible with healing from true moral wounds and can, instead, compound or prolong moral injury. Authentic or genuine self-forgiveness, by contrast, is an often-painful process that entails a moral reckoning as the precondition for spiritual growth and renewal (18, 19).

The word "process" is central to our understanding of self-forgiveness. It is not an act or a gesture, but an emotional and behavioral regeneration that requires moral engagement and change (20). One veteran in IOK treatment compared the process to unpacking a rucksack that he had carried on his back in combat—removing and examining its weighty components one at time, gradually unburdening himself and making it possible for him to *move* and to *act* differently—in his case, to better connect with and care for neglected others in his life, even if the sack would always remain on his shoulders (2). As Webb and colleagues (16) have written:

> "Self-forgiveness occurs over time and is a deliberate, volitional process initiated in response to one's own negative feelings in the context of a personally acknowledged self-instigated wrong, that results in ready accountability for said wrong and a fundamental, constructive shift in one's relationship to, reconciliation with, and acceptance of the self through human connectedness and commitment to change" (p. 221).

Authentic self-forgiveness is not a linear process, but one filled with ebbs and flows. Sometimes, what one takes out of the rucksack goes back in for a time. And nothing removed is ever forgotten.

HOW DOES SELF-FORGIVENESS BEGIN?

> "I felt like a monster. I felt like a monster separated from the human race"—combat veteran, IOK study

Moral guilt is often conceptualized as a *constructive* negative emotion—one that can catalyze behavioral change and lead to personal growth. Guilt is, in fact, an important precursor to the transformational experience of authentic self-forgiveness (21). Yet, when guilt becomes an enduring, global criticism of one's self and one's behavior—when guilt becomes indistinguishable from chronic shame—it is no longer associated with affirmative change, amends-making, or personal growth. It can become, instead, a source of moral paralysis and other psychological and behavioral problems, including the self-punishing behaviors associated with moral injury (18, 22). This is often the case among morally injured veterans, who can become locked in patterns of self-hatred, self-condemnation, and self-punishment, perceiving no way out (5, 23).

The source of this moral quicksand, we argue, is an inability to see any path toward the reconstitution of a self-worthy of respect and love—a morally intact self. When a veteran has committed, in his or her eyes, a wrong so significant that it defines the moral self and cannot be corrected, it may seem like there is no viable path

forward. At this juncture, to broach the topic of *self*-forgiveness is to introduce the possibility that such a path can be forged *and* to suggest that the guilty party must take the first active steps to forge it. For the morally injured and ashamed veteran to take those steps, he or she must first understand the meaning of authentic self-forgiveness and have some sense of the process that it entails. The veteran must also recognize self-forgiveness as distinct from the morally stagnant practices of excusing or condoning one's actions—practices already rejected by those who are sincerely remorseful.

There are extraordinary barriers to reaching even this modest starting point. Those barriers may include the veteran's sincere convictions that some acts are unforgivable, that only victims can forgive, or that forgiving is tantamount to letting oneself off the proverbial hook. Ideas about self-forgiveness are often embedded in one's cultural, spiritual, or familial background, and some veterans may resist the concept itself, believing that self-forgiveness is meaningless or self-indulgent, or perhaps that forgiveness can come only from a higher power. Even those who embrace the concept may confront other barriers, including obstacles to making direct amends to those harmed by their actions in combat. Ironically, the veteran's own recognition and articulation of these barriers can provide evidence of an intact moral self that belies the image of the self as an irredeemable moral failure. Articulation of barriers to self-forgiveness also empowers the veteran to begin analyzing and disentangling destructive beliefs about the self, finding small openings that illuminate a potential pathway to the restoration of moral identity and self-regard—a pathway that must ultimately honor the veteran's most deeply held convictions and values.

In our work, we have found that the core components of the self-forgiveness process—accepting responsibility, cultivating self-compassion, making amends, and reconstructing an intact moral identity—are near-universal steps on the pathway through and beyond moral guilt. For most veterans, recognition and reaffirmation of violated values, such as respect for the sanctity and dignity of human life, are essential to the process. So too is reparative work to make right what was wrong. Because veterans are seldom able to make amends directly to those harmed or killed in war, they may find ways to affirm their values through service to the broader community—for example, joining organizations to help other veterans of war, performing community service or volunteer work as part of a religious congregation, speaking in public or to groups of school children about their experiences and lessons learned, or even raising their own children to respect the values they feel they violated during their service. Some veterans even return to the site of their most traumatic experiences—for instance, traveling back to Vietnam to pay respects to the dead and to atone for their actions in war. Taking steps like these can help veterans begin to move from a place of shame and guilt to one of self-compassion, moral renewal, and hope.

A marker of whether the self-forgiveness process has started is observable changes in functioning: is the veteran able to have better relationships, to reconnect with their spiritual community, to speak about topics they considered unspeakable in the past; to visit places they have been avoiding? In our work with morally injured veterans, we look for these signs of progress but also recognize that self-forgiveness is an ongoing process that will continue after any formal treatment program ends. In particular, healing must continue across the contexts that are most meaningful for the individual, including within their personal relationships, families, and communities. For this familial and social reintegration to take place, there must first be meaningful progress toward self-reintegration—the gradual reconstitution of a coherent moral identity on the path toward self-forgiveness.

HOW CAN SELF-FORGIVENESS HELP?

> "I feel like I have let go… like I don't have to be in Vietnam again. I'm in a present state right now."—combat veteran, IOK study

We believe that embarking on a journey of authentic self-forgiveness unlocks the possibility of re-engagement in one's life and one's community after moral injury. Recent studies show that the IOK treatment program (2), which centers on self-forgiveness, can help morally injured veterans feel less depression, anxiety, suicidality, and shame (3, 4). After completing the self-forgiveness modules of the IOK program, veterans often described feeling a sense of profound relief. "It's freedom from being captive," explained one veteran, "It's not that I am guilt free or shame free; it's just that I am not packing around all that load, that weight… How do you describe opening a door to a new life?" Some described being able to open up emotionally and become intimate with loved ones again, and others spoke of feeling less anger and more compassion toward others. Many affirmed that self-forgiveness was the heart of their healing process, enabling them to love others and to find compassion for themselves.

Emerging scholarship supports our contention that self-forgiveness has the power to change the lives of morally injury veterans. Although there is little research on the impact of *receiving* forgiveness, to forgive is clearly associated with psychological wellbeing, including less depression, anxiety, and shame (24). Research also suggests that *self*-forgiveness is associated with lower levels of anxiety, depression (25), and suicidality (26), fewer destructive behaviors including problematic substance use (27), more satisfying and committed relationships (28), and other improvements in both psychological and physical health and wellbeing (24). In short, forgiving the self can also help heal the bodies and minds of morally injured veterans.

WHAT ROLE CAN CLINICIANS PLAY IN FACILITATING FORGIVENESS?

> "[I] have to look into your eyes and see that you really care."—combat veteran, IOK study

Forgiveness is a complex process with psychological and spiritual dimensions, and some might consider it outside the purview of mental health clinicians. Indeed, it is more familiar territory for chaplains and clergy, who have supported veterans in finding forgiveness and healing from moral injuries long before clinicians

began using the term "moral injury" (29). Nonetheless, we argue that mental health clinicians, especially those who work with veterans through VA or Department of Defense healthcare systems, can play a crucial role in facilitating the processes of self-forgiveness and reconciliation at the heart of healing from moral injury.

When working with morally injured veterans, the role of the clinician is first to create a space where veterans can begin to appraise the traumatic events at the foundation of their shame and guilt. To do this, it is essential to establish a trusting, nonjudgmental relationship and to convey that no topic is off limits for thoughtful and compassionate discussion. Invited to comment on their IOK treatment experience, veterans routinely emphasize how important the "therapist connection" is to them. As one veteran explained, moral injury work "can't be an intellectual exercise": "Whatever it takes to have that safe good connection between veteran and therapist, that has to be there before you can go a useful distance into exploring forgiveness." To open up about the sensitive topics of shame, guilt, and moral injury, the veteran must feel confident that her mental health provider can remain present, engaged, and compassionate, even when the discussion ventures into the most dark and graphic of subjects.

Creating a space for open, compassionate exploration requires resisting any personal judgments about the veteran's actions and appraisals, and ultimately honoring the veteran's own moral values and judgments. At the same time, the clinician should play an active role in encouraging self-exploration and ask critical questions about unexamined beliefs and assumptions. An engaged clinician will help the veteran examine personal beliefs about specific morally injurious experiences, encouraging attentiveness to context as well as consequences. Clinicians can also ask questions that encourage patients to think more flexibly and compassionately, helping them find a balance between acceptance and change. In a treatment context, this work of self-examination and reappraisal is the foundation for authentic self-forgiveness work, and it is often necessary before explicitly broaching the topic of forgiveness.

Ultimately, we have found that it is important to raise the matter of forgiveness directly. In the IOK model, we initiate this process by inviting discussion of the personal meaning, cultural relevance, and spiritual significance of forgiveness for each individual veteran. We also invite exploration of potential psychological and cultural barriers to self-forgiveness. We then work with the veteran to create a personalized, patient-driven "forgiveness plan" that is designed to transcend these barriers and to serve as a springboard to the self-forgiveness process. The plan is action-oriented and includes activities centered on examination and reaffirmation of values, such as written and verbal exercises inviting the veteran to define self-forgiveness, to delineate cultural beliefs about forgiveness, and to conceptualize how they have applied forgiveness to the self and others. Veterans in IOK treatment also develop an amends plan, identifying specific actions they can take to reaffirm their violated values and to live as the kind of person they want to be.

We have found that self-forgiveness work can be facilitated by incorporating selected tools and exercises of cognitive behavioral therapy into each veteran's forgiveness plan. Cornish and Wade (17) suggest encouraging patients to dialogue with parts of themselves and/or with others whom they've hurt, sometimes adopting or trying on different perspectives to encourage cognitive flexibility, empathy, and compassion. In IOK treatment, veterans are invited to write letters to those they have killed or harmed, letters to a younger version of themselves, and other letters tailored to highlight different perspectives and needs. Veterans report that these letters are often a catalyst for transformation, facilitating cognitive change, compassion, and awareness of the personal growth that has taken place since the war.

Throughout the treatment process, clinicians must be aware of their own values and judgments and be wary of any strong feelings that could disrupt the process. This is more easily said than done: veterans will sometimes express sentiments rooted in personal, cultural, and spiritual traditions that are unfamiliar, or even distressing, to the clinician. The veterans' values might also result in self-appraisals that the clinician feels are harsh or unwarranted. In expressing compassion, a clinician may be tempted to excuse or condone the veterans' actions—for example, by reassuring the veteran that their actions were justified. This form of reassurance is well-meaning but can hinder progress. We have seen veterans continue to harbor the same feelings of self-condemnation and shame, but simply avoid admitting them to a provider focused on reassurance. Clinicians should also avoid inadvertently steering veterans toward inauthentic self-forgiveness, which can delay real forgiveness work, create confusion between authentic and inauthentic self-forgiveness, and hinder eventual engagement in a more authentic process.

By facilitating initial progress toward self-forgiveness, the clinician can play a crucial role in helping veterans begin to heal from moral injury—a process that will continue long after treatment ends. As veterans pursue their forgiveness and amends plans and prepare to continue the work of self-forgiveness after treatment, part of the clinician's job is to make sure that each veteran has the necessary support in place and to help him or her build new support as needed—for instance, by encouraging the veteran to strengthen existing bonds with family and friends, or to forge new bonds within supportive veteran or spiritual communities. Clinicians can also facilitate veterans' connections to pastoral care through, for example, referrals to or collaborations with chaplains or clergy (e.g., moral injury groups that are co-led by mental health professionals and clergy). In these ways, clinicians can empower veterans to keep making progress on the path of self-exploration, community reintegration, and making amends.

WHAT ARE THE LIMITS OF FORGIVENESS?

> "I can't forgive myself… I did something wrong"—combat veteran, IOK Study

It bears noting that not every veteran will feel that forgiveness is warranted or possible. Some will feel that their actions are unforgiveable. This may be especially true for veterans who

killed civilians, participated in massacres, or took actions that can only be described as murder. Others may feel that they are not authorized to forgive their own immoral actions—believing, for example, that only victims can grant forgiveness. As one veteran in our IOK study said, "I can forgive people for what they've done against me, but I can't forgive myself for what I've done against somebody else." These are serious moral concerns without easy resolution. Philosophers have long debated who has standing to forgive and whether any act is finally unforgiveable (30). However, when it comes to *self*-forgiveness, we have found that the individual veteran is ultimately the arbiter. A clinician may ask probing questions to encourage more critical and flexible thinking or greater attentiveness to context, but must finally respect the veteran's choice to embrace, or not to embrace, self-forgiveness as a goal. Some will choose to reject it.

Those who choose to pursue self-forgiveness are likely to find that it is a long journey with many ups and downs. That journey may result in worsening guilt and shame at first, and guilt is seldom resolved entirely, even in the aftermath of self-forgiveness. For many veterans, additional therapeutic work will be necessary to address the long-term traumatic impact of moral injury, which is often entangled with post-traumatic stress in complex ways. For others, religious or pastoral care may facilitate healing and spiritual growth beyond what clinical care can offer. Self-forgiveness work should not be conceptualized as the only approach to resolving the multiple psychological, emotional, behavioral, and spiritual problems that may be associated with moral injury.

There is also, as noted, some risk of inauthentic or "pseudo" self-forgiveness. If embraced uncritically or inauthentically, self-forgiveness can result in eased feelings of guilt that do not actually lead to reconciliation or amends, nevermind spiritual growth and learning (21, 31). Inauthentic self-forgiveness is also compatible with ongoing self-destructive behaviors, such as the self-sabotaging behaviors and substance abuse that can sometimes accompany moral injury (32).

Even authentic self-forgiveness has its limits. It can help some veterans reach a place of spiritual restoration, where they can live beyond shame and self-punishment. It can also help them re-engage with their families and communities and give back in meaningful ways that honor their values. But it can never undo what happened and is thus limited in its capacity to ease the pain of others who were harmed or victimized. This is particularly true when it comes to the moral violations of war, which often involve killing and harming anonymous strangers. In some sense, the most serious of wrongs can go un-righted, even in the wake of authentic self-forgiveness. Although the self-forgiveness process involves making amends and giving back, it is still primarily a matter of *personal* growth and transformation. In itself, it does not help to change the social or political conditions that lead soldiers into morally compromising positions and it may allow those conditions to continue unabated.

In the end, moral injury is not exclusively a psychological matter, and healing moral injuries requires more than the tools of psychology or psychiatry can offer. It requires spiritual growth rooted in both personal and communal values, as well as reintegration into a moral community (be it religious, secular, familial, or other). Often, there is an explicit social and political dimension to this healing process. For example, some veterans may feel that making amends entails seeking justice and contributing to specific communities in specific ways—a path akin to those created through restorative justice programs. Others might argue that the civilian community shares responsibility for the violence of war and, thus, that healing requires a *collective* reckoning with war's consequences (e.g., a truth and reconciliation commission). After all, soldiers suffer from moral injury as a result of actions they took in wars engineered by much larger political and social forces. For individual veterans, self-forgiveness is not a panacea, nor does it resolve the larger moral questions raised by the violence of war.

CONCLUSION

> "I had to learn to love myself. At one time I couldn't love myself… I had to forgive myself."—combat veteran, IOK study

Forgiveness of the self is a powerful, if partial, intervention that can facilitate healing from moral injury. Although it does not constitute the totality of that healing process, we have found that it is a crucial springboard to the reaffirmation of violated values and the reconstitution of an integrated moral identity. Self-forgiveness may not repair the underlying conditions that leave so many soldiers affected by moral injury, but it can give individual veterans the opportunity to find a livable path forward. Clinicians, if they are willing and humble, can play a crucial role in facilitating the process of self-forgiveness. They can create a space for open and compassionate exploration of painful moral traumas, and help veterans chart a course toward the renewal of their moral self. Many veterans, we have found, can and do achieve that renewal—honoring their values, making amends to those they harmed, and finding ways to respect the self they have become.

ETHICS STATEMENT

This is not an original research manuscript, but it does reference findings and data across several of the authors' previously published studies. All studies described in this manuscript were approved by the UCSF Institutional Review Board, and all human subjects completed an IRB-approved informed consent process.

AUTHOR CONTRIBUTIONS

NP, BG, KB, and SM all contributed to planning, development, and writing of this manuscript. SM and KB developed the clinical intervention (IOK) described herein. SM designed and served as principal investigator of the original research studies referenced throughout, with NP and KB conducting data analysis and interpretation. BG contributed his expertise in the literature on forgiveness and moral injury. NP prepared the initial draft of the manuscript, and all authors participated in revision and refinement of the final manuscript.

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PERSPECTIVE
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Spiritual Dimensions of Moral Injury: Contributions of Mental Health Chaplains in the Canadian Armed Forces

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Moral Injury (MI) describes the profound distress experienced by military personnel as a result of a violation of personal beliefs. Impacting not only psychological, but spiritual, health, and well-being, MI is associated with spiritual/religious (S/R) suffering and a need to find hope, trust, connection, reconciliation, and wholeness. Addressing spiritual wounds can help military personnel overcome fundamental barriers that may impede them from effectively engaging in or benefitting from traditional trauma therapies and having a more complete recovery. Military Chaplains in the Canadian Armed Forces (CAF) are both embedded with the troops in garrison and theater and work closely with service providers such as the Royal Canadian Medical Services. In their role, they offer front-line support and services to members and their families and facilitate access to care. Specific to the assessment and treatment of MI, Mental Health Chaplains (MHCs) offer S/R expertise and a complimentary clinical skill set to service members and interdisciplinary teams. This perspectives article explores the S/R dimension of MI, discusses the role of MHCs in CAF Mental Health (MH) Clinics, and provides clinical perspectives of a MHC regarding the treatment of MI. Key focuses of MHC interventions include bridging to other mental health services and supports, facilitating S/R coping and grounding, reconciling worldviews, resolving anger at a God-figure (not specific to any S/R perspective) and fostering reconciliation. Based on the literature, Mental Health practitioner's feedback, and clinical experience, MHCs are integral to service provision regarding MI and warrant more widespread inclusion on interdisciplinary teams in CAF MH Clinics.

Keywords: moral injury, chaplains, mental health, intervention, spirituality, interdisciplinary collaboration

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INTRODUCTION

Interest in military and veteran health and well-being has recently been reignited by conflicts involving urban guerrilla warfare. During both combat and peace-keeping missions, military personnel can be exposed to morally injurious experiences (MIEs) in which they face ethical dilemmas. Soldiers involved in the wars in Afghanistan and Iraq reported MIEs such as firing at the enemy (52%), being responsible for killing (40%) including the death of a non-combatant (20%), witnessing and being unable to help ill/wounded women and children (60%), and facing ambiguous

ethical situations (27%) (1). Intense and overlapping emotional, cognitive, and spiritual/religious (S/R) distress can occur as a result of MIEs, and manifest as depression, anxiety, post-traumatic stress disorder (PTSD) and moral injury (MI) (2–5).

MI is described by Litz et al. as "perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs" (5). Associated with feelings of guilt, shame, anxiety, and anger, MI can have a profound and enduring impact. Spiritually, it can result in the shattering of a person's core sense of self, connection with self, others and the sacred or Transcendent, and a loss of meaning, purpose, trust, and hope (3, 6, 7). Morally injurious transgressions against self and others have been identified as the most significant factors associated with suicidal ideation in veterans (8, 9). Further, MI is strongly and independently associated as a risk factor for suicide among veterans and active duty military personnel with PTSD symptoms (3, 8, 10).

This manuscript describes the importance of addressing the spiritual dimension of MI, explores the contributions of Mental Health Chaplains (MHCs) on interdisciplinary (ID) healthcare teams in the Canadian Armed Forces (CAF), and advocates for their more widespread inclusion in the treatment of MI.

SPIRITUALITY AND MORAL INJURY

Spirituality and spiritual distress have been recognized in the literature as core features of MI (11, 12), with some scholars considering MI to be a form of S/R struggle (13–16). Studies examining first-hand experiences of military personnel found that S/R struggles and existential crises were commonly reported following exposure to MIEs (17–19). MIEs and MI appear to challenge a person's spirituality, sense of self and spirit, underlying core beliefs, and fundamental relationships with self, others and the sacred/Transcendent (14, 17, 20–22). Due to commonly held North American morals, beliefs, and values (which inherently have S/R underpinnings), spiritual distress can be experienced by individuals who do or do no identify with a S/R perspective.

S/R has been found to be positively related to an individual's ability to integrate stressful life events into their personal framework and experiences (23). Factors that are independently linked to post-traumatic growth (PTG) and increased well-being among veterans include intrinsic religiosity, spirituality, and purpose in life (24, 25). It has been suggested that S/R beliefs often enable individuals to engage with existential questions or those related to meaning and purpose (26). Hijazi et al. (25) argues that a transformation from struggle to PTG can occur because "deeply held beliefs spark a question for re-establishing meaning, reformulating shattered beliefs about goodness and one's worth, and seeking forgiveness from self and others, which is what may ultimately facilitate growth" (25). While S/R struggles are likely to be initially associated with lower well-being, individuals who are able to find a sense of meaning or spiritual significance in their struggles have been shown to have higher levels of well-being and lower levels of depression and anxiety (27).

Conversely, while S/R may facilitate PTG and well-being, one's S/R framework may also increase the risk of MIEs and MI. Ames et al. (3) found that religiosity does not mediate nor moderate the relationship between MI and suicide among veterans/active duty military with PTSD symptoms (3). Military personnel who adhere to strict religious principles and have high moral expectations can potentially experience heightened feelings of guilt and self-condemnation following a MIE, further increasing their risk of MI (28, 29). Hufford et al. (20) suggest that this may be due to existential questioning of a Divine being and "shattering [of] deeply held spiritual beliefs" (20). Incongruence to one's S/R framework or belief system may create intense experiences of distress, especially regarding one's relationship with a higher power (30). In response to the loss of meaning and S/R distress, some individuals seek opportunities that can help restore meaning and relationships through previously established S/R frameworks.

Spiritual struggles and illnesses (31–34) often reside within and mimic mental health concerns developed during military service. While addressing S/R can help to disentangle underlying MI causes, particularly as they relate to S/R struggles and illnesses, many healthcare providers are either unaware of how to approach this domain or uncomfortable doing so. Studies highlight that many mental health professionals have received little to no training in and have limited knowledge about what to do with S/R aspects of service provision. As a result, while a limited number of clinicians address S/R within the therapeutic context (35), many more tend to neglect it in practice (36). In addition, assessments tend to overlook S/R dimensions of service members. Impediments to the inclusion of S/R in mental health treatment may also relate to: (1) therapist biases, (2) scientific avoidance, skepticism, or antagonism toward S/R, or (3) illiteracy regarding S/R perspectives, processes and practices (37–39). These barriers may result in the S/R dimension of MI being overlooked, and a potentially essential, if not foundational aspect of healing, being negated or untapped.

MENTAL HEALTH CHAPLAINS IN THE CANADIAN ARMED FORCES

The CAF has a long-standing tradition of employing Chaplains to provide S/R leadership and support. Military Chaplains are both embedded with the troops in garrison and theater and work closely with various care providers such as the Royal Canadian Medical Services (RCMS). In so doing, they offer front-line support and services to members and their families and facilitate access to care. Most recently, the Royal Canadian Chaplain Service (RCChS) was commended for its contributions during operations in Afghanistan (2001–2010). The establishment of MHC roles within CAF Mental Health (MH) Clinics has evolved from these collaborations and in response to the needs of military members experiencing spiritual and mental health concerns such as operational stress injuries (OSIs) including PTSD and MI. Colleagues and service members alike have attested to their role and contribution.

MHCs, who are first and foremost Chaplains with a primary call to serve members and their families, are also trained as counselors or psychotherapists. Enriched by this dual training, MHCs provide a specialized counseling ministry centered on S/R struggles and distress. Drawing on both spiritual and counseling modalities and practices, MHCs approach service members using a person-centered, holistic approach that sees each member as a *human being*—with a body, mind, spirit—who relies on connection and a sense of belonging to thrive. From the MHC perspective, the human "spirit" is understood to be "the essential core of the individual – the deepest part of the self" which is thoroughly manifested in behavioral, relational, and vocational choices and personal identity (40).

To holistically support military personnel, MHCs employ a biopsychosocial-spiritual (BPSS) model such as the Canadian Model of Occupational Performance and Engagement (**Figure 1**) (41) that views the biological, psychological, social, and spiritual dimensions as distinct, yet interconnected and inseparable (42). With an emphasis on the spiritual domain, MHCs are predominantly focused on S/R processes (e.g., struggles, questions, wounds), barriers that may delimit or impede overall success, as well as S/R resources and practices that can facilitate recovery and resilience. MHCs also use S/R practices (e.g., prayer, meditation, rituals), explore issues of meaning and purpose, work through S/R and existential questions, address fractured worldviews, core beliefs, and relationships, and facilitate movement toward recovery, reconciliation, and restoration (43). Addressing the spiritual domain in this way not only helps to address and heal specific spiritual wounds, but encourages service members to engage in healthy S/R practices and processes that enable them to reach their personal potential (see **Figure 2**) [Brémault-Phillips et al., unpublished; (44)].

In addition to addressing S/R topics that may arise during treatment for MI, MHCs also provide personal and professional support to healthcare providers. Regarding service provision to military personnel, MHCs facilitate integration of S/R-related components into care and treatment planning. For providers who may be ill-equipped or reluctant to address S/R concerns, MHCs are available for consultation and collaboration. Further, MHCs help ID team members become more aware of and comfortable addressing the S/R domain when addressing MI by either providing training to help them recognize and address spiritual distress or seek support from MHCs in the resolution of S/R issues. Finally, MHCs can provide spiritual support to ID members facing their own personal and professional S/R struggles as they support those who have sustained a MI.

CLINICAL PERSPECTIVES

A MHC in the CAF, one of the co-authors (JSM) has been a key member of ID teams. Recently appointed Principal Chaplain for Mental Health by the Chaplain General, he has supported military members struggling with mental and spiritual health concerns including PTSD, MI and other OSI symptoms and facilitated their treatment. Referrals received from psychologists, social workers, psychiatrists, nurses or physicians typically focused on addressing grief, guilt and/or shame, or using S/R coping strategies to support recovery. Common interventions provided included bridging members to services and supports, facilitating S/R coping and grounding techniques, reconciling worldviews, resolving anger at a God-figure (not specific to any S/R perspective), and fostering reconciliation. Following is a brief discussion of ways in which MHCs contribute to healing in these areas.

Bridging to Services and Supports

Chaplains are well-positioned to enhance member resilience and recognize distress, as well as act as a bridge to health and family services and supports. Embedded with the troops in theater and garrison, as well as in MH Clinics, Chaplains walk with service members during all stages of their military careers. In so doing, they provide support regarding prevention, promotion and recovery, and offer on-call front-line response for acute and chronic challenges. Their ongoing presence can be a reminder that others are available to extend non-judgmental care and of the value of S/R practices, resources and communities. They also can be facilitative of connection to other services. Contact with Chaplains has been found to diminish potential stigma associated with help-seeking and increase the likelihood that military personnel will be more receptive to interventions essential to recovery. The pre-established relationship between Chaplains and military members can be an invaluable asset in the process of recovery.

Facilitating Spiritual Coping and Grounding

MHCs can support members to effectively cope with MI and other OSI conditions, reduce stress and decrease arousal, and contend with the challenges of recovery by encouraging the use of S/R practices. Introduced early in treatment, S/R practices that facilitate grounding (e.g., meditation or contemplation) can become a source of comfort that then enables members to remain grounded throughout the course of treatment. Various studies show the impact of S/R grounding techniques on the brain and body in helping to reduce stress and decrease arousal. These practices can also help individuals to direct their attention to the "here and now," grow in self-awareness, and reconnect with their body, mind, and spirit.

Reconciling Worldviews

Some military members have indicated that deployment changed or challenged their worldviews and beliefs. In this context, MHC interventions primarily center around exploring the person's S/R beliefs and values to identify what had previously been held as "sacred" and what has been lost or challenged since deployment. As an example, military members have had difficulties processing wartime encounters with child soldiers or casualties as it conflicts with a western worldview that holds children as sacred and innocent. Disparate representations of children (harmless vs. aggressors/threats) causes them to re-evaluate their perspective, beliefs and values. Such experiences can significantly impact a person's worldview and result in a redefinition of both self and self-in-relationship to others, the world and the sacred/Transcendent.

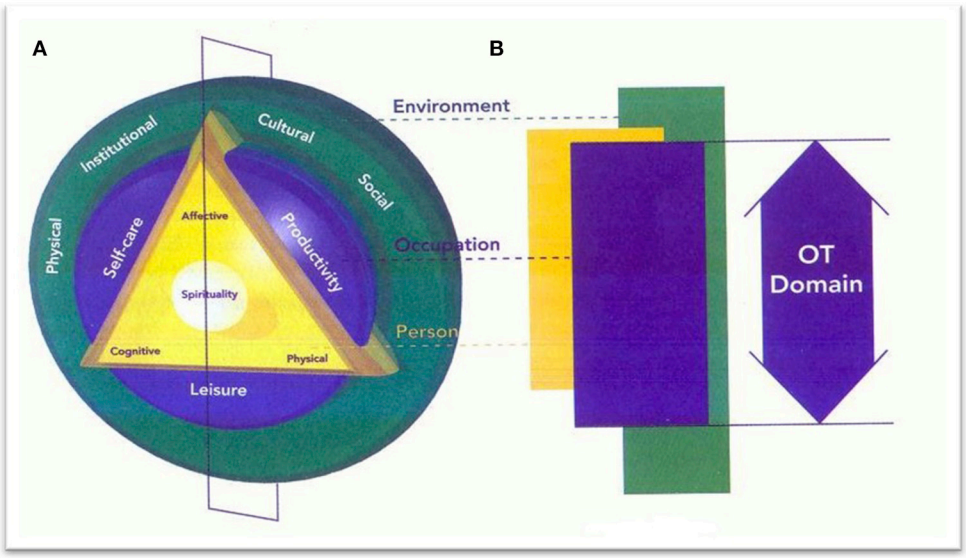

FIGURE 1 | Canadian model of occupational performance and engagement (CMOP-E).

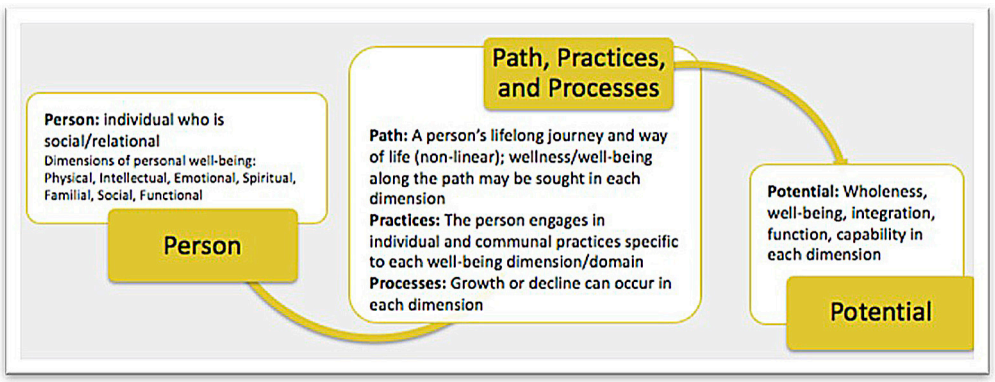

FIGURE 2 | The 5 Ps: personal paths, practices and processes to maximizing potential.

Resolving Anger at a God-Figure

While military members may report having no precise S/R affiliation, they nonetheless often report feeling angry with a God-figure and being challenged by existential questions such as "Why is this possible?" "If God exists, why did God let this happen?" In some cases, operational experiences reinforce atheistic interpretations of events; in others, the experience can lead individuals to deepen their S/R beliefs. A deeper understanding of a psychosocial-S/R dilemma can be facilitated through MHC interventions. Provision of S/R support can help members formulate and integrate a new framework based on an evolving understanding of their relationship with a God-figure or what they consider sacred/Transcendent.

Fostering Reconciliation

Events occurring during deployment can also lead some military members to seek S/R interventions associated with forgiveness as a means of mending relationships with self, others and/or the sacred/Transcendent. Interventions related to reconciliation employed by MHCs center on distress, guilt and/or shame and are personalized according to S/R needs and resources. In the process of seeking forgiveness, valuing self in relation to others and a God-figure can be challenging for some individuals. Liaising with local clergy or spiritual leaders regarding the sacrament of reconciliation or other rituals can be supportive; in other cases, dialogue with a benevolent authority has been central to the acknowledgment of guilt and extension of forgiveness.

The above clinical perspectives shed light on some of the contributions of MHCs in supporting the recovery of military members dealing with OSIs, PTSD, and MI. Addressing divergent worldviews, and anger at a God-figure, drawing on S/R resources including coping and grounding techniques, and supporting reconciliation can address fundamental issues, help facilitate recovery and enable military members and veterans to be more

receptive to and ready for other treatment modalities available through the ID team.

DISCUSSION

The success of integrating MHCs into CAF Mental Health Clinics, which has been affirmed by ID teams and service members, offers evidence of the therapeutic value they offer in the treatment of MI. Most significantly, MHCs on ID teams ensure that: (1) spiritually-integrated holistic person-centered care is delivered, (2) S/R interventions are integrate into treatment for MI, and (3) capacity-building of ID teams to address this domain in relation to MI is facilitated.

Ensuring Holistic Person-Centered Care

Addressing the needs of military members from a holistic, BPSS perspective is essential to healing from MI. MHCs on ID teams are well-positioned to encourage military members to reflect upon themselves and their spiritual processes (e.g., struggles, questions and wounds), and where appropriate, use various S/R interventions (practices) to support healing and reintegration post-MI. Considering MI as merely a collection of psychological symptoms to the negation of S/R components may impede recovery. Nash et al. (15) argue that the use of spiritual language and practices should be encouraged for the treatment of MI given its underlying spiritual dimension. Equally, developing, strengthening, or restoring the human spirit, providing comfort through S/R means, and facilitating transition through and closure for experiences and chapters of life have long been key contributions of S/R.

Integrating S/R Interventions

Pertinent to the treatment of MI is the ability of MHCs to integrate S/R processes and practices. As illustrated in the literature and observed clinically, MHCs are uniquely qualified to engage in dialogue regarding the spiritual domain, assess for S/R strengths and distress, and integrate S/R processes and practices in the context of the overall ID treatment plan. Successful treatment for MI requires recognizing MIEs and supporting individuals as they seek to re-integrate their core self, reframe their worldview, and re-establish relationships with themselves, others, and the sacred or a God-figure. Addressing a person's S/R values, beliefs, needs and resources in the course of treatment may alleviate pathology, enable individuals to attain optimal mental, physical, spiritual, and social functioning (43), and increase their receptivity to other supports and services. Moreover, spiritual well-being activities, specifically S/R coping (e.g., meaning-making, support, ritual, practice, meditation), can offer a distinctive benefit over and above the effects of secular methods of coping (13, 45).

Facilitating S/R Capacity-Building

Addressing the spiritual dimension of MI is not common-place for many mental health clinicians. Finlay (46) notes that there currently exists a dearth of clinicians capable of appropriately addressing the S/R components of MI (46). As some ID team members may feel ill-equipped to address S/R aspects of MI, MHCs can assist them to: (1) develop a therapeutic alliance that is sensitive to the S/R domain; (2) assess and identify S/R concerns; (3) include spirituality in treatment planning; (4) implement spiritually-integrated psychological interventions; (5) monitor and evaluate overall treatment progress and outcomes of S/R goals; (6) prevent compassion fatigue and work within practice guidelines; and (7) be aware of attitudes regarding S/R that they may bring into their practice (47, 48). Plante (47) encourages healthcare providers integrating S/R into clinical care to be aware of biases, consider S/R like any other type of diversity, take advantage of available resources, and consult colleagues including Chaplains and S/R leaders (47).

CONCLUSION

This perspective paper has explored the concept of MI, the role of Chaplains in its identification and treatment, and ways in which S/R interventions delivered by MHCs can be facilitative of recovery. When MI occurs, all dimensions of the person need to be addressed including underlying spiritual concerns. From a spiritual perspective, pursuit of healing and wholeness following exposure to an MIE often involves facing existential and S/R questions, finding healing for wounds in one's deep core, and mending fractured relationships with self, others and the sacred/Transcendent. At times, spiritual blocks need to be overcome and worldviews, beliefs and values reconciled in order for members to be able to more fully benefit from other forms of therapy. While all members of the ID team may address the spiritual domain to some degree, Chaplains, and more particularly MHCs, are well-positioned to help military members face and make sense of the spiritual aspects of MIEs. It is the opinion of the authors that, given the empirical evidence, feedback from ID team members, and clinical experience, that MHCs should be fully integrated as part of any ID team working with military personnel and veterans who experience mental and spiritual health concerns including MI.

AUTHOR CONTRIBUTIONS

LS-M, J-SM, and SB-P participated in the conceptualization and writing of this article and approved the final version. In doing so, all authors agree to be accountable for the content of the work.

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