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Emerging treatments and approaches for moral injury and moral distress

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Emerging treatments and approaches for moral injury and moral distress

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Editorial: Emerging treatments and approaches for moral injury and moral distress

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Editorial on the Research Topic
Emerging treatments and approaches for moral injury and moral distress

Advanced exploration of interventions for moral injury and moral distress

Current evidence-based therapies to treat trauma-affected populations, especially military members and first responders, have had variable success. Treatment response may be impeded by a lack of clinical attention to moral aspects of psychotrauma. Despite abundant evidence clouded in personal experiences (1), persistent cognitions of shame and negative beliefs long remained a diagnostically unacknowledged phenomenon (2–4). Recent discourse around moral injury (MI) and moral distress (MD), however, has stimulated further consideration of these clinical observations (5). MI/MD refer to the psychosocial-spiritual harm associated with committing, failing to prevent, observing, or learning about an event that violates one's morals and values (6, 7). Such real or perceived transgressions or betrayals by self or others may cause harm to a person's wellbeing. MD/MI can have devastating impacts on the lives of many, leading to persistent guilt, social withdrawal and self-destructive behavior. While a better understanding of these constructs is needed, it is also important to advance the exploration of interventions that address the impacts of MI/MD on the human condition.

Interdisciplinary collaborative treatment of moral injury and moral distress

There is much we do not know about both MI/MD and the domains within which they are situated. The field of psychiatry, for example, may be considering situating MI/MD within current diagnostic classifications; there may be support for a subtype of MI as part of PTSD (8). Other perspectives advocate for a broader interdisciplinary public health perspective of MI/MD (9, 10). There is a clear need to broaden the horizon to include domains such as morals and ethics, spirituality and religion, and philosophy and anthropology. An interdisciplinary approach is thought to be critical to bringing coherence to the discourse, laying the foundations

for novel interventions and embedding diverse interventions into systems of care and support. Respectful interdisciplinary dialogue and exchange of ideas will be paramount to this endeavor. This Frontiers special topic: *Emerging treatments and approaches for moral injury and moral distress*, aims to address the imperative of finding evidence-based interventions that integrate interdisciplinary perspectives on MI/MD.

Moral injury and moral distress: Contribution perspectives

The contributions comprising this e-collection of 14 papers cover a range of theoretical and practical important areas within the topic, including multi-partner perspectives from those with lived and living experience of MI/MD and those attempting to provide assessment, treatment and support.

In *Defining and assessing the syndrome of moral injury*, Litz et al. consider problems of Definition and assessment of MI with the Moral Injury Outcome Scale (MIOS) based on initial work of the MIOS consortium. The MIOS is a carefully constructed and promising instrument that makes an important contribution to the reliable and valid assessment of MI. The contribution of Easterbrook et al. in providing an analysis of *Risk factors for moral injury among Canadian armed forces personnel* begins to fill a significant gap in our knowledge regarding trauma-related factors associated with MI amongst military personnel in the Canadian context. Notably, the authors point to not only deployment-related factors but also child maltreatment as risk factors for MI.

In the face of COVID-19, we have become aware of the significance of MI/MD in relation to health care professionals. As such, it is appropriate that this e-collection contains contributions focusing on the healthcare environment. These contributions include an analysis of *Research gaps and recommendations to guide research on assessment, prevention, and treatment of moral injury among healthcare workers* authored by Maguen and Griffin, which stresses the importance of improved measurements, mixed methods approaches and conceptual clarity; and a scoping review of *Potential circumstances associated with moral injury and moral distress in healthcare workers and public safety personnel across the globe during COVID-19* by Xue et al., which focuses on providers' emotional response to moral dilemmas and challenges during the pandemic. A third contribution, by Smith-MacDonald et al., examines a promising e-health based intervention for this population: *Companions in the abyss: A feasibility and acceptability study of an online therapy group for healthcare providers working during the COVID-19 pandemic.*

The relevance of MI/MD to other diverse populations is also addressed. Extending to work concerning refugees, an ever-present group arising from natural disasters, war and/or political oppression, Mooren et al. discuss current evidence on *The impact of morally injurious events in a refugee population: a quantitative and qualitative study*. Two further papers examine and report MI/MD as it relates to serving police officers: *Moral injury in trauma-exposed, treatment-seeking police officers and military veterans: Latent class analysis* by Mensink et al.; and *Development of an online treatment module for support of treatment of moral injury in military veterans and police officers* by June ter Heide et al.. With respect to the latent class analysis paper, the authors report high PTSD severity in a comorbid MI-PTSD client group and indicate that there is a substantial subgroup of trauma-exposed, treatment-seeking police officers and military veterans that may suffer from MI. The June ter Heide et al. paper describes development of a favorably rated treatment module and outlines plans moving forward for further development and likely implementation into systems of care.

Other practical interventions are also included in this Research Topic. The contribution by Brémault-Phillips et al., in the data-reference-rich article outlining *Scenario-based supported interventions (SBSIs) for moral injury and PTSD: Data report of film and television references for use with uniformed professionals*, is a unique practical resource for facilitating dialogue on MI/MD prior to and following exposure to potentially morally injurious experiences. That practical offering fits with other intervention-focused contributions including *Companions in the abyss: A feasibility and acceptability study of an online therapy group for healthcare providers working during the COVID-19 pandemic* authored by Smith-MacDonald et al. and mentioned in the health care workers cluster, and two very important papers that, respectively, focus on Acceptance and Commitment Therapy and the use of deepfake technology in the context of "safe" perpetrator confrontation. *Case conceptualizing in acceptance and commitment therapy for moral injury (ACT-MI): An active and ongoing approach to understanding and intervening on moral injury* authored by Borges et al. outlines an approach to ACT-MI that may prove helpful as an intervention in this context. The *Initial development of perpetrator confrontation using deepfake technology in victims with sexual violence-related PTSD and moral injury* presented by van Minnen et al. is a fascinating approach using digital health technology that may also have other important applications in this context.

Following on from this excellent collection of original work, the reader has access to more theoretical considerations with the introduction of two novel models in *Toward a dual process model of moral injury and traumatic illness* by Barr et al. and *Caught between is and ought: The moral dissonance model* by Te Brake and Nauta. Within the former, the Dual Process Model is introduced with practical applications demonstrated through brief vignettes. This work postulates that approaches to treatment that entail principles of Stoicism, non-judgment of experience, acceptance, and values-oriented action, are more likely than traditional trauma treatment approaches to assuage MI. The latter work regarding the Moral Dissonance Model considers contextual factors associated with moral injury and proposes a framework akin to cognitive dissonance that may have explanatory power in this context. In *Forgiveness: A key component of healing from moral injury?* Brémault-Phillips et al. consider the impact of forgiveness on reconstituting moral identity, restoring relationships, and healing of body, mind and soul.

For the scholar accessing this area for the first time, or for more seasoned readers, this e-collection will further scholarly and interdisciplinary discourse on MI/MD. Our hope is that this e-collection will be a stimulus for increased engagement for the public good, help shape the field, and serve as a springboard for further critical conversations for appropriate interventions and treatments of MI/MD.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of interest

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References

1. Nichter B, Norman SB, Maguen S, Pietrzak RH. Moral injury and suicidal behavior among US combat veterans: results from the 2019-2020 National Health and Resilience in Veterans Study. *Depress Anxiety.* (2021) 38:606–14. doi: 10.1002/da.23145

2. Lifton. *Home From the War: Vietnam Veterans, Neither Victims nor Executioners*. Simon and Schuster (1973). p. 478.

3. Kubany ES. A cognitive model of guilt typology in combat-related PTSD. *J Trauma Stress.* (1994) 7:3–19. doi: 10.1002/jts.2490070103

4. Nash WP, Litz BT. Moral injury: a mechanism for war-related psychological trauma in military family members. *Clin Child Fam Psychol Rev.* (2013) 16:365–75. doi: 10.1007/s10567-013-0146-y

5. Atuel HR, Barr N, Jones E, Greenberg N, Williamson V, Schumacher MR, et al. Understanding moral injury from a character domain perspective. *J Theoret Philos Psychol.* (2021) 41, 155–73. doi: 10.1037/teo0000161

6. Jameton A. *Nursing Practice: The Ethical Issues*. Englewood Cliffs, NJ: Prentice-Hall (1984). p. 331.

7. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003

8. Vermetten E, Jetly R. A critical outlook on combat-related PTSD: review and case reports of guilt and shame as drivers for moral injury. *Milit Behav Health.* (2018) 6:156–64. doi: 10.1080/21635781.2018.1459973

9. Currier JM, Drescher KD, Nieuwsma J. Future directions for addressing moral injury in clinical practice: concluding comments. In: Currier JM, Drescher KD, Nieuwsma J, editors. *Addressing Moral Injury in Clinical Practice*. American Psychological Association (2021). p. 261–71.

10. Molendijk T, Verkoren W, Drogendijk A, Elands M, Kramer EH, Smit A, et al. Contextual dimensions of moral injury: an interdisciplinary review. *Milit Psychol.* (2022) 34, 742–53. doi: 10.1080/08995605.2022.2035643

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Companions in the Abyss: A Feasibility and Acceptability Study of an Online Therapy Group for Healthcare Providers Working During the COVID-19 Pandemic

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Introduction: In the context of the global pandemic of the SARS-CoV-2 coronavirus (COVID-19), healthcare providers (HCPs) have experienced difficult moral and ethical dilemmas. Research is highlighting the importance of moral injury (MI)–a trauma syndrome related to transgressing personal morals and values–in understanding the psychological harm and occupational impairment experienced by HCPs. To date, MI treatments have largely been developed for military personnel and veterans and rely on in-person one-on-one psychotherapy.

Purpose: This project aims to explore the feasibility and acceptability of an evidence-informed online Acceptance and Commitment Therapy-based group therapy for MI in HCPs called "Accepting Moral Pain and Suffering for Healthcare Providers" (AMPS-HCP).

Method: This feasibility and acceptability study included three separate phases with the first two phases focused on the development of the psychotherapeutic intervention and the third phase focused on the evaluation of the psychotherapeutic intervention. Eight participants (including registered nurses, practical nurses and respiratory therapists) completed seven 90-min sessions in an online group format. The focus of these sessions included ACT and MI psychoeducation and experientials. Qualitative semi-structured interview data was thematically analyzed while demographic and quantitative self-reported outcome data underwent descriptive analysis and non-parametric testing.

Results: Results show that the intervention was highly feasible and acceptable to healthcare providers who worked on the frontline during COVID-19. Feasibility (referrals, eligibility, retention, participation engagement) was strong (8 out of 10 participants; 80% vs. desired >70% eligibility) and overall, 80% of participants completed 71% of the intervention. Data further supported the applicability and acceptability of the intervention. Preliminary data suggests that AMPS-HCP may supports HCPs to address MI.

Discussion: This study is the first to report on the development and evaluation of an online MI group intervention for registered nurses, registered practical nurses, and respiratory therapists working during COVID-19. Results showed the use of both the online and group components of the intervention were acceptable and feasible during the third wave of COVID-19.

Keywords: moral injury, healthcare provider (HCP), COVID-19, acceptance and commitment therapy, moral distress

INTRODUCTION

The global pandemic of the SARS-CoV-2 coronavirus (COVID-19) has placed untold strain and threat to global healthcare systems and healthcare providers (HCPs) (1). During the COVID-19 pandemic, HCPs across the globe have faced difficult moral and ethical decisions related to the enormous influx of patients with life-threatening conditions, resource limitations (e.g., ventilators, personal protective equipment, and life-saving medications), system overload (e.g., not having enough beds or HCPs to care for severely ill patients), policy changes, secondment, societal, and political stigma and denial, family needs (e.g., not allowing family to be present or say goodbye), exposure to mass death and dying, as well as personal elevated exposure risk for COVID-19 (2, 3). Additionally, HCPs have been stigmatized as vectors of contagion, resulting in their assault, abuse, and isolation during the COVID-19 pandemic (4, 5). This situation has caused many HCPs to feel helplessness, shame, anger, and guilt as hundreds of patients every day succumb to the illness (6, 7).

It is widely acknowledged that a large mental health crisis will be forthcoming for HCPs once the pandemic is over (8, 9). Significant research has been conducted regarding HCPs' experiences of other epidemics (e.g., SARS, MERS, Ebola) including within a Canadian context. For example, Maunder et al. (10) found that an estimated 29–35% of hospital workers experienced a high degree of stress, while another study found that 45% of nurses in Toronto during SARS experienced emotional distress (11). Other studies of HCPs during SARS have suggested rates of emotional distress being as high as 57% (12). Longitudinally, HCPs in Toronto reported significantly higher levels of burnout, psychological distress, and posttraumatic stress disorder (PTSD) 1–2 years post-SARS (13). More importantly, emotional and psychological distress experienced by HCPs was not necessarily associated exclusively with SARS trauma; rather it was compounded with issues related to quarantine, fear of contagion, concern for family, job stress, interpersonal isolation, perceived stigma, and conscription of non-specialists into infectious disease work (13).

Moral Injury

Moral Injury (MI)–a specific trauma syndrome associated with the distress of witnessing or participating in acts that transgress personal morals, values, and beliefs (14)–has gained significant attention during COVID-19 particularly for HCPs (9, 15). One MI scholar commented that HCPs "are vulnerable to MI because (they) care" [(16), p. 1] and because they have faced innumerable moral and ethical dilemmas with no "right" solutions (15). While preliminary, research is highlighting the importance of MI when discussing the harm and impairment experienced by HCPs. O'Neal et al. (17) found 66.5% of surveyed HCPs felt moral distress related to conflicts between institutional constraints and what they believed was right during the pandemic. Similar moral dilemmas have been suggested for physicians who may be experiencing tensions between physicians' fidelity to best medical practices, their Hippocratic Oath, and managing scarce resources (18). Factors and experiences which have been found to cause moral distress during COVID-19 include uncertainty and lack of knowledge, fear of exposure, intra-professional tensions and miscommunications, policies that prevent or impede care, practicing within crisis standards of care, new roles/tasks and broken routines, and dealing with medical resource scarcity (19, 20). Noted emotions associated with COVID-19 related MI are feelings of overwhelm, fear, guilt, frustration, distrust, exhaustion, frustration, uncertainty, hopelessness, and helplessness (19).

While the long-term impacts of the coronavirus cannot be known at this time, MI is associated with significant mental health challenges, psychosocial issues, and occupational impairments. In a recent review, MI is associated with mental illnesses (e.g., PTSD, generalized anxiety disorder, major depressive disorder), physical health challenges (e.g., pain, sleep disturbances), behavioral issues (e.g., substance misuse, suicidal ideation) and occupational impairment (e.g., burnout, compassion fatigue, and work absenteeism) (21). Within COVID-19 literature, Wang et al. (22) explored prevalence and correlates of MI among physicians and nurses in mainland China during the pandemic and found an estimated 41.3% of HCPs screened positive for MI, with HCPs providing direct COVID-19 care to patients at 28% greater risk of MI. MI scores in these HCPs were also strongly and positively correlated with depression, anxiety, low well-being, and burnout symptoms (22). Similar results were found in a Canadian study where, again, moral distress significantly and positively predicted symptoms of depression, anxiety, PTSD, and burnout in HCPs (23). Universally, research is reporting that HCPs are at an increased risk for stress, burnout, and depression during the ongoing COVID-19 pandemic (24).

Central to the problem of MI is the lack of evidence-based treatment. To date, MI treatments have largely been developed for military personnel and veterans and rely on in-person one-on-one psychotherapy. Evidence-based,

trauma-focused treatment approaches, such as Eye Movement Desensitization and Reprocessing, Prolonged Exposure, and Cognitive Processing Therapy, fail to directly address MI. Moreover, current scientific knowledge of MI highlights that this injury, while trauma-based, requires a different therapeutic approach (25, 26). For example, it has been suggested that rather than relying on strategies that address fear stimuli, MI is best resolved through expression of moral pain, mindfulness, self-compassion, grief and loss rituals, reparation of belief schemas, forgiveness, relationship repair, values or amends work, and self-care (27–31). A group approach to MI has also been suggested given the potential for group therapy to support relationship repair (32, 33). Meta-analyses into group therapy treatments have shown large and significant pre-post treatment reduction in PTSD symptoms (34, 35) and have also been shown to normalize symptoms, counteract isolation, provide peer support and observational learning, and ameliorate important shame-based cognitions (36)–all of which may be central to the treatment of MI.

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) is a functional contextual cognitive behavioral psychotherapy approach that emphasizes mindfulness, acceptance, perspective-taking and values-based behavior change (37). ACT views human language as the core of many psychological disorders and human suffering (38) and seeks to bring language and thought under effective contextual control (39). Rather than trying to change the content of problematic thinking or the form and frequency of difficult private events such as unwanted thoughts, feelings, urges and sensations, ACT attempts to alter their psychological functions and influence on overt behavior by altering the socio-verbal context in which private events occur (39). The essential goal of ACT interventions is to increase capacity for behavior change by treating emotional avoidance, excessive literal response to cognitive content, and barriers to making and keeping commitments to value-based actions (38). This ability to choose to do what works in order to move toward who or what is important to the individual is known as *psychological flexibility* (40). Six processes combine to promote psychological flexibility and regulate patterns of behavior: cognitive defusion, acceptance, committed action, values, contact with the present moment and self-as-context (40).

Importantly, ACT has been theoretically suggested as a potentially ideal therapeutic modality for MI because of its therapeutic focus on cognitive flexibility, mindfulness, and value-driven behavior (28, 41). Specific to MI, ACT has been conceptualized as supporting the cultivation of acceptance of moral pain in the service of one's values instead of challenging the content of that pain (42). Theoretically, ACT posits that healing from MI requires a willingness to feel moral pain in the service of creating meaning, purpose, and vitality, while simultaneously reengaging areas of life (e.g., relationships, spirituality, and self-care) that are often ignored by those suffering a MI (43). Borges et al. (44) have argued that acceptance may be particularly important during the COVID-19 pandemic as challenging the content of painful experiences can pathologize the often functional response of moral pain. ACT for example has been explored through case studies for veterans with MI (45) and Evans et al. (42) wrote a self-guided workbook on MI using ACT; however, ACT has not been piloted in HCP populations, nor within an online group format for MI.

Purpose

This project aims to explore the feasibility and acceptability of an evidence-informed online ACT-based group therapy for MI in HCPs, called "*Accepting Moral Suffering and Pain for Healthcare Providers*" (AMPS-HCP). As ACT has not been established as an evidence-based modality for MI, nor has a group approach or online format been trialed for a MI intervention, we determined to conduct a preliminary feasibility and acceptability study prior to embarking on a full scale randomized controlled pilot study.

METHODS

Project Design

This pilot study included three separate phases with the first two phases focused on the development of the psychotherapeutic intervention and the third phase focused on the evaluation of the psychotherapeutic intervention. Mixed data collection was selected for the third phase as both quantitative and qualitative data are necessary to assess feasibility and acceptability.

Phase 1: Intervention Development

A systematic and critical review was conducted of the MI academic literature focused on MI interventions. Additionally, we consulted with 12 international MI Subject Matter Experts. The aim of this phase was to identify MI treatment approaches and components, along with potential benefits, barriers, and recommendations to the delivery of MI treatment via digital health platforms.

Phase 2: Intervention Construction and Training

Upon determining that no current intervention would be appropriate, the research team selected ACT as the evidence-based modality given its focus on value-driven behavior and grafted key MI constructs onto the six processes of ACT. This resulted in the development of a 100-page standardized clinician manual for AMPS-HCP. Training of registered mental health clinicians (i.e., psychologists, occupational therapists, psychotherapists) (n =4) occurred prior to delivery of the MI intervention. Two of the clinicians were recruited from the investigators listed on the grant.

Phase 3: Research of the Intervention

The AMPS-HCP intervention was delivered and researched for its feasibility and accessibility.

Recruitment, Participants, and Setting

Potential participants were recruited via convenience and snowball sampling. An initial contact email with an electronic poster was sent to leaders within participating healthcare organizations asking them to forward the recruitment material. Additionally, given the need to recruit remotely, recruitment posts were placed on appropriate social media sites (with

expressed consent). Potential participants were asked to directly contact the researchers and were subsequently screened for eligibility. If deemed eligible, participants were sent an electronic consent form to sign digitally via RedCap (an online data capturing platform) indicating their consent to participate in the intervention. Research Ethics Board and operational approvals were sought prior to commencing with the study. Participants were included if they were 18 years or older, spoke and understood English, were a registered nurse, registered practical nurse, or respiratory therapist (RT) who had been working during the COVID-19 pandemic, and felt they had been exposed to a potentially morally injurious experience. Ten potential participants initially expressed interest, meet inclusion criteria and we included in the study, but two dropped out before the intervention started due to personal reasons. No other participants were recruited as the recruitment material had been taken down (given fully the sample size in <48 hours) and the research team had informed the participating organizations that the study was closed. The final sample size was eight (n =8). The intervention was offered online via a Health Insurance Portability and Accountability Act compliant Canadian geo-fenced Zoom platform.

Measures

Demographics

A demographics form was administered at baseline to assess age, gender, ethnicity, education, marital status, health profession, number of years in the profession, job title, and employment status.

Acceptability Measures

To assess for acceptability the Client Satisfaction Questionnaire (CSQ-8) (46) and Narrative Evaluation of Intervention Interview (NEII) (47) were used. The CSQ-8 is an eight-item, four-point Likert scale self-report measure that assesses overall satisfaction with the intervention being offered. The NEII is a 16-item semi-structured guide focused on the participants' perspectives of the impact of the intervention, helpful and unhelpful components, and comparison to other interventions. The semi-structured NEII interviews were conducted 1 week post completion of AMPS-HCP.

Feasibility Measures

Feasibility of AMPS-HCP was operationally defined as: sufficient patient referrals (ability to meet the minimum sample size of 8), eligibility (> 70% of potential participants meet the eligibility criteria), and enrollment (>50% of potential participants meet the eligibility criteria). The justification for the small sample size (n = 8) was two-fold: (1a) this was pilot feasibility and acceptability study to study what logistical challenges may be associated with offering the intervention, if potential participants felt the intervention adequately to address their needs, and what changes or modifications would be required in order for the intervention to be cultural/population appropriate; and (2) to ensure the sample size is representative of what would be used in a standard group therapy modality (approximately 6 to 10 participants). Evidence of feasible treatment delivery was defined as a minimum of 70% of participants completing 70% of the intervention. Regarding completion and retention, specific attention was given to the impact of shift-work and technology to the delivery of AMPS-HCP.

Fidelity Measure

Fidelity was established in terms of >80% adherence to clinician manual and ACT principles. Additionally, all four clinicians met for 30-min upon completion of each session to debrief, reflect, iteratively discuss changes to the previous and upcoming session, and to review the fidelity checklist.

Participant Treatment Outcomes Measure

Several measures of psychological health (PCL-5 and DASS-21), MI (MIOS), social function (MSPSS), occupational impairment (ProQoL), emotional regulation (DERS-18), coping (B-COPE), cognitive flexibility (AAQ), post-traumatic growth (PTGT), and resilience (CDRS-10) were administered pre-post intervention to help guide a future randomized controlled trial designed to assess the effect of AMPS-HCP (48).

AMPS-HCP Intervention

The purpose of this transdiagnostic MI intervention was to support participants in cultivating acceptance of moral pain in the service of one's values rather than challenging the content of moral pain. The AMPS-HCP intervention consists of seven (one introductory and six therapeutic) 90-min online sessions administered over the course of consecutive weeks. Each session had the following structure: an opening poem/meditation, a review of the week using the Matrix (a tool help discriminate between internal and external experiences and identify actions that aligned with personal values), psychoeducation of an ACT principle, an integrative exercise, followed by psychoeducation of a MI principle, another integrative exercise to solidify learning and skill competence, and a closing poem/meditation. Time was allotted for individual and group reflections within each session to support learning and group cohesion. The therapeutic components of this intervention consisted of teaching six core processes within the sessions: (1) acceptance and self-compassion related to moral pain; (2) defusion related to self-criticism and resentment; (3) contact with the present moment, including contacting grief; (4) self-as-context and the role of meaning-making, narratives, and story-telling in perpetrating moral suffering; (5) contacting values related to moral injury, especially values behind our laments; (6) committing to value-driven actions of self-compassion and other reparative practices aimed to heal relationships with self-and/or others (see **Table 1**).

Data Collection

As the primary outcome of this study was to explore feasibility and acceptability of AMPS-HCP, semi-structured 45-min interviews via Zoom occurred ∼1 week after completion of AMPS-HCP with participants. Interviews used the NEII questions to assess for acceptability of the study. They were then audio-recorded with permission and transcribed. Additionally, semi-structured 45-min interviews with the four clinicians providing AMPS-HCP were also conducted to assess for fidelity

TABLE 1 | Summary of AMPS-HCP sessions.

Session	Intentions	Practical Content
Introductory	Identify MI, potentially morally injurious experiences (PMIEs), and symptoms of MI. Explore how MI is related to violated values. Introduction of ACT and the Matrix as the framework for the sessions	- Introduction to ACT - Introduction to MI - Exercise reviewing PMIEs which may have occurred in COVID-19 - Introduction and review of the Matrix
One	Help participants identify the need for acceptance as the primary step toward healing of MI. Identification of the ways in which participants have been harmed during COVID-19, and the PMIE(s) which are most difficult to accept. Explore the role of compassion in helping to manage and accept moral pain	- Introduction to the concept of acceptance - Review of the Matrix - Exercise focused on identifying participants' MI monster (i.e., event that is most difficult to accept) - Education on compassion - Self-compassion meditation
Two	Help participants learn skills related to defusion and getting unstuck from negative or unwanted thoughts, emotions, and sensations. Emphasize the importance of viewing these as only thoughts, emotions, or sensations that will pass. Explore how PMIEs may impact and direct thoughts that further perpetuate suffering	- Introduction to the concept of fusion and defusion - Review of the Matrix - Exercise illustrating the attempts to remove "bad" thoughts - Education on how fused thoughts about PMIE(s) may be particularly difficult or sticky - The role of moral judgments in automatic or controlling thoughts - Exercise focused on defusion from the "inner dictator"
Three	Help participants to explore how they can stay in the present moment, and be more present and open to their thoughts, emotions, and sensations. Explore the intersectionality between grief and MI to show that MI includes loss because of the moral violation that occurred. Encourage participants to be open to grief and mourning the losses they have experienced while working during COVID-19	- Introduction of the concept of present moment awareness - Review of the Matrix - Present moment awareness exercise - Psychoeducation about loss and grief - Exercise focused on inviting in grief
Four	Help participants to see themselves as being within the current context of COVID-19, while also encouraging recognition for the larger more transcendent self. Exploration of the ways in which COVID-19 may have permanently or temporarily caused harm to the "self." Utilize narrative and storytelling as a way to have participants begin to explore their individual MIEs and also frame those within the larger story of the pandemic	- Introduction to the concept of self-as-context - Review of the Matrix - Broken mirror exercise focused on illustrating the transcendent self - "I am" exercise - Exploration of the role of narratives/storytelling in MI - Exercise focused on writing COVID-19 MI story
Five	Help participants to continue exploring how MI or PMIE(s) may be impacting their behaviors and causing them to no longer be behaving in a value congruent manner. Help participants to continue exploring the ideas introduced by the "hero's journey" with specific attention given to the struggles of "ordeal in the abyss" and unresolved points of moral pain	- Introduction of the concept of values - Review of the Matrix - Exercise focused on encouraging value-driven behaviors - Psychoeducation on the role of meaning-making in MI - Exercise focused on writing COVID-19 lament
Six	Help participants to begin to explore how they could move to the "toward" side of the Matrix through value-driven behavior. Participants are encouraged to write down the values they have identified throughout the group as being harmed and to now match them to morally reparative behavior and action. Participants are reminded not to see these behaviors and actions as undoing their moral pain but allowing them to begin to re-experience vitality and meaning. Group wrap out and closing also occurs	- Review of the Matrix - Create a list of morally reparative behaviors - Explore thoughts, emotions, or sensations which might get in the way - Group wrap

to the intervention and differences in opinions regarding feasibility and acceptability. The clinician weekly debrief notes and fidelity check-lists were also included as part of the data collection. To explore potential quantitative outcomes, REDCap was used to gather informed consent and the pre-post-questionnaire data.

Data Analysis

Quantitative analysis included descriptive statistics (e.g., mean values, frequencies, and proportions) to summarize demographic data. Non-parametric analysis using Wilcoxon rank-sum was also conducted comparing pre-post differences within the participants. Qualitative data were thematically analyzed. Braun and Clarke (49) described thematic analysis as a method for identifying, analyzing, and reporting patterns (themes) in rich detail which may also allow for the researchers to interpret various aspects of the topic. Practically, thematic analysis involves examining the text in detail to identify recurring patterns (open coding) which are refined into "themes." Initial codes for this study were developed through both deductive (i.e., based on acceptability and feasibility) and inductive coding (i.e., themes that emerged from the data itself). Four researchers reviewed the transcripts and independently coded the interviews to ensure the validity, reliability, and conformability of the analysis (50).

TABLE 2 | Participant demographics.

Variable	Sub-variable	Percentage (*n*, %)
Age (Average)		∼37 years
Gender	Female	8 (100%)
	Male	0 (0%)
Ethnicity	Caucasian	7 (88%)
	African-Canadian	0 (0%)
	Latino	1 (12%)
	Asian	0 (0%)
	South Asian	0 (0%)
	First nation or metis	0 (0%)
Healthcare profession	Registered nurse	4 (50%)
	Licensed practical nurse	1 (12%)
	Respiratory therapist	3 (38%)
Highest level of education	High school	0 (0%)
	Diploma/college	3 (38%)
	Undergraduate degree	4 (50%)
	Graduate degree	1 (12%)
Years in the profession	First year in profession	0 (0%)
	1–5 years	4 (50%)
	5–10 years	0 (0%)
	10–15 years	3 (38%)
	15–20 years	1 (12%)
Employment status	Fulltime	5 (63%)
	Parttime	2 (25%)
	Causal	1 (12%)

TABLE 3 | Participants self-reported outcomes.

	Pre-mean	Post-mean	Change	Pre-SD	Post-SD	*p*-value
MIOS	68.63	58.75	9.88	18.08	32.59	0.401
PCL5	31.38	25	6.38	11.15	20.58	0.263
DASS21-total	25.13	17.25	7.88	5.36	15.22	0.159
DASS21-stress	11.75	5.43	6.32	2.76	5.13	0.018**
DASS21-anxiety	6.38	6	0.38	4.72	4.93	0.395
DASS21-depression	7	5.43	1.57	2.83	5.13	0.235
PROQoL	93.37	91.25	−2.12	9.71	6.18	0.612
DERS-18	42.63	32.50	10.13	11.95	21.2	0.161
BCOPE	69.63	56.38	13.25	9.86	36.02	0.674
AAQ	32.38	30	2.38	5.63	3.51	0.236
MSPSS	58.75	45.75	−13	32.59	29.36	0.499
CDR10	26.14	20.13	−6.01	3.723	12.85	0.397
PGTI	40.75	37	−3.75	10.33	29.49	0.674

The primary codes were then combined and tabulated into preliminary themes and reviewed by the research team. Upon completion of a second round of analysis, the proposed thematic theory underwent collective analysis by the entire research team, and key quotations were isolated to illustrate selected themes.

RESULTS

Participant Demographics

The descriptive statistics of the participants are contained in **Table 2**. The average participant was middle-aged, Caucasian, female and had worked as a healthcare professional between 1 and 15 years.

Feasibility (Referrals, Eligibility, Retention, Participation Engagement)

Within 1 week of recruiting the study was full ($n = 10$). All participants who volunteered to participate in the study were eligible to participate (10 out of 10 participants; 100% vs. desired >70% eligibility). None of the potential participants chose to decline to participate, and most participants asked if the study was open so that they could recruit friends and colleagues which we could not accommodate (10 out of 10 participants; 100% vs. desired >50% enrollment rate). Two participants withdrew from the study citing personal reasons for not being able to attend the sessions, but still asked to receive the weekly handouts as they found them to be helpful and beneficial to their mental health. The remaining eight participants completed the AMPS-HCP protocol. Four participants were able to complete all seven sessions (40% completed 100%), while three participants completed six of the seven sessions (30% completed 86%) and one participant completed four of the seven sessions (10% completed 57%). Overall, 80% of participants completed 71% of the intervention. The most common reason cited for not being able to attend was shift work or unexpectedly being called into work. It should also be noted that the intervention was offered to participants during the third wave of COVID-19 within Canada; some participants attended the intervention while on shift at the hospital during their breaks. Technology was not cited as being a barrier to attendance and as will be noted below, was found to be significant facilitator for attendance.

Acceptability

All eight participants completed the NEII and seven of the eight participants completed the CSQ-8. The mean score of the CSQ-8 was 30 (the highest possible score being 34) and all participants rated the intervention as either "excellent" or "very good." Qualitative thematic analysis further supported the acceptability and acceptability of the intervention. Specific sub-themes and supportive quotes are listed in the boxes below.

Theme 1: Applicability

Participants noted that the AMPS-HCP intervention was highly applicable to their experience of COVID-19. Many participants noted they were often expected as HCPs to "shove it down" or "deal with it" when mental health concerns arose. In particular, participants noted feeling failed by management as there was an expectation that frontline nurses and RTs would be able to manage on their own. Through engaging in the AMPS-HCP

intervention, participants found they were allowed the space and validation to be "human beings" again and begin receiving the mental help they might not have found otherwise.

Theme 2: Usability

Participants expressed an openness and acceptability to engaging in the online group format of the intervention. They found the option of attending from home convenient as it allowed more flexibility within their work and home schedules and meant there was no time needing to be allocated toward travel. Participants also noted the online format increased their sense of comfort as they had more control over their environment and could turn off their microphones or cameras for increased privacy. When discussing the group format, many of the participants commented on the validation they were able to receive through knowing "*I wasn't the only one*" (P7) and the common verbalization aided them in "*analyzing and thinking things through*" (P5). One participant noted concerns about confidentiality as they had worked with some of the other participants, but expressed that this concern was not strong enough to impede their participation in the intervention.

Theme 3: Feasibility

Overall, feasibility did not arise as a significant issue for participants as most were able to attend most or all of the offered group sessions and found the online delivery accessible and convenient. The primary barrier participants referenced in attending the group was scheduling time around shift work (i.e., irregularity and inflexibility) which meant that some participants had to miss a session or two. In addition, some participants found the time the intervention was offered (5 pm) interfered with aspects of their personal or family lives, requiring them to make alternate arrangements for childcare or meal routines. Participants also noted that receiving information about the intervention (i.e., handouts or updates) via email was challenging given the number of emails they received every day during the pandemic.

Theme 4: Helpful Components

Participants also expressed that there were specific components of the AMPS-HCP intervention that were most helpful including: (1) permission to begin expressing the emotions they felt as a result of the pandemic; (2) a safe space to engage and unpack; (3) encouragement to begin to explore painful and distressing memories and emotions which they had otherwise tried to suppress; (4) a focus on application of the learned skills vs. straight psychoeducational content; and (5) the diversity of the facilitators which facilitate different styles and insights around session topics.

Theme 5: Outcomes

Participants generally found that participation in the group was beneficial to their mental health and in providing insight into further areas they want to work on. The participants commented on how the group helped them to gain awareness of the difficulties they were experiencing and to also gain the tools and resources to cope with these difficulties. In particular, participants found that realigning themselves with their values was highly beneficial. Several participants commented how they are more likely to seek out therapy in the future after participating in this group, as there are still things that they believe would be helpful for them to work through.

Fidelity

A review of the fidelity checklist and debrief notes showed the facilitators were able to largely follow the standardized manual sessions per week (6 out of 7 weeks; 85% fidelity). However, the facilitators noted greater ability to maintain fidelity to the ACT content and exercises than the MI content and exercises. The facilitators noted that engaging in MI exercises required iterative adaptations both within and between sessions to effectively reflect the group process and honor the lived experiences of participants in the group. For example, 1 week's content shifted from reconciliation/forgiveness work to honoring values, coping amid current struggles and unknowns, taking inventory of losses and betrayals, and finding ways to accept difficult feelings. Other minor changes to the standardized manual included moving some of the psychoeducational content into the handouts rather than in the session content to allow for more time for the exercises and group discussions, the addition of more images, and the streamlining of metaphors throughout the manual so that these could be built upon each week. A full analysis of the facilitators' perspective will be forthcoming.

Evaluation of Participant Outcome Measures

This study was not designed to test or ascertain the efficacy of the interventions, and non-parametric testing was limited because of the extremely small sample size. Self-reported questionnaires used were statistically insignificant with the exception of the DASS-21 (stress) subscale ($p < 0.05$) (**Table 3**). However, trends toward significant were found for the DASS-21(total), DASS-21 (depression), the DERS-18 (emotional regulation), and the AAQ (cognitive flexibility). Additionally, while statistically insignificant, participants did (as an aggregate) have a 10 point decrease on the MIOS, indicating a potential reduction of MI symptoms.

DISCUSSION

The AMPS-HCP intervention is one of the first of its kind to explore the feasibility and acceptability of addressing MI using either a group or online format. These results are noteworthy given the overall lack of MI treatments, and that those currently being proposed predominately require one-to-one psychotherapy. Moreover, this is the first MI intervention to be developed exclusively for HCPs (nurses and RTs). While our results are preliminary, they showed that the AMPS-HCP was highly tolerated and meaningful, and participants perceived personal benefit to their mental health. Participants found the use of both the group and online format to be acceptable to them, and in some cases, perceived it as being more beneficial than if they had done it through in person one-on-one therapy. The need for novel evidence-based treatments cannot be overstated (51, 52) given the World Health Organization (1) statement that the

Failed by Management/System

"The management does not listen. I don't feel cared for by management. We are told that this is what we signed up for and that we are to just deal with it. They are paying us and we should do a job. Death is a part of nursing. Yeah, I understand that but this feels very different. 19 deaths in 3 weeks. In a palliative unit things don't go that way. All my coworkers felt pressure." (P2)

"Otherwise you're just always on the shove it down, suck it up, be more resilient, keep going, you can't break down, you gotta go to work." (P7)

"There's a lot of times where we have to do things where we have no choice of where it comes from way above our heads and it's like you have to do this but we know it's not right. I think moral injury needs to be out there more and talked about and needs to be part of mental health training and everything like that...this should be a continuing thing that's offered, especially in the healthcare profession." (P7)

Not Robots

"Yeah, we give so much of ourselves as health care workers, whether respiratory therapists or nurses. We know that our job is to just show up and do, we can just not do our jobs. But, at the same time we also are not robots. We are human beings and we have feelings and experiences." (P6)

"We are always the helpers and now we need help. A lot of the doctors I hope that they are getting help. I don't know what they have, but the experience broke a lot of people." (P2)

Accessible and Convenient

"I feel like it made it more accessible. It was like Ok I just have to block off one hour of time. I did not have to plan to drive to wherever the meeting is. That was kinda nice. Ok I am at my house, I have an internet connection. I just have to turn my computer on. So probably it made it easier in a way. Probably, if I had the option between the two now I would probably go online again for that factor." (P4)

"I liked that at the end of the calls you're online and you're already at your house...You can just be at home and you can cry by yourself if you need to...That was a convenience thing more than anything, but also almost a safe thing. It made it feel a little more comfortable and a little more safe...And a lot of times when they were reading the poems I would turn off my camera and I would sit kind of like this just listening to it, just trying to get myself into the headspace of actually being able to be in the poem and I think if it was in-person I would maybe feel too self-conscious to do that." (P3)

Group: Needing To Do It Together

"Whatever came out of everyone's mouth was exactly what I was thinking. Working on the unit was difficult. The things they said were difficult. Management did not take it seriously, they told us what staff signed up for. Like, this is normal. Just get through it. It is nice to see others that feel the same. We are all different areas and not the same hospital. It was nice to be validated. We have had none of that for a year and a half." (P2)

"I think the group really helped me because it helped validate my own emotions and feelings and know that I wasn't the only one feeling that way" (P7).

Shift Work

"My schedule is absolutely bonkers. I never have the same day off in a week. It's not regular in that way. It's days, nights, I flip all over the place… The main barrier is scheduling. That's the big one." (P3)

"Work schedules are always the hardest part." (P1)

Timing

"I struggled with childcare a little bit because of my husband's work schedule. Once I told my mother-in-law what I was doing, she made an effort to come and watch the kids so that I could do it. The timing was a bit weird because it started at 5pm. That is dinner time. I felt that it was a bit of a challenge. I made it to all of the sessions so that was not insurmountable" (P5).

mental health of HCPs is critical to successfully overcoming the pandemic. As feelings of being inadequately supported, morally compromised and helplessness may contribute to impaired mental health (53) and burnout (54, 55) the call to address MI as a key component of the COVID-19 related mental health crisis is high (56). Given this, the potential significance of AMPS-HCP should not be overlooked.

While COVID-19 has caused a dramatic increase in the use of digital technology to provide mental health treatment, questions remain about the efficacy particularly for serious mental health conditions or vulnerable populations. As there is no literature to date on the use of digital health for MI, ensuring that an online delivery would not be problematic to participants was central to our study. Our results indicate that participants did not find it to be problematic or an impediment to MI treatment, thus supporting a growing body of literature which shows that online means may be useful for a number of serious mental health conditions including psychosis (57), PTSD (58), major depressive disorder (59), and anxiety disorders (60) along with vulnerable populations such as indigenous (61), refugee (62), and trauma-affected populations (63). Our results are similar to Samoocha et al. (64) that online digital health interventions could be empowering and facilitate greater involvement in the therapy.

Group therapy has been shown to be equally effective compared to individual treatment (65). Group therapy has also been noted to bring unique components to the therapeutic process not found in one-on-one. Yalom and Leszcz (66) noted that groups provide healing, bring hope, decrease isolation, and connect people to something larger than their own pain and loneliness. Group therapy has also been noted to be especially effective in addressing shame-based cognitions and emotions (67). Our intervention specifically refrained from encouraging participants to discuss details of specific incidents but on with instances experientially and working on changing relationships to the moral injury stories. By not focusing on details of participants PMIEs, there was considerable comradery,

Permission to Feel

"I feel it gave me the tools to reason out events in my life, identify feelings, or even gave me permission to feel my feelings. Make sense of things, differentiate between what are my thoughts and who I am and what are my values...I feel like I never really had those tools before." (P1)

Digging into the Mental Garbage

"I just found it super helpful in dealing with emotions. I am just not the type of person that sits and thinks about my feelings or sits and thinks about what things were. And I think that a lot of girls from the group, or some of the girls in the group, definitely are, so I think the way they think through things, and then to actually sit and think through my stuff, I don't know that I would do it on my own. To sit and make that time and space where I think..I'm going to sit and deal with my mental garbage. For me, to sit aside that time and think, this is what I need to deal with my mental health." (P5)

Shared Collective Trauma

"I was kind of surprised at how well it worked actually. And I think the reason, in my opinion, that it worked so well is because we all have a shared collective trauma, all of us. We all have been going through something similar. And we didn't talk specifically about which hospitals we worked at or what units we worked on but a lot of people on the call I think worked very closely with COVID patients either like on COVID units, in COVID ICUs or in hospitals that were accepting mass quantities of COVID patients." (P3)

Very Little Doodling

"I would say my favorite thing about this group therapy format in particular is that every week it was very clear that the facilitators had something they wanted to teach and there was very little doodling in that regard. It was like okay let's talk about our weeks, poem, now we're going to teach you stuff, and now we're going to practice those things, and get out a pen and paper because now we're going to do a little activity. It was like every week there was kind of almost a to do list of things that we had to get through and be taught on the actual call which I thought was super super helpful that it was done during the session rather than stuff we had to do as homework and then come back next week with the actual homework done. So I thought that that was really good." (P3)

Diverse Facilitators

"I think that the facilitators did an awesome job of…um…making it a really safe non-judgmental atmosphere. I really appreciated it, um… so we have 4 facilitators. And they were each very different styles and sort of different backgrounds and they all had unique insights, and different, you know, ways of speaking to things that were really helpful. So I definitely appreciated that. And all those years of experience, right, when are you ever going to get a group when you have so many really experienced and really brilliant therapists all in one room, right?" (P5).

Momentum to Continue Therapy

"Oh 100% I am going to be looking for a therapist...It has helped me feel more comfortable to reach out to seek therapy. I didn't think I was going to like it—talking to other people." (P2)

"I could have kept going a little more. I think there's just so much for everybody to work through." (P7)

"But they felt heavy. Like in the other ones we learned other tools, but, I think the last two sessions, um, I think, well they kinda did. The second last session we came back and wrote a story. And then in the last session we wrote a shorter version of it, but I can't remember what it was called. That was helpful but they were quite heavy and I felt it would have been nice to have another session to break some of that down." (P1)

Getting Back to My Values

"...Identifying values was probably one of the biggest things for me that I'll probably always reflect on what my values are and coming back to that…" (P1)

"I feel like I allow myself to feel my...feelings more. Like you know, if there is something sad at work. Or experience grief. I always felt before that it was not my place to feel that grief. And now I allow myself to feel that. If it is a sad situation, I am ok to feel sad even if it's a person I don't know. (I) definitely feel that I can allow myself to feel my feelings, happy, sad or whichever. Take time to reflect on them a little bit and instead of just, you know, brushing them off, or I used to find that I would keep myself busy and ignore all my feelings." (P1)

"I still dread going to work some days, but I'm not absolutely miserable and anxiety ridden and full of fear and angst. I feel more calm in myself" (P7).

solidarity, and shared humanity in the suffering despite disparate settings, roles, and professions.

While group therapy has theoretically been suggested for MI because of these specific therapeutic components, little research has been done to validate its use. Our results suggest that group therapy may be a highly effective modality to use for MI. The use of an online format did not impact the ability to offer a group intervention. During COVID-19, particular focus has been given to the potential impact of video conferencing on the therapeutic process; indeed, video conferences in times of COVID-19 seem to be accepted and perceived as helpful by patients and providers (68). Dehkordi et al. (69) developed online Balint groups for healthcare professionals working on the frontlines of COVID-19 and found statistically significant decreases in anxiety and increases resilience scores in participants. These results highlight the growing evidence to support the use of online group therapy including for MI both during and potentially after COVID-19 (70, 71).

This study also provides useful information regarding MI and HCPs. Initially the researchers wondered if participants would relate to the concept of MI given the previous focus on moral distress especially within nursing literature (72). Participants quickly identified with the concept of MI as cycles of problematic thinking (e.g., avoidance of thoughts); emotions (e.g., judgement of or escape from emotions like anger, worry, hurt, sadness) and behaviors (e.g., disconnecting from relationships, reducing self-care). While participants identified with MI, it is important to note that they identified less with perpetration-based MI (self or others) and more with betrayal-based MI (73). Betrayal-based PMIEs included institutional neglect/dismissal, healthcare leadership dismissal of psychological harm, conflicting health policies, resource disparities resulting in a suboptimal care,

"COVID denial," non-compliance with masks/social distancing, personal exposure to COVID-19 (with long term effects), bearing the brunt of familial or society anger, resent or hostility; and witnessing painful deaths without the ability to comfort. As such, guilt and shame did not figure as prominently in this group as sadness, resentment, and hurt. This is interesting given the predominate focus on guilt and shame as the primary emotions tied to MI (74). Understanding the role of moral emotions more broadly may support a more comprehensive understanding about MI (28).

Key learnings were also gleaned regarding topics for the treatment of MI in HCPs. Ambiguous loss and disenfranchised grief were important concepts. Studies are currently lacking regarding the potential interplay or overlap of grief and MI; though some MI researchers have highlighted the potential grief elements of MI (75). Interestingly, the concept of forgiveness was not addressed as it seemed like it would be premature for some, and not a central issue for others; however, the struggles related to acceptance and self-compassion of moral pain were meaningful (29, 42). This may be an important distinction in treatment between preparation-based and betrayal-based MI. Additionally, it was clear that participants needed tangible practices and skills to be able to integrate, process and move through their moral pain. For example, the Matrix (76) helped to organize discussion, capture painful experiences, clarify values, and support participants in "toward" vs. "away" behavioral moves. Additionally, the use of storytelling, lament, expressive writing and poetry was also noted by participants to be particularly meaningful. The use of such mediums has been noted elsewhere as being potentially fruitful in the healing of MI and PTSD (36, 77). These results point to the importance of moving away from a strictly cognitive-based approach for treating MI and instead use language, metaphor, story, imagery, and spiritual practices to move people into their moral wounds (78, 79). Conversations around MI involve some of the most difficult and unanswerable spiritual and existential questions and require a very different approach than what is seen in traditional trauma therapy.

Further works is therefore warranted for AMPS-HCP. This should include a mixed-methods multisite randomized waitlist-controlled pilot study focused on exploring the efficacy of AMPS-HCP. In particular, it may be helpful to randomize severely affected COVID-19 healthcare sites as this would allow for greater comparability and assist in recruiting a statistically powered sample size of RNs, licensed practical nurses and RTs to further investigate the merit of AMPS-HCP as an evidence-based intervention. Given the larger sample size specific attention would be given to GBA + considerations (e.g., gender, ethnicity, minority status). Additionally, if the results from a AMPS-HCP pilot study were positive, care will be taken to explore implementation science processes to support scale and spread of the intervention.

Limitations

There were several limitations of the current study that should be taken into consideration when interpreting the findings. First, the sample size is extremely small, and therefore generalizability is low. Second, participants were also recruited via convenience and snowball sampling and were therefore self-selected. This self-selection could mean that participants who were part of the sample were those who most identify with being morally injured because of COVID-19 or who were open to receiving treatment and support. The sample was also largely homogeneous with participants representing registered nurses, registered practical nurses, and RTs respiratory therapists. Additionally, all participants identified as female challenging the research team's ability to explore inclusion, diversity and equity principles; this should be addressed in future randomized control trials. Fourth, the sample size was not powered nor large enough to determine intervention effect, nor were the found effects explored longitudinally to determine sustainability. Fifth, as some participants were not able to attend all intervention sessions and did not complete all of the standardized outcomes measures this may have influenced the quantitative results. Sixth, it has been widely acknowledged in the literature that standardized questionnaires for MI are poor, and may be lacking in reliability, validity, and sensitivity (80). The MIOS was selected as the best questionnaire at the time of study construction particularly because it is not military-centric, however, caution should be warranted regarding if this questionnaire fully captured the causes, symptoms and harm caused by MI in HCPs. As this area of research is rapidly developing, there may exist other outcome measures for MI that may be appropriate for this population and exhibit improved reliability, validity, sensitivity, and temporal stability. Seventh given the conceptual challenges associated with MI, it is possible that data collection may not have fully encapsulated the events and processes that subsequently produced the noted harms associated with COVID related-MI. Finally, it is possible that participants were grateful to the researchers for receiving support and treatment, and therefore did not wish to express negative opinions regarding the intervention which will need to be countered (e.g., having greater separation between the facilitators of AMPS-HCP and the research team).

CONCLUSION

This study is the first to report on the development and evaluation of an online MI group intervention for registered nurses, registered practical nurses, and RTs working during COVID-19. Results from this study showed the use of both the online and group components of the intervention were acceptable and feasible during the third wave of COVID-19. Moreover, participants identified strongly with the concept of MI and expressed the benefit and need for ongoing support to process the morally injurious experiences they had been exposed to in their work. As COVID-19 continues, there is an urgency to provide evidence-informed MI interventions which are tailored to address the unique needs of healthcare providers (HCPs) and the realities of COVID-19. Building on this feasibility and acceptability study, future research to explore and test AMPS-HCP seems warranted. Without this, healthcare systems risk that their most precious resource–their highly trained staff–will succumb to occupational injuries, mental illnesses, MI, or burnout. Fundamentally, when essential HCPs are doing well and

are able to maintain health, safety, and security, all Canadians stand to benefit.

DATA AVAILABILITY STATEMENT

The data are not publicly available due to their containing information that could compromise the privacy of research participants. Requests to access the datasets should be directed to smithmac@ualberta.ca.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Alberta, Research Ethics Board, Pro00106350. The participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

LS-M, JL, DL-B, and SB-P all equally participated in the conceptualization, development, delivery of the AMPS-HCP intervention, and also engaged in the original and final manuscript write-up. KB, AL, MV, SS, EC, AP, and CJ were involved in the data collection and analysis components of the research project and contributed to the writing and editing of the final manuscript. All authors agreed upon the authors order and attest to their involvement in the research project.

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REFERENCES

1. World Health Organization. *Mental Health and Psychosocial Considerations During the COVID-19 Outbreak.* (2020). Available online at: https://www.who.int/docs/default-source/coronaviruse/mental-health-considerations.pdf
2. Hennein R, Lowe S. A hybrid inductive-abductive analysis of health workers' experiences and wellbeing during the COVID-19 pandemic in the United States. *PLoS ONE.* (2020) 15:e0240646. doi: 10.1371/journal.pone.0240646
3. Shreffler J, Petrey J, Huecker M. The impact of COVID-19 on healthcare worker wellness: a scoping review. *West J Emerg Med.* (2020) 21:1059–66. doi: 10.5811/westjem.2020.7.48684
4. Bagcchi S. Stigma during the COVID-19 pandemic. *Lancet Infect Dis.* (2020) 20:782. doi: 10.1016/S1473-3099(20)30498-9
5. World Health Organization. *A Guide to Preventing and Addressing Social Stigma Associated With COVID-19.* World Health Organization (2020). Available online at: https://www. who. int/publications/m/item/a-guide-to-preventing-and-addressing-social-stigma-associated-with-covid-19
6. Masiero M, Mazzocco K, Harnois C, Cropley M, Pravettoni G. From individual to social trauma: sources of everyday trauma in Italy, the US and UK during the Covid-19 pandemic. *J Trauma Dissoc.* (2020) 21:513–9. doi: 10.1080/15299732.2020.1787296
7. Rabow MW, Huang CHS, White-Hammond GE, Tucker RO. Witnesses and victims both: healthcare workers and grief in the time of COVID-19. *J Pain Sympt Manage.* (2021) 62:647–56. doi: 10.1016/j.jpainsymman.2021.01.139
8. Kumar A, Nayar KR. COVID 19 and its mental health consequences. *J Ment Health.* (2021) 30:1–2. doi: 10.1080/09638237.2020.1757052
9. Litam SDA, Balkin RS. Moral injury in health-care workers during COVID-19 pandemic. *Traumatology.* (2021) 27:14–9. doi: 10.1037/trm0000290
10. Maunder RG, Lancee WJ, Rourke S, Hunter JJ, Goldbloom D, Balderson K, et al. Factors associated with the psychological impact of severe acute respiratory syndrome on nurses and other hospital workers in Toronto. *Psychosom Med.* (2004) 66:938–42. doi: 10.1097/01.psy.0000145673.84698.18
11. Nickell LA, Crighton EJ, Tracy CS, Al-Enazy H, Bolaji Y, Hanjrah S, et al. Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. *CMAJ.* (2004) 170:793–8. doi: 10.1503/cmaj.1031077
12. Tam CW, Pang EP, Lam LC, Chiu HF. Severe acute respiratory syndrome (SARS) in Hong Kong in 2003: stress and psychological impact among frontline healthcare workers. *Psychol Med.* (2004) 34:1197–204. doi: 10.1017/S0033291704002247
13. Maunder RG, Lancee WJ, Balderson KE, Bennett JP, Borgundvaag B, Evans S, et al. Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. *Emerg Infect Dis.* (2006) 12:1924–32 doi: 10.3201/eid1212.060584
14. Jinkerson JD. Defining and assessing moral injury: a syndrome perspective. *Traumatology.* (2016) 22:122–30. doi: 10.1037/trm0000069
15. Williamson V, Murphy D, Greenberg N. COVID-19 and experiences of moral injury in front-line key workers. *Occup Med.* (2020) 70:317–9. doi: 10.1093/occmed/kqaa052
16. Nash W. *Because We Care–Risk for Moral Injury During the Covid-19 Pandemic.* (2020). Available online at: https://deploymentpsych.org/blog/guest-perspective-because-we-care-risk-moral-injury-during-covid-19-pandemic
17. O'Neal L, Heisler M, Mishori R, Haar RJ. Protecting providers and patients: results of an Internet survey of health care workers' risk perceptions and ethical concerns during the COVID-19 pandemic. *Int J Emerg Med.* (2021) 14:18. doi: 10.1186/s12245-021-00341-0
18. Kherbache A, Mertens E, Denier Y. Moral distress in medicine: an ethical analysis. *J Health Psychol.* (2021) 2:13591053211014586. doi: 10.1177/13591053211014586
19. Kreh A, Brancaleoni R, Magalini SC, Chieffo DPR, Flad B, Ellebrecht N, et al. Ethical and psychosocial considerations for hospital personnel in the Covid-19 crisis: moral injury and resilience. *PLoS ONE.* (2021) 16:e0249609. doi: 10.1371/journal.pone.0249609
20. Silverman HJ, Kheirbek RE, Moscou-Jackson G, Day J. Moral distress in nurses caring for patients with Covid-19. *Nurs Ethics.* (2021) 28:1137–64. doi: 10.1177/09697330211003217
21. Hall NA, Everson AT, Billingsley MR, Miller MB. Moral injury, mental health, and behavioral health outcomes: a systematic review of the literature. *Clin Psychol Psychother.* (2021). doi: 10.1002/cpp.2607
22. Wang Z, Harold KG, Tong Y, Wen J, Sui M, Liu H, et al. Moral injury in Chinese health professionals during the COVID-19 pandemic. *Psychol Trauma.* (2021). doi: 10.1037/tra0001026. [Epub ahead of print].
23. Plouffe RA, Nazarov A, Forchuk CA, Gargala D, Deda E, Le T, et al. Impacts of morally distressing experiences on the mental health of canadian health care workers during the COVID-19 pandemic. *medRxiv.* 12:1–12. doi: 10.1080/20008198.2021.1984667
24. Sriharan A, West KJ, Almost J, Hamza A. COVID-19-related occupational burnout and moral distress among nurses: a rapid scoping review. *Nurs Leaders.* (2021) 34:7–19. doi: 10.12927/cjnl.2021.26459
25. Klassen BJ, Brennan MB, Held P. Clinician issues in treating moral injury. In: Currier JM. Drescher KD, Nieuwsma J, editors. *Addressing Moral Injury in Clinical Practice.* Washington, DC: American Psychological Association (2021). p. 105–22. doi: 10.1037/0000204-007
26. Williamson V, Murphy D, Stevelink SAM, Allen S, Jones E, Greenberg N. Delivering treatment to morally injured UK military personnel and veterans: the clinician experience. *Milit Psychol.* (2021) 33:115–23. doi: 10.1080/08995605.2021.1897495

27. Drescher KD, Currier JM, Nieuwsma JA, McCormick W, Carroll TD, Sims BM, et al. A qualitative examination of VA chaplains' understandings and interventions related to moral injury in military veterans. *J Religion Health.* (2018) 57:2444–60. doi: 10.1007/s10943-018-0682-3
28. Farnsworth JK, Drescher KD, Evans W, Walser RD. A functional approach to understanding and treating military-related moral injury. *J Context Behav Sci.* (2017) 6:391–7. doi: 10.1016/j.jcbs.2017.07.003
29. Forkus SR, Breines JG, Weiss NH. Morally injurious experiences and mental health: the moderating role of self-compassion. *Psychol Trauma.* (2019) 11:630. doi: 10.1037/tra0000446
30. Litz BT, Lebowitz L, Gray MJ, Nash WP. *Adaptive Disclosure: A New Treatment for Military Trauma, Loss, Moral Injury.* New York: Guilford Publications (2017).
31. Worthington EL Jr, Langberg D. Religious considerations and self-forgiveness in treating complex trauma and moral injury in present and former soldiers. *J Psychol Theol.* (2012) 40:274–88. doi: 10.1177/009164711204000403
32. Harris JI, Erbes CR, Engdahl BE, Thuras P, Murray-Swank N, Grace D, et al. The effectiveness of a trauma focused spiritually integrated intervention for veterans exposed to trauma. *J Clin Psychol.* (2011) 67:425–38. doi: 10.1002/jclp.20777
33. Maguen S, Burkman K, Madden E, Dinh J, Bosch J, Keyser, et al. Neylan TC. Impact of killing in war: a randomized, controlled pilot trial. *J Clin Psychol.* (2017) 73:997–1012. doi: 10.1002/jclp.22471
34. Barrera TL, Mott JM, Hofstein RF, Teng EJ. A meta-analytic review of exposure in group cognitive behavioral therapy for posttraumatic stress disorder. *Clin Psychol Rev.* (2013) 33:24–32. doi: 10.1016/j.cpr.2012.09.005
35. Sloan DM, Feinstein BA, Gallagher MW, Beck JG, Keane TM. Efficacy of group treatment for posttraumatic stress disorder symptoms: a meta-analysis. *Psychol Trauma.* (2013) 5:176. doi: 10.1037/a0026291
36. Keenan MJ, Lumley VA, Schneider RB. A group therapy approach to treating combat posttraumatic stress disorder: interpersonal reconnection through letter writing. *Psychotherapy.* (2014) 51:546. doi: 10.1037/a0036025
37. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy: The Process and Practice of Mindful Change*. New York: Guilford Press (2011).
38. Hayes SC, Wilson KG. Acceptance and commitment therapy: altering the verbal support for experiential avoidance. *Behav Anal.* (1994) 17:289–303. doi: 10.1007/BF03392677
39. Hayes SC, Strosahl KD, Bunting K, Twohig M, Wilson KG. What is acceptance commitment therapy? In: Hayes SC. Strosahl KD, editors. *A Practical Guide to Acceptance and Commitment Therapy*. Boston, MA: Springer (2004). doi: 10.1007/978-0-387-23369-7_1
40. Hayes SC, Levin ME, Plumb-Vilardaga J, Villatte JL, Pistorello J. Acceptance and commitment therapy and contextual behavioral science: examining the progress of a distinctive model of behavioral and cognitive therapy. *Behav Ther.* (2013) 44:180–98. doi: 10.1016/j.beth.2009.08.002
41. Nieuwsma J, Walser R, Farnsworth J, Drescher D, Meador K, Nash W. Possibilities within acceptance and commitment therapy for approaching moral injury. *Curr Psychiatry Rev.* (2015) 11:193–206. doi: 10.2174/1573400511666150629105234
42. Evans WR, Walser RD, Drescher KD, Farnsworth JK. *The Moral Injury Workbook: Acceptance and Commitment Therapy Skills for Moving Beyond Shame, Anger, and Trauma to Reclaim Your Values.* Oakland, CA: New Harbinger Publications (2020).
43. Borges LM, Barnes SM, Farnsworth JK, Drescher KD, Walser RD. A contextual behavioral approach for responding to moral dilemmas in the age of COVID-19. *J Context Behav Sci.* (2020) 17:95–101. doi: 10.1016/j.jcbs.2020.06.006
44. Borges LM, Barnes SM, Farnsworth JK, Bahraini NH, Brenner LA. A commentary on moral injury among healthcare providers during the Covid-19 pandemic. *Psychol Trauma.* (2020) 12:S138–40. doi: 10.1037/tra0000698
45. Borges LM. A service member's experience of acceptance and commitment therapy for moral injury (AMPS-HCP): "Learning to accept my pain and injury by reconnecting with my values and starting to live a meaningful life. *J Context Behav Sci.* (2019) 13:134–40. doi: 10.1016/j.jcbs.2019.08.002
46. Larsen DL, Attkisson CC, Hargreaves WA, Nguyen TD. Assessment of client/patient satisfaction: development of a general scale. *Evaluat Prog Plan.* (1979) 2:197–207. doi: 10.1016/0149-7189(79)90094-6
47. Hasson-Ohayon I, Roe D, Kravetz S. A qualitative approach to the evaluation of psychosocial interventions for persons with severe mental illness. *Psychol Serv.* (2006) 3:262–73. doi: 10.1037/1541-1559.3.4.262
48. Eldridge SM, Lancaster GA, Campbell MJ, Thabane L, Hopewell S, Coleman CL, et al. Defining feasibility and pilot studies in preparation for randomised controlled trials: development of a conceptual framework. *PLoS ONE.* (2016) 11:e0150205. doi: 10.1371/journal.pone.0150205
49. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* (2006) 3:77–101. doi: 10.1191/1478088706qp063oa
50. Lincoln YS, Guba EG. *Naturalistic Inquiry*. Thousand Oaks, CA: Sage (1985). doi: 10.1016/0147-1767(85)90062-8
51. Taylor WD, Blackford JU. Mental health treatment for front-line clinicians during and after the coronavirus disease 2019 (COVID-19) pandemic: a plea to the medical community. *Ann Inter Med.* (2020) 173:574–575. doi: 10.7326/M20-2440
52. Sandesh R, Shahid W, Dev K, Mandhan N, Shankar P, Shaikh A, et al. Impact of COVID-19 on the mental health of healthcare professionals in Pakistan. *Cureus.* (2020) 12:e8974. doi: 10.7759/cureus.8974
53. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, et al. Mental health care for medical staff in China during the COVID-19 outbreak. *Lancet Psychiatry.* (2020) 7:e15–16. doi: 10.1016/S2215-0366(20)30078-X
54. Li Z, Ge J, Yang M, Feng J, Qiao M, Jiang R, et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain Behav Immun.* (2020) 88:916–9. doi: 10.1016/j.bbi.2020.03.007
55. Ornell F, Schuch JB. "Pandemic fear" and COVID-19: mental health burden and strategies. *Braz J Psychiatry.* (2020) 42:232–5. doi: 10.1590/1516-4446-2020-0008
56. de Vroege L, van den Broek A. Results of mental support for health care professionals and mental care during the COVID-19 pandemic. *J Public Health.* (2021) 43:490–2. doi: 10.1093/pubmed/fdaa278
57. Bucci S, Berry N, Morris R, Berry K, Haddock G, Lewis S, et al. "They are not hard-to-reach clients. We have just got hard-to-reach services." Staff views of digital health tools in specialist mental health services. *Front Psychiatry.* (2019) 10:344. doi: 10.3389/fpsyt.2019.00344
58. Schwartze D, Barkowski S, Strauss B, Knaevelsrud C, Rosendahl J. Efficacy of group psychotherapy for posttraumatic stress disorder: systematic review and meta-analysis of randomized controlled trials. *Psychother Res.* (2019) 29:415–31. doi: 10.1080/10503307.2017.1405168
59. McDermut W, Miller IW, Brown RA. The efficacy of group psychotherapy for depression: a meta-analysis and review of the empirical research. *Clin Psychol-Sci Pract.* (2001) 8:98–116. doi: 10.1093/clipsy.8.1.98
60. Barkowski S, Schwartze D, Strauss B, Burlingame GM, Rosendahl J. Efficacy of group psychotherapy for anxiety disorders: a systematic review and meta-analysis. *Psychother Res.* (2020) 30:965–82. doi: 10.1080/10503307.2020.1729440
61. Hensel JM, Ellard K, Koltek M, Wilson G, Sareen J. Digital health solutions for indigenous mental well-being. *Curr Psychiatry Rep.* (2019) 21:1–9. doi: 10.1007/s11920-019-1056-6
62. Liem A, Natari RB, Jimmy, Hall BJ. Digital health applications in mental health care for immigrants and refugees: a rapid review. *Telemed e-Health.* (2021) 27:3–16. doi: 10.1089/tmj.2020.0012
63. Jones C, Miguel-Cruz A, Smith-MacDonald L, Cruikshank E, Baghoori D, Chohan AK, et al. Virtual trauma-focused therapy for military members, veterans, and public safety personnel with posttraumatic stress injury: systematic scoping review. *JMIR mHealth uHealth.* (2020) 8:e22079. doi: 10.2196/22079
64. Samoocha D, Bruinvels DJ, Elbers NA, Anema JR, van der Beek AJ. Effectiveness of web-based interventions on patient empowerment: a systematic review and meta-analysis. *J Med Internet Res.* (2010) 12:e1286. doi: 10.2196/jmir.1286
65. Burlingame GM, Seebeck JD, Janis RA, Whitcomb KE, Barkowski S, Rosendahl J, et al. Outcome differences between individual and group formats when identical and nonidentical treatments, patients, and doses are compared: a 25-year meta-analytic perspective. *Psychotherapy.* (2016) 53:446–61. doi: 10.1037/pst0000090
66. Yalom ID, Leszcz M. *Theory and Practice of Group Psychotherapy.* 5 ed. New York, NY: Basic Books (2005).

67. Mahoney A, Karatzias T, Hutton P. A systematic review and meta-analysis of group treatments for adults with symptoms associated with complex post-traumatic stress disorder. *J Affect Disord.* (2019) 243:305–21. doi: 10.1016/j.jad.2018.09.059
68. Liu S, Yang L, Zhang C, Xiang YT, Liu Z, Hu S, et al. Online mental health services in China during the COVID-19 outbreak. *Lancet Psychiatry.* (2020) 7:e17–9. doi: 10.1016/S2215-0366(20)30077-8
69. Dehkordi MK, Sakhi S, Gholamzad S, Azizpor M, Shahini M. Online Balint groups in health workers caring for COVID-19 patients in Iran. *Psychiatry Res.* (2020) 290:113034. doi: 10.1016/j.psychres.2020.113034
70. Marmarosh CL, Forsyth DR, Strauss B, Burlingame GM. The psychology of the COVID-19 pandemic: a group-level perspective. *Group Dynam Theory Res Pract.* (2020) 24:122. doi: 10.1037/gdn0000142
71. Weinberg H. Online group psychotherapy: challenges and possibilities during COVID-19 – a practice review. *Group Dynam.* (2020) 24:201–11. doi: 10.1037/gdn0000140
72. Huffman DM, Rittenmeyer L. How professional nurses working in hospital environments experience moral distress: a systematic review. *Crit Care Nurs Clin N Am.* (2012) 24:91–100. doi: 10.1016/j.ccell.2012.01.004
73. Bryan CJ, Bryan AO, Anestis MD, Anestis JC, Green BA, Etienne N, et al. Measuring moral injury: psychometric properties of the moral injury events scale in two military samples. *Assessment.* (2016) 23:557–70. doi: 10.1177/1073191115590855
74. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
75. Ramsay NJ. Moral injury as loss and grief with attention to ritual resources for care. *Pastoral Psychol.* (2019) 68:107–25. doi: 10.1007/s11089-018-0854-9
76. Wilson KG. *The ACT Matrix: A New Approach to Building Psychological Flexibility Across Settings and Populations*. New Harbinger Publications (2014).
77. Fawson S. Sustaining lamentation for military moral injury: witness poetry that bears the traces of extremity. *Pastoral Psychol.* (2019) 68:31–40. doi: 10.1007/s11089-018-0855-8
78. Liebert EA. Accessible spiritual practices to aid in recovery from moral injury. *Pastoral Psychol.* (2019) 68:41–57. doi: 10.1007/s11089-018-0825-1
79. Wortmann JH, Eisen E, Hundert C, Jordan AH, Smith MW, Nash WP, et al. Spiritual features of war-related moral injury: a primer for clinicians. *Spirit Clin Pract.* (2017) 4:249–61. doi: 10.1037/scp0000140
80. Litz BT, Kerig PK. Introduction to the special issue on moral injury: conceptual challenges, methodological issues, clinical applications. *J Traumat Stress.* (2019) 32:341–9. doi: 10.1002/jts.22405

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Research Gaps and Recommendations to Guide Research on Assessment, Prevention, and Treatment of Moral Injury Among Healthcare Workers

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Healthcare workers face numerous occupational stressors, including some that may challenge personal and shared morals and values. This is particularly true during disasters and crises such as the COVID-19 pandemic, which require critical decisions to be made with little time and information often under personal distress and situational constraints. Consequently, healthcare workers are at risk for moral injuries characterized by stress-related and functional impacts. Although research on the evaluation and treatment of moral injury among military veterans burgeoned in the recent decade, addressing moral injury in healthcare workers and other civilians remains an important gap. In this perspective piece, we identify research gaps and make recommendations to advance future work on assessment, prevention, and treatment of moral injury in healthcare workers. We draw on empirical studies of moral injury in veterans, limited studies of moral injury in health professionals, and our clinical experiences with healthcare workers affected by moral injury.

Keywords: moral injury, healthcare workers, mental health, prevention, assessment, treatment

INTRODUCTION

Healthcare workers (HCWs) face numerous occupational stressors. This is especially true during disasters and crises such as the COVID-19 pandemic, which require critical decisions to be made with little time and information often under personal distress and situational constraints. In doing so, HCWs may transgress their moral beliefs or expectations by what they did or failed to do, even when their behavior is consistent with recommended standards of care. For example, HCWs might perceive considerable suffering to be the result of their actions when restricting access to testing or treatment resources due to lack of supply or denying visitors to patients or care facility residents who are dying of complications related to COVID-19. They may consequently sustain a moral injury, defined as psychological, behavioral, social, and religious/spiritual problems stemming from perceived transgression of internalized moral beliefs rooted in cultural, organizational, and group-based ethical norms (1).

Studies of moral injury proliferated during the recent decade, most of which focused on military personnel and veterans exposed to potentially morally injurious events (PMIEs) in the context of combat (e.g., killing in war) (2). Our research demonstrates that post-9/11 veterans exposed to a PMIE are at risk of experiencing mental health problems, functional impairment, and suicide, particularly the 20% who report transgressing their own moral values (3, 4). Critically, HCWs' experiences of the COVID-19 pandemic illuminated the nascent construct of moral injury, uncovering a considerable gap in our understanding of moral injury among non-military populations. We identify research gaps and make eight recommendations below to advance future work on assessment, prevention, and treatment of moral injury in healthcare workers. We draw on empirical studies of moral injury in veterans, limited studies of moral injury in HCWs, and our clinical experiences with HCWs affected by moral injury.

MORE RESEARCH IS NEEDED TO EXAMINE THE UNIQUE IMPACTS OF MORAL INJURY AND RISK AND PROTECTIVE FACTORS AMONG HCWs

Several studies demonstrate that moral injury is both potentially prevalent and associated with increased distress and decreased functioning in HCWs (5–8). Norman et al. (6) found that 53–88% of healthcare workers endorsed moral distress due to family-related (e.g., worry about the effect of COVID-19 on one's ability to care for dependents), infection-related (e.g., worry about infecting patients with COVID-19), and work-related concerns (e.g., worry about having to make difficult decisions that prioritize the health of one patient over another). Moreover, moral distress was associated with COVID-19-related posttraumatic stress disorder (PTSD) symptoms, burnout, and impaired occupational and relationship functioning. Importantly, in a longitudinal study, exposure to PMIEs was associated with suicidal ideation among some HCWs (7).

When examined over time, moral distress may linger, while other mental health symptoms dissipate. In a longitudinal study, rates of mental health symptoms declined over several months while rates of moral injury remained stable (8). Given preliminary indications of a unique trajectory that may be different from other mental health symptoms, more research is needed to distinguish the unique impact of moral injury from general mental health outcomes in HCWs. Related, it will be important to examine how moral injury is associated with functioning, given the relationship between moral injury and functioning in veterans (3); specifically, those who reported transgressions against their own morals showed trajectories that were characterized by poor or declining functioning in several domains (e.g., work and relationship functioning) (9). Similarly, Borges et al. (5) found an association between exposure to PMIEs and poorer self-reported psychosocial functioning among HCWs. If moral injury symptoms are impeding HCWs from performing optimally at work, this can lead to additional moral distress (e.g., through poor decision making due to stretched cognitive resources) and ultimately to decreased job satisfaction and burnout. If moral injury symptoms are creating strained relationships, this may lead to greater challenges at home and thus remove sources of support that could mitigate further moral injury symptoms.

An important caveat is that HCWs are a heterogenous group, and experiences with moral injury will likely vary across different individual, occupational, organizational, and cultural groups. Williamson, Murphy, and Greenberg (10) identify attributes of HCWs who may be at greater risk of moral injury including those who are exposed to death and dying as part of their job, work with vulnerable individuals (e.g., children), perceive leadership to be unsupportive, feel unprepared for the emotional/psychological consequences of decisions (e.g., less experienced providers), and those who have a history of exposure to trauma and violence. Risk beyond the individual level may extend to subgroups including medical trainees and early career providers who are likely to witness medical errors but who may be overlooked as participants in ensuring patient safety (11). Finally, given that HCWs are a resilient group, it will also be important to understand individual protective factors that mitigate against the development of moral injury-related distress.

BETTER MEASURES OF MORAL INJURY ARE REQUIRED TO INFORM CARE AND RESEARCH

One of the biggest barriers in being able to address moral injury among HCWs is the absence of culturally appropriate, valid, and reliable measures of moral injury. Currently, the majority of moral injury measures focus on military-related moral injury, most commonly in the context of war or deployments. Additionally, within these existing measures, a few conflate exposure to PMIEs and associated moral injury symptoms (2, 12). Typically current moral injury measures capture one or the other; for some of those measuring moral injury symptoms, these symptoms are not always reliably indexed to a PMIE (but rather vaguely ask about experiences), creating room for measurement error and the likelihood of capturing overall distress rather than the symptoms of moral injury in particular. What is needed is a measure that is validated with HCWs, indexed to PMIEs specifically, and includes a variety of moral injury symptoms that manifest as a result of these exposures, including the hallmark symptoms of moral injury (e.g., guilt, disgust, inability to self-forgive, self-sabotaging behaviors). Additionally, because moral injury symptoms have been found to potentially linger, a moral injury measure that is sensitive enough to assess changes over time would help illuminate trajectories of moral injury at various phases of recovery (12).

EXTENSION OF MORAL INJURY TO HCWs REQUIRES A MIXED METHODS APPROACH

While some preliminary efforts to assess and treat moral injury have involved adapting tools developed for veterans

to HCWs as a first step, we recommend a ground-up, mixed methods approach to more deeply and comprehensively understand the impact of moral injury on HCWs both during and outside of pandemics. To that end, few mixed methods studies have been published to date that focused on HCWs' experiences of moral injury. Hand in hand with measuring rates of moral injury, striving to better characterize moral injury in the voices of HCWs is a critical next step. While nomothetic studies indicate that HCWs experience moral distress, we lack a more nuanced understanding of the origins, exacerbating factors, and specific impacts. A need exists for mixed methods idiographic work to understand the unique subjective experiences of HCWs who sustain a moral injury, dynamics between frontline workers and administrators/policy makers that may contribute to moral injury, HCWs' preferences for healing, and critical aspects related to delivery of moral injury care. Notable studies from the military-related moral injury literature that may be useful guides survey veterans' reactions to killing in war (13) and providers' experiences of delivering treatment for moral injury (14).

CONSTRUCT VALIDITY IS AN ESSENTIAL PART OF ESTABLISHING CONCEPTUAL CLARITY OF MORAL INJURY AMONG HCWs

Within the literature on military service members and veterans who are often exposed to multiple and complex highly stressful events, scholars prioritized differentiation of moral injury from posttraumatic stress disorder (PTSD). Whereas PTSD is associated with exposure to events that threaten one's physical integrity and characterized by maladaptive biological and behavioral fear responses (e.g., exaggerated startle), a growing consensus suggests that moral injury is associated with exposure to events that transgress one's core beliefs and is expressed in self-deprecating, self-directed cognitions, emotions, and behaviors (e.g., guilt, powerlessness, disgust, demoralization, self-sabotaging behaviors) (1, 15). As the literature on moral injury extends to non-military populations, gaining conceptual clarity about the construct of moral injury is important to understand how it is similar and different from other related constructs. For example, burnout, conceptually different than moral injury, is a syndrome of poor work engagement characterized by emotional exhaustion, depersonalization, and lack of personal accomplishment (16). A number of editorials (17) and few pioneering empirical studies (18) have already been published connecting moral injury and burnout; however, empirical studies that investigate areas of distinction (and overlap) are needed. When moral injury co-occurs with other clinical syndromes in a given population, innovative methodologies such as networking analyses can help elucidate the complex relationships between moral and psychological distress (19).

THERE IS A NEED TO DEVELOP AND TEST CULTURALLY APPROPRIATE MORAL INJURY INTERVENTIONS FOR HCWs

Of HCWs that experience some mental health symptoms and signs of moral injury, most will heal on their own and through the support of friends, family and coworkers. In fact, a rapid review of the research in HCWs during pandemics found that systems-level interventions, rather than individual ones, may alleviate distress for most providers without the need for specialized mental health intervention (20). Additionally, the authors recommend a stepped-care mental health response that includes "proactive health care leadership, psychotherapeutic intervention, and referral to specialized care" to most effectively allocate resources and care to those in need. They also highlight that for those that need specialized care, it is important to commit resources to develop and test evidence-based mental healthcare for HCWs following pandemics. Unfortunately to our knowledge, evidence-based psychotherapies (EBPs) addressing moral injury for HCWs do not yet exist, although there are some studies with veterans that may shed light on which types of treatments may be most helpful.

There are now several psychotherapeutic interventions for veterans with moral injury that have preliminary support and are undergoing more rigorous testing through randomized controlled trials (RCTs). These include Adaptive Disclosure (AD) (21), Impact of Killing (IOK) (22), Trauma-Informed Guilt Reduction Therapy (TrIGR) (23), Acceptance and Commitment Therapy for Moral Injury (ACT-MI) (24), Building Spiritual Strength (BSS) (25), and the Mental Health Clinician and Community Clergy Collaboration (MC3) (26). There is also some evidence that certain PTSD treatments can help with moral injury symptoms (e.g., Cognitive Processing Therapy) (27). Many of these moral injury treatments directly deal with the hallmark symptoms of moral injury, such as decreasing guilt and/or shame, and increasing self-compassion and self-forgiveness. While these treatments have all demonstrated promise with veteran and/or military populations, most have been specifically crafted to deal with moral injury related to war. Although there may be some similarities in issues that are faced by frontline HCWs during a pandemic and veterans at war, the situations that frontline HCWs experience are unique and require study and attention. Notably, as stated above, ground-up, mixed methods studies are needed to identify the ways in which HCWs are most impacted and want to be helped. For example, when it comes to treatment, it is critical to better understand needs and preferences of HCWs rather than adapt existing treatments to HCWs.

In one qualitative study of HCWs, the following suggestions were made about how to help remedy moral injury, including: (1) providing counseling or other emotional support; (2) offering peer support (whether formal or informal); (3) educational and ethical support; (4) wellness offerings; and (5) spiritual or faith-based support (28). To date, there have been some treatments that have been created to target moral injury among HCWs and have shown preliminary acceptability and feasibility. For example, an Acceptance and Commitment Therapy based online group

intervention for moral injury has shown some promise (29), but has not yet been tested in a RCT. Although other preliminary treatments are in development, research published thus far is more descriptive. There are also a few online e-packages that have been developed that offer a combination of psychoeducation and self-help, but none have been formally tested yet.

A NEED EXISTS TO ADDRESS ACCESS AND BARRIERS TO MORAL INJURY CARE

Notwithstanding the pioneering work of those developing, testing, and disseminating treatments for moral injury with veterans, the existing treatments have notable limitations. Chief among these limitations is that all are delivered in specialty mental health clinics by licensed independent providers and/or chaplains and require eight to twelve 60- to 90-min sessions. The existing treatments are therefore susceptible to known access barriers and would require substantial resource investment to scale beyond specialty mental health settings (30). An opportunity exists to develop higher reach, less intensive interventions to address moral injury and its sequelae for busy HCWs and within the broader community. This could include strategies that implore innovative modalities of delivering care such as web-based, self-management tools that involve synchronous digital interactions between patients and eHealth applications, as well as peer responder interventions that could leverage the infrastructure and relational capital that already exist within healthcare organizations. These modalities may also reduce stigma about seeking mental healthcare among HCWs, which is a known and consistent barrier. Additional work is also needed to explore the association between moral injury symptoms and healthcare utilization, help-seeking, etc.

THE ROLE OF ORGANIZATIONS AND LEADERSHIP IN PREVENTION AND HEALING OF MORAL INJURY IS CRITICAL

In addition to studying individual factors associated with moral injury, it will be critical to include organizational factors that may exacerbate or mitigate moral injury, given that HCWs function within teams and systems of care within complex organizational structures. Among veterans, Currier et al. (31) observed that organizational (e.g., perceiving leadership to be out of touch), environmental (e.g., need for rapid decision-making), and cultural/relational circumstances (e.g., dehumanization toward consumers) all contribute to a climate in which moral injury is more likely to occur. Consequently, healthcare organizations can support HCWs and mitigate the impact of moral injury by planning for prevention at the primary (e.g., dissemination of information about moral injury, encouraging seeking informal support, proactive check-ins by leadership), secondary (reducing stigma and training staff to identify moral injury signs in peers) and tertiary levels (accessible, confidential, and rapid availability of mental health services) (10, 32).

Existing studies of HCWs consistently find that leadership support is a protective factor and is negatively associated with moral injury (28, 33). In their qualitative examination of HCWs in the pandemic, Nelson et al. (28) found that the importance of organizational infrastructure (e.g., availability of resources, clear communication) and leadership support were two consistent themes that emerged in the context of moral injury. Leadership support was associated with factors such as being heard and having concerns addressed, trustworthiness, empathy and being valued, and leaders being present or visible (27). Preliminary studies suggest that leadership could play an important role in the prevention and healing from moral injury, and that offering support to healthcare workers from those in these leadership roles cannot be underestimated. HCWs are embedded within organizational structures that are complex, with hierarchical structures, and support and normalization of some reactions to their complex work by leaders can go a long way in mitigating downstream issues. Similar to leadership support in the military increasing cohesion and decreasing mental health concerns, just so leadership among HCWs can also make an important impact for those who are caring for others' during a pandemic.

THE INTERSECTION BETWEEN MORAL INJURY AND HEALTH EQUITY IS AN IMPORTANT AREA OF INQUIRY

As Litz et al. (1) suggest, one's moral beliefs and expectations are rooted in cultural, organizational, and group-based ethical norms. We internalize "what is right" based on various social and cultural norms to develop a moral scheme, which is comprised of numerous overlapping and potentially conflicting beliefs. Moral injury often results in situations that elicit an inevitable sense of transgression; what is right by one standard (e.g., maximizing individual patient's chance of survival by providing the highest quality of care) differs from what is right by another standard (e.g., conserving scarce testing and treatment sources due to lack of supply). Acknowledging conflicting moral perspectives, accepting naturally occurring emotions, and taking action to facilitate moral repair will likely require compassion toward others and oneself from HCWs and cultural humility from the clinicians who aim to understand another's moral distress (34).

The majority of moral injury studies have drawn samples from White, educated, industrialized and individual-focused (vs. collectivist) populations. Greater representation of diverse individuals is sorely needed in this research, especially to the extent that culture shapes what moral beliefs and expectations an individual internalizes. The COVID-19 pandemic has highlighted long-existing health inequities within the United States, with infected individuals who identify with underprivileged groups, such as Black, indigenous, and people of color (BIPOC) having higher rates of infection and lower rates of survival (35). The pandemic has also highlighted long-existing systemic inequities and racist structures of care that providers must work within (35). Providers may feel complicit in the discriminatory impact of COVID-19 on underprivileged communities, and thus experience moral distress. Concurrently, the pandemic has also created the opportunities to have challenging conversations that can start to recognize and undo

these harmful structures (36), providing HCWs with advocacy opportunities that may serve as an outlet to resolve moral distress. But the other side of the coin is that many may take on more personally to try to ameliorate these systemic issues, and ultimately experience burnout.

CONCLUSION

Given the tremendous number of stressors that healthcare workers have had to endure during their careers, and during the COVID-19 pandemic, it is important to best understand how to assess, prevent and treat the ripple effects of these stressors, including the impact of moral injury. First and foremost, it is critical to acknowledge the tremendous resilience and growth of HCWs as they have navigated a pandemic and provided the world with so much comfort and healing. Related, it is important to acknowledge that although we have focused on moral injury, which impacts emotional, psychological, behavioral, and spiritual wellbeing, moral distress occurs on a continuum and does not always cause lasting distress [please see Riedel et al. (37) for a recent scoping review of moral distress and moral injury in HCWs]. To guide future research in this area, we suggest eight recommendations, highlighting that critically, this research needs to be culturally attuned and directly involve the input and diverse voices of healthcare workers on the frontlines. More mixed methods and longitudinal research is needed to characterize moral injury in HCWs, understand systemic and individual factors that contribute to moral injury, and better understand treatment needs, particularly of those who experience moral injury and may not be easily identified. More honed measurement of moral injury can help guide each of these tasks as well as capture improvement over time. It is also critical to understand how the diverse workforce of HCWs have experienced health inequities and other systemic harms that contribute to moral injury. Overall, better understanding how to characterize and heal from moral injury will require cultural humility, compassion, and attunement as we support our HCWs in their restorative journey.

AUTHOR CONTRIBUTIONS

SM and BG conceptualized, outlined, wrote, and edited the current perspectives article. All authors contributed to the article and approved the submitted version.

REFERENCES

1. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
2. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral injury: an integrative review. *J Traum Stress.* (2019) 32:350–62. doi: 10.1002/jts.22362
3. Maguen S, Griffin BJ, Copeland LA, Perkins DF, Finley EP, Vogt D. Gender differences in prevalence and outcomes of exposure to potentially morally injurious events among post-9/11 veterans. *J Psychiatr Res.* (2020) 130:97–103. doi: 10.1016/j.jpsychires.2020.06.020
4. Maguen S, Griffin BJ, Vogt D, Hoffmire CA, Blosnich JR, Bernhard PA, et al. Moral injury and peri-and post-military suicide attempts among post-9/11 veterans. *Psychol Med.* (2022) 1–10. doi: 10.1017/S0033291721005274. [Epub ahead of print].
5. Borges LM, Holliday R, Barnes SM, Bahraini NH, Kinney A, Forster JE, et al. A longitudinal analysis of the role of potentially morally injurious events on COVID-19-related psychosocial functioning among healthcare providers. *PLoS ONE.* (2021) 16:e0260033. doi: 10.1371/journal.pone.0260033
6. Norman SB, Feingold JH, Kaye-Kauderer H, Kaplan CA, Hurtado A, Kachadourian L, et al. Moral distress in frontline healthcare workers in the initial epicenter of the COVID-19 pandemic in the United States: relationship to PTSD symptoms, burnout, and psychosocial functioning. *Depress Anxiety.* (2021) 38:1007–17. doi: 10.1002/da.23205
7. Amsalem D, Lazarov A, Markowitz JC, Naiman A, Smith TE, Dixon LB, et al. Psychiatric symptoms and moral injury among US healthcare workers in the COVID-19 era. *BMC Psychiatry.* (2021) 21:1–8. doi: 10.1186/s12888-021-03565-9
8. Hines SE, Chin KH, Glick DR, Wickwire EM. Trends in moral injury, distress, and resilience factors among healthcare workers at the beginning of the COVID-19 pandemic. *Int J Environ Res Public Health.* (2021) 18:488. doi: 10.3390/ijerph18020488
9. Maguen S, Griffin BJ, Copeland LA, Perkins DF, Richardson CB, Finley EP, et al. Trajectories of functioning in a population-based sample of veterans: contributions of moral injury, PTSD, and depression. *Psychol Med.* (2020) 1–10. doi: 10.1017/S0033291720004249. [Epub ahead of print].
10. Williamson V, Murphy D, Greenberg N. COVID-19 and experiences of moral injury in front-line key workers. *Occup Med.* (2020) 70:317–9. doi: 10.1093/occmed/kqaa052
11. Seiden SC, Galvan C, Lamm R. Role of medical students in preventing patient harm and enhancing patient safety. *BMJ Qual Safety.* (2006) 15:272–6. doi: 10.1136/qshc.2006.018044
12. Maguen S, Norman S. Moral injury. *PTSD Res Q.* (2021) 32. Available online at: https://www.ptsd.va.gov/publications/ptsd_rq.asp
13. Purcell N, Koenig CJ, Bosch J, Maguen S. Veterans' perspectives on the psychosocial impact of killing in war. *Counsel Psychol.* (2016) 44:1062–99. doi: 10.1177/0011000016666156
14. Burkman K, Purcell N, Maguen S. Provider perspectives on a novel moral injury treatment for veterans: Initial assessment of acceptability and feasibility of the impact of killing treatment materials. *J Clin Psychol.* (2019) 75:79–94. doi: 10.1002/jclp.22702
15. Bryan CJ, Bryan AO, Roberge E, Leifker FR, Rozek DC. Moral injury, posttraumatic stress disorder, and suicidal behavior among National Guard personnel. *Psychol Traum Theor Res Pract Policy.* (2018) 10:36. doi: 10.1037/tra0000290
16. Schaufeli W, Salanova M, González-Romá V, Bakker AB. The measurement of engagement and burnout: a two sample confirmatory factor analytic approach. *J Happiness Stud.* (2002) 3:71–92. doi: 10.1023/A:1015630930326
17. Kopacz MS, Ames D, Koenig HG. It's time to talk about physician burnout and moral injury. *Lancet Psychiatry.* (2019) 6:e28. doi: 10.1016/S2215-0366(19)30385-2
18. Mantri S, Lawson JM, Wang Z, Koenig HG. Identifying moral injury in healthcare professionals: the moral injury symptom scale-HP. *J Religion Health.* (2020) 59:2323–40. doi: 10.1007/s10943-020-01065-w
19. Levi-Belz Y, Greene T, Zerach G. Associations between moral injury, PTSD clusters, and depression among Israeli veterans: a network approach. *Eur J Psychotraumatol.* (2020) 11:1736411. doi: 10.1080/20008198.2020.1736411
20. Magill E, Siegel Z, Pike KM. The mental health of frontline health care providers during pandemics: a rapid review of the literature. *Psychiatr Serv.* (2020) 71:1260–9. doi: 10.1176/appi.ps.202000274
21. Gray MJ, Schorr Y, Nash W, Lebowitz L, Amidon A, Lansing A, et al. Adaptive disclosure: an open trial of a novel exposure-based intervention for service members with combat-related psychological stress injuries. *Behav Ther.* (2012) 43:407–15. doi: 10.1016/j.beth.2011.09.001

22. Maguen S, Burkman K, Madden E, Dinh J, Bosch J, Keyser J, et al. Impact of killing in war: a randomized, controlled pilot trial. *J Clin Psychol.* (2017) 73:997–1012. doi: 10.1002/jclp.22471
23. Norman SB, Capone C, Panza KE, Haller M, Davis BC, Schnurr PP, et al. A clinical trial comparing trauma-informed guilt reduction therapy (TrIGR), a brief intervention for trauma-related guilt, to supportive care therapy. *Depress Anxiety*. (2022) 39:262–73. doi: 10.1002/da.23244
24. Borges LM. A service member's experience of acceptance and commitment therapy for moral injury (ACT-MI) via telehealth: "Learning to accept my pain and injury by reconnecting with my values and starting to live a meaningful life". *J Context Behav Sci.* (2019) 13:134–40. doi: 10.1016/j.jcbs.2019.08.002
25. Harris JI, Usset T, Voecks C, Thuras P, Currier J, Erbes C. Spiritually integrated care for PTSD: a randomized controlled trial of "Building Spiritual Strength". *Psychiatry Res.* (2018) 267:420–8. doi: 10.1016/j.psychres.2018.06.045
26. Pyne JM, Rabalais A, Sullivan S. Mental health clinician and community clergy collaboration to address moral injury in veterans and the role of the Veterans Affairs chaplain. *J Health Care Chaplaincy*. (2019) 25:1–9. doi: 10.1080/08854726.2018.1474997
27. Held P, Klassen BJ, Steigerwald VL, et al. Do morally injurious experiences and index events negatively impact intensive PTSD treatment outcomes among combat veterans? *Eur J Psychotraumatol.* (2021) 12:1877026. doi: 10.1080/20008198.2021.1877026
28. Nelson KE, Hanson GC, Boyce D, Ley CD, Swavely D, Reina M, et al. Organizational impact on healthcare workers' moral injury during COVID-19: a mixed-methods analysis. *J Nurs Adm*. (2022) 52:57–66. doi: 10.1097/NNA.0000000000001103
29. Smith-MacDonald L, Lusk J, Lee-Baggley D, Bright K, Laidlaw A, Voth M, et al. Companions in the abyss: a feasibility and acceptability study of an online therapy group for healthcare providers working during the COVID-19 pandemic. *Front Psychiatry*. (2022) 12:801680. doi: 10.3389/fpsyt.2021.801680
30. Fortney JC, Burgess JF, Bosworth HB, Booth BM, Kaboli PJ. A re-conceptualization of access for 21st century healthcare. *J General Intern Med.* (2011) 26:639–47. doi: 10.1007/s11606-011-1806-6
31. Currier JM, McCormick W, Drescher KD. How do morally injurious events occur? A qualitative analysis of perspectives of veterans with PTSD. *Traumatology*. (2015) 21:106. doi: 10.1037/trm0000027
32. Tracy DK, Tarn M, Eldridge R, Cooke J, Calder JD, Greenberg N. What should be done to support the mental health of healthcare staff treating COVID-19 patients? *Br J Psychiatry*. (2020) 217:537–9. doi: 10.1192/bjp.2020.109
33. Dale LP, Cuffe SP, Sambuco N, Guastello AD, Leon KG, Nunez LV, et al. Morally distressing experiences, moral injury, and burnout in florida healthcare providers during the COVID-19 pandemic. *Int J Environ Res Public Health.* (2021) 18:12319. doi: 10.3390/ijerph182312319
34. Hook JN, Davis DE, Owen J, Worthington Jr EL, Utsey SO. Cultural humility: measuring openness to culturally diverse clients. *J Counsel Psychol.* (2013) 60:353. doi: 10.1037/a0032595
35. Mishra V, Seyedzenouzi G, Almohtadi A, Chowdhury T, Khashkhusha A, Axiaq A, et al. Health inequalities during COVID-19 and their effects on morbidity and mortality. *J Healthc Leadership.* (2021) 13:19. doi: 10.2147/JHL.S270175
36. Barbot O. George floyd and our collective moral injury. *Am J Public Health.* (2020) 110:1253. doi: 10.2105/AJPH.2020.305850
37. Riedel PL, Kreh A, Kulcar V, Lieber A, Juen B. A scoping review of moral stressors, moral distress and moral injury in healthcare workers during COVID-19. *Int J Environ Res Public Health.* (2022) 19:1666. doi: 10.3390/ijerph19031666

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Risk Factors for Moral Injury Among Canadian Armed Forces Personnel

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Objectives: The traumatic nature of high-risk military deployment events, such as combat, is well-recognized. However, whether other service-related events and demographic factors increase the risk of moral injury (MI), which is defined by consequences of highly stressful and morally-laden experiences, is poorly understood. Therefore, the objective of this study was to examine determinants of MI in Canadian Armed Forces (CAF) personnel.

Methods: Data were obtained from the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS; unweighted $n = 2{,}941$). To identify military characteristics, sociodemographic variables, and deployment-related factors associated with increased levels of MI, a series of multiple linear regressions were conducted across deployed and non-deployed groups.

Results: When all variables were considered among the deployed personnel, rank, experiencing military related sexual trauma, child maltreatment (i.e., physical abuse, emotional abuse and neglect), and stressful deployment experiences were significant predictors of increased MI total scores ($\beta = 0.001$ to $\beta = 0.51$, $p < 0.05$). Feeling responsible for the death of an ally and inability to respond in a threatening situation were the strongest predictors of MI among stressful deployment experiences. Within the non-deployed sample, experiencing military-related or civilian sexual trauma and rank were significant predictors of increased MI total scores ($\beta = 0.02$ to $\beta = 0.81$, $p < 0.05$).

Conclusion: Exposure to stressful deployment experiences, particularly those involving moral-ethical challenges, sexual trauma, and childhood maltreatment were found to increase levels of MI in CAF personnel. These findings suggest several avenues of intervention, including education and policies aimed at mitigating sexual misconduct, as well as pre-deployment training to better prepare military personnel to deal effectively with morally injurious experiences.

Keywords: mental health, deployment, military personnel, stress disorder, post-traumatic, moral injury, child maltreatment

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INTRODUCTION

Military service has been associated with an elevated risk of negative mental health outcomes including posttraumatic stress disorder (PTSD), depression, substance use, and suicidal behaviors globally (1–5). This finding holds in the Canadian context, with higher prevalence of mental disorders observed in Canadian Armed Forces (CAF) personnel compared to civilian populations (6, 7), with 44% of surveyed CAF members experiencing symptoms consistent with a depressive or anxiety-related disorder at some point between 2002 and 2018 (8).

Although stressful deployment experiences such as combat have been associated with increased negative mental health outcomes in military populations (1, 9), combat experiences are not the sole type of psychologically traumatic events military members may encounter. Exposure to stressful or difficult events with moral-ethical implications is also common (10–12), but the psychological distress associated with these experiences is less well understood. Therefore, it is critical to understand the pre-, peri- and post-deployment, as well as non-deployment experiences that are associated with moral injury in the CAF.

Moral injury (MI) refers to the psychological, spiritual, behavioral or social distress that follows from situations in which individuals have committed, witnessed, or failed to prevent acts that transgress one's personal moral beliefs (13, 14). These feelings of distress may include shame, guilt, anger, and disgust, which may be associated with acts perpetrated by the self, such as actions leading to loss of life, or acts perpetrated by others, including betrayal, witnessing inappropriate acts by colleagues, or inappropriate acts by individuals in positions of power (10–15). Morally injurious experiences, such as betrayal from a trusted peer, may prompt a variety of psychological, social, and behavioral consequences, including relational strain, fundamental shifts in core beliefs (e.g., beliefs about the world), spiritual/existential challenges, alterations in perceptions of the self, as well as feelings of guilt, shame or anger (10, 15, 16). Although evidence is currently limited, recent research indicates that potentially morally injurious experiences (PMIEs) are common, and may have a unique impact on post-deployment outcomes in military populations. A representative survey of United States (U.S.) military combat veterans found that approximately 25% of respondents reported witnessing transgressions of others, 25% reported experiencing betrayal during their careers, and 10% reported that they transgressed their personal morals (15). In a representative survey of CAF members deployed to the mission in Afghanistan, Nazarov et al. (11) found that over half of the population indicated experiencing at least one PMIE. The authors found that individuals indicating exposure to PMIEs were more likely to report experiencing past-year major depressive disorder (MDD) and past-year posttraumatic stress disorder (PTSD) while adjusting for other relevant variables such as age, sex, and deployment-related factors (11).

Although these findings provide evidence that certain PMIEs may increase the risk of negative mental health outcomes in deployed military members, there are specific limitations to the current body of research examining MI among military personnel. In the aforementioned study by Nazarov et al. (11), MI was not directly assessed using a validated measure; rather, mental health outcomes were assessed in relation to proxy deployment experiences used to indicate exposure to PMIEs (11). Wisco et al. (15) used the Moral Injury Events Scale (MIES) to assess MI, but because this study was conducted in a U.S. combat sample, the results may not generalize to the CAF due to cultural and structural differences between the two Armed Forces (15). Additionally, although both studies examined the impact that deployment PMIEs had on the development of other mental health disorders, the authors did not focus on factors that may increase the risk of development of MI among non-deployed personnel. Although this evidence suggests that PMIEs occur frequently during military combat and deployment operations, scant evidence exists regarding factors that may contribute to the development of MI in non-deployed CAF personnel. Understanding risk factors that contribute to the development of MI within both deployed and non-deployed CAF personnel is critical to appropriately target resilience-building interventions to mitigate development of MI.

Aims of the Study

The aim of this study was to identify the military, deployment, and sociodemographic factors that are associated with increased MI in a nationally representative sample of CAF personnel and veterans. We hypothesized that deployment experiences and childhood maltreatment variables will significantly predict elevated MI scores in CAF personnel.

MATERIALS AND METHODS

Participants and Data Collection

Data were obtained from the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS)(17). The CAFVMHS used a longitudinal survey design to resample individuals who initially participated in the 2002 Canadian Community Mental Health Survey—Mental Health and Well-being—Canadian Forces (CCHS-CF) (9). 5,155 CAF Regular Force personnel participated in the CCHS-CF in 2002, and 4,299 individuals were eligible to be contacted for follow-up interview. The target sampling frame for CAFVMHS were individuals who had completed the CCHS-CF and were full-time Regular Force members at the time of 2002 administration. At the time of 2018 data collection, personnel could be actively serving or veterans.

Of those who participated in the 2002 CCHS-CF and were eligible for follow-up (n = 4,299), 2,941 individuals participated in the CAFVMHS. Longitudinal weights were then created to produce representative estimates of the target population in 2002 and rounded to the nearest base of twenty. Therefore, the weighted survey sample represents 18,120 active duty and 34,380 released CAF personnel from the 2002 survey. As our analyses aimed to determine independent risk factors for the development of MI, and morally injurious experiences may differ between deployed and non-deployed personnel, the data were split into two groups: ever deployed outside North America and never-deployed groups. Data collection was conducted by Statistics

Canada between January and May of 2018 using computer-assisted personal interviews. Participation was voluntary, and all participants provided informed consent. All data were collected in accordance with Statistics Canada procedures and approved by relevant review boards. For more information regarding the CAFVMHS rationale and methodology, please refer to (17, 18).

Measures

Moral Injury

MI was evaluated using the Moral Injury Events Scale (19), which uses a six-point Likert scale to assess event experiences. Participants were provided a series of nine statements (e.g., "I am troubled by having witnessed others' immoral acts") and were asked to indicate their level of agreement (1 = *strongly disagree*, 6 = *strongly agree*). Of note, logic skipping, wherein a participant selecting *strongly disagree* for certain items automatically imputed *strongly disagree* for a subsequent item, was used during administration [for more information, please see (20)]. Mean MIES scores were calculated and used as an outcome variable in our models, with higher mean scores indicating increased endorsement of MI. Past research has shown that while it is not without limitations (20), the MIES has strong evidence for internal consistency reliability and convergent validity (19, 20).

Deployment Experiences

Deployment experiences (DEX) were captured using a survey module that evaluated lifetime exposure and exposure since 2002 to eight stressful deployment experiences using dichotomous (*yes/no*) scoring (e.g., "known someone seriously injured or killed"). These items were adapted by the Canadian Department of National Defense (DND) from the Combat Experiences Scale (21). The eight items were chosen by the initial survey developers from the original Combat Experiences Scale instrument based on conceptual considerations (11).

Child Maltreatment

Participants were asked to retrospectively recall types of childhood adversity that they had been exposed to before the age of sixteen. Childhood physical abuse, sexual abuse, emotional abuse, exposure to intimate partner violence, and neglect were captured using nine items that were adapted from the Childhood Experiences of Violence Questionnaire (22). This measure has been used previously in population-level research to assess degree/severity of exposure to childhood adversity (11, 23). Of note, childhood sexual trauma was removed from the multivariate models due it theoretically being captured as a sub-category of lifetime sexual trauma.

Lifetime Sexual Trauma

Participants were asked if they had ever experienced sexual trauma in their lifetime. Sexual trauma was endorsed if they answered *yes* to one or more of eight dichotomous questions (e.g., "unwanted touching"). Further questions probed whether the event occurred while at a CAF workplace, while on deployment, or whether it was perpetrated by a CAF member/DND employee (17). If the respondent answered *yes* to any of these questions, these events were coded as military-related sexual trauma. If not, they were coded as non-military-related sexual trauma.

Military Variables

Previous research has shown that certain military variables may be associated with the presence of MI (11). As such, military variables, including force type, service environment (Army, Navy or Air Force), rank (junior non-commissioned member, senior non-commissioned officer, junior officer, senior officer), and number of years in the military, were included as covariates in our analyses (17). A dichotomous deployment variable was used to split the sample into CAF members who had deployed outside of North America and those who had not previously deployed. Separate models were created for deployed and non-deployed samples to independently assess how deployment-related variables impacted the endorsement of MI.

Demographic Covariates

Based on previous research that has shown associations between certain sociodemographic factors and MI, we adjusted for marital status, age, sex, and highest level of completed education in our analyses (11, 15). These variables were measured by self-report.

Statistical Methods

First, we evaluated descriptive statistics across both samples, as well as simple linear regressions with MIES score as the outcome variable. Next, multiple linear regression models were conducted to assess military, deployment, and sociodemographic-related predictors of MI scores. Survey sample weights calculated by Statistics Canada were used in all analyses to ensure survey sample representativeness. Furthermore, to account for the complex survey design, confidence intervals were calculated using 500 bootstrapped weights provided by Statistics Canada. Based on Statistics Canada's vetting rules, reported frequencies used sample weights and were rounded on a base of twenty, with percentages calculated based on the weighted frequencies following rounding. Statistical analyses were conducted using SAS Version 9.4 (SAS Institute Inc., Cary, NC, USA).

RESULTS

The unweighted sample of 2,941 total participants represented 18,120 active duty and 34,380 released CAF personnel from the original 2002 survey. Over 90% (n = 39,600) of the deployed sample and 74% (n = 6,500) of the non-deployed sample were male. The majority of the deployed (69%, n = 30,300) and non-deployed (62%, n = 5,500) personnel were between the ages of 45–60 years at the time of the 2018 survey administration. Among those who deployed, stressful deployment experiences were commonly reported. Specifically, 62% endorsed knowing someone who had been seriously injured or killed, 46% had ever received incoming artillery, rocket or mortar fire, and 44% reported seeing injured or ill women or children they were unable to help (**Table 1**). Simple linear regressions with MIES total score as the outcome variable among deployed and non-deployed samples are displayed in **Tables 2**, **3**, respectively. Force element (i.e., Army, Navy or Air Force) was a statistically significant

TABLE 1 | Sociodemographic and military characteristics of weighted study sample.

	Deployed		Never deployed	
	n	Mean/percentage (95%CI)	*n*	Mean/percentage (95%CI)
Age				
33–44	9,240	21.14% (19.15–23.13%)	1,800	20.45% (16.27–24.64%)
45–60	30,300	69.34% (67.21–71.46%)	5,500	62.50% (58.02–66.98%)
61–75	4,160	9.52% (8.52–10.52%)	1,500	17.05% (14.25–19.84%)
Sex				
Male	39,600	90.66% (90.14–91.18%)	6,500	73.86% (71.09–76.64%)
Female	4,080	9.34% (8.82–9.86%)	2,300	26.14% (23.36–28.91%)
Education				
Secondary or lower	19,480	44.82% (42.50–47.14%)	2,900	32.95% (28.75–37.16%)
Postsecondary or higher	23,980	55.18% (52.86–57.50%)	5,900	67.05% (62.84–71.25%)
Marital status				
Married	30,080	69.18% (67.23–71.13%)	5,900	67.05% (62.69–71.40%)
Common law	6,240	14.35% (12.77–15.93%)	1,040	11.82% (8.85–14.78%)
Separated/widowed/divorced	4,460	10.26% (8.91–11.60%)	1,280	14.55% (11.38–17.71%)
Single	2,700	6.21% (5.11–7.31%)	580	6.59% (4.36–8.83%)
Military factors				
Force type†				
Regular	38,760	88.82% (87.60–90.04%)	7,200	81.63% (78.45–84.81%)
Reserve	4,880	11.18% (9.96–12.40%)	1,620	18.37% (15.19–21.55%)
Rank†				
Junior NCM	11,620	26.61%, (24.53–28.70%)	3,120	35.54%, (31.10–39.97%)
Senior NCO	22,160	50.76%, (48.68–52.83%)	2,900	33.03%, (29.08–36.98%)
Junior officer	3,200	7.33%, (6.31–8.35%)	1,020	11.62%, (9.43–13.81%)
Senior officer	6,680	15.30%, (14.31–16.29%)	1,740	19.82%, (17.04–22.59%)
Service Environment				
Air Force	12,420	28.46% (26.55–30.38%)	4,820	54.77% (50.32–59.23%)
Army	23,020	52.75% (50.54–54.96%)	2,540	28.86% (24.59–33.14%)
Navy	8,200	18.79% (16.98–20.60%)	1,440	16.36% (13.09–19.64%)
Years in military (mean)		25.98 (25.68–26.28)		24.64 (23.73–25.56)
Sexual trauma				
Place/person				
No trauma	35,420	81.61% (79.94–83.28%)	6,620	75.92% (72.49–79.35%)
Military related‡	3,980	9.17% (8.03–10.31%)	1,020	11.70% (9.54–13.86%)
At other place or by others	4,000	9.22% (7.94–10.50%)	1,080	12.39% (9.57–15.21%)
Child Maltreatment				
Physical abuse	19,640	45.17% (42.85–47.49%)	3,460	39.41% (34.95–43.87%)
Sexual	4,960	11.43% (10.02–12.84%)	1,080	12.30% (9.86–14.74%)
Exposure to intimate partner violence	5,320	12.21% (10.67–13.76%)	900	10.25% (7.62–12.88%)
Emotional abuse	8,400	19.41% (17.61–21.21%)	1,540	17.58% (14.53–20.63%)
Neglect	14,880	34.56% (32.37–36.74%)	2,300	26.38% (22.55–30.21%)
Deployment experience				
Known someone seriously injured or killed	27,060	62.18% (59.92–64.43%)	-	-
In threatening situation—unable to respond due to rules of engagement	15,000	34.48% (32.23–36.73%)	-	-
Ever been injured	15,300	35.19% (33.05–37.33%)	-	-
Ever received incoming artillery, rocket or mortar fire	20,000	46.00% (43.72–48.28%)	-	-
Had close call, e.g. shot/hit but were protected	11,100	25.54% (23.47–27.61%)	-	-
Seen ill/injured women/children who you were unable to help	19,140	44.04% (41.72–46.36%)	-	-
Felt responsible for death of Canadian or ally personnel	3,220	7.41% (6.14–8.68%)	-	-
Difficulty distinguishing between combatants and non-combatants	13,620	31.31% (29.12–33.5%)	-	-

†*Force type and Rank in 2018.*

NCM, non-commissioned member; NCO, non-commissioned officer.

‡*Military-related: occurred at CAF workplace or perpetrated by CAF member/DND staff.*

TABLE 2 | Simple linear regressions predicting MIES scores among deployed CAF personnel (weighted $n = 43,700$).

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value	R^2
Age					0.0020
33–44 (ref)					
45–60	0.11	0.061	1.86	0.0628	
61–75	−0.0046	0.096	−0.05	0.9624	
Sex					0.0026
Male (ref)					
Female	0.21	0.085	2.47	0.0137	
Education					0.0029
Secondary or lower (ref)					
Postsecondary or higher	−0.13	0.05	−2.57	0.0104	
Marital status					0.0092
Married (ref)					
Common law	0.22	0.072	3.05	0.0023	
Separated/widowed/divorced	0.32	0.083	3.84	0.0001	
Single	0.12	0.104	1.13	0.2568	
Military factors					
Force type†					0.0024
Regular (ref)					
Reserve	−0.18	0.078	−2.34	0.0196	
Service Environment					0.0096
Army (ref)					
Air Force	−0.24	0.057	−4.18	<0.0001	
Navy	−0.22	0.066	−3.38	0.0007	
Rank†					0.0276
Junior NCM	0.62	0.078	7.96	<0.0001	
Senior NCO	0.41	0.071	5.82	<0.0001	
Junior officer	0.28	0.11	2.53	0.0115	
Senior officer (ref)					
Years in military	−0.0083	0.0034	−2.46	0.0140	0.0026
Sexual trauma					
Place/person					0.0436
No trauma (ref)					
Military related‡	0.86	0.089	9.69	<0.0001	
At other place or by others	0.34	0.081	4.23	<0.0001	
Relate to deployment or not					0.0440
No trauma (ref)					
While deployment	1.03	0.115	9.01	<0.0001	
Not while deployment	0.40	0.071	5.72	<0.0001	
Type of sexual trauma					
Sexual assault					0.0413
No trauma (ref)					
Military related‡	1.11	0.12	9.22	<0.0001	
Non-military	0.47	0.11	4.19	<0.0001	
Sexual unwanted touching					0.0434
No trauma (ref)					
Military related‡	0.86	0.09	9.71	<0.0001	
Non-military	0.33	0.08	3.92	<0.0001	
Sexual assault or unwanted touching					
No trauma (ref)					0.0482
Military related‡	0.89	0.08	10.60	<0.0001	
Non-military	0.25	0.08	3.01	0.0027	

(Continued)

TABLE 2 | Continued

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value	R^2
Child Maltreatment					
Physical	0.48	0.049	9.85	<0.0001	0.0405
Sexual	0.52	0.077	6.76	<0.0001	0.0195
Exposure to intimate partner violence	0.39	0.075	5.24	<0.0001	0.0118
Emotional abuse	0.78	0.061	12.95	<0.0001	0.0681
Neglect	0.46	0.051	8.90	<0.0001	0.0335
Deployment experience					
Known someone seriously injured or killed	0.51	0.050	10.20	<0.0001	0.0432
In threatening situation—unable to respond due to rules of engagement	0.66	0.050	13.14	<0.0001	0.0697
Ever been injured	0.55	0.050	10.88	<0.0001	0.0489
Ever received incoming artillery, rocket or mortar fire	0.25	0.049	5.15	<0.0001	0.0114
Had close call, e.g., shot/hit but were protected	0.57	0.055	10.30	<0.0001	0.0441
Seen ill/injured women/children who you were unable to help	0.62	0.048	12.83	<0.0001	0.0667
Felt responsible for death of Canadian or ally personnel	0.88	0.092	9.53	<0.0001	0.0380
Difficulty distinguishing between combatants and non-combatants	0.52	0.052	9.95	<0.0001	0.0412

†*Force type and Rank in 2018.*
‡*Military related is defined as the sexual trauma that happened in CAF workplace or by CAF member/DND staff or while on deployment.*
NCO, non-commissioned officer; NCM, non-commissioned member.

predictor of MIES score in the deployed sample, though not in the non-deployed sample. Rank was a statistically significant predictor in both deployed and non-deployed samples.

Multiple linear regression models to determine independent risk factors for increased MI score are reported in **Tables 4**, **5**. The independent variables accounted for approximately 25% of the variance in MI scores in the deployed sample and 17% in non-deployed CAF personnel. Rank, years in military, military-related sexual trauma, childhood physical and emotional abuse, childhood neglect, and stressful deployment experiences were predictors of increased MI score in the deployed sample (**Table 4**). When all variables were included in the model, the strongest deployment-related predictors of higher MI score were feeling responsible for the death of an ally and inability to respond in a threatening situation due to rules of engagement. Within the non-deployed sample, rank, experiencing sexual trauma (military or civilian), years in the military, and childhood neglect were the only significant predictors of increased MI scores (**Table 5**).

DISCUSSION

This is the first study to identify factors associated with increased MI using a representative survey of Canadian military personnel. Among non-deployed CAF personnel, experiencing either military-related or civilian sexual trauma, and junior non-commissioned member rank (compared to senior officer) were significantly associated with increased MI total scores. Among the previously deployed CAF personnel, child maltreatment (i.e., neglect, physical abuse and emotional abuse), experiencing military-related sexual trauma, and stressful deployment experiences (e.g., feeling responsible for the death of an ally) were significant predictors of MI total scores.

Specific military variables, including deployment experiences and individual rank, were independently associated with MIES score in deployed personnel. These experiences, such as seeing ill or injured children and being unable to help, may be categorized as PMIEs as they are situations that may lead to the violation of moral values (24), a precursor to MI. Further, in both deployed and non-deployed samples, rank was independently associated with MIES score, which is consistent with previous findings (11). Interestingly with regards to rank, being a junior non-commissioned member, regardless of deployment status, conferred the strongest association with MIES scores when compared to senior officers. This could be due to a multitude of factors, including differences in duties, increased likelihood of deployment related PMIEs, and power structure dynamics inherent in the military rank system.

Importantly, sexual trauma was a significant predictor of MIES score in the simple linear regression models for both deployed and non-deployed CAF members, perhaps due to feelings of perceived betrayal from these experiences (25). However, when all variables were considered together, military sexual trauma was the only sexual trauma variable significantly associated with MIES score in deployed CAF personnel. Military sexual trauma perpetrated by CAF personnel or DND staff or at a CAF workplace, defined in this study as unwanted touching or sexual assault, was a significant predictor of increased MIES score in both the deployed and non-deployed samples. These definitions largely overlap with the concept of Military Sexual Misconduct (MSM), which has been associated with adverse mental and physical health outcomes, including PTSD, in U.S. military populations (26, 27). In 2018, 70% of CAF respondents reported experiencing targeted MSM during the

TABLE 3 | Simple linear regressions predicting MIES scores among non-deployed CAF personnel (weighted $n = 8,800$).

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value	R^2
Age					0.0073
33–44 (ref)					
45–60	0.16	0.12	1.41	0.1588	
61–75	−0.071	0.15	−0.48	0.6343	
Sex					0.0309
Male (ref)					
Female	0.45	0.10	4.46	<0.0001	
Education					0
Secondary or lower (ref)					
Postsecondary or higher	0.012	0.096	0.12	0.9008	
Marital status					0.0156
Married (ref)					
Common law	0.15	0.14	1.04	0.2991	
Separated/widowed/divorced	0.40	0.13	3.08	0.0021	
Single	0.050	0.18	0.26	0.7986	
Military factors					
Force type†					0.0008
Regular (ref)					
Reserve	−0.085	0.12	−00.73	0.4680	
Service Environment					0.0047
Army (ref)					
Air Force	−0.15	0.10	−1.44	0.1517	
Navy	−0.21	0.14	−1.53	0.1270	
Rank†					0.0366
Junior NCM	0.58	0.12	4.67	<0.0001	
Senior NCO	0.25	0.13	1.94	0.0533	
Junior officer	0.32	0.16	1.93	0.0537	
Senior officer (ref)					
Years in military	0.00027	0.0047	0.06	0.9542	0
Sexual trauma					
Place/person					0.1035
No trauma (ref)					
Military related	0.99	0.14	7.31	<0.0001	
At other place or by others	0.68	0.13	5.15	<0.0001	
Type of sexual trauma					
Sexual assault					0.095
No trauma (ref)					
Military related‡	1.20	0.18	6.79	<0.0001	
Non-military	0.82	0.17	4.80	<0.0001	
Sexual unwanted touching					0.1028
No trauma (ref)					
Military related‡	1.02	0.14	7.38	<0.0001	
Non-military	0.66	0.14	4.81	<0.0001	
Sexual assault or unwanted touching					0.1035
No trauma (ref)					
Military related‡	0.99	0.14	7.31	<0.0001	
Non-military	0.68	0.13	5.15	<0.0001	
Child Maltreatment					
Physical	0.34	0.09	3.73	0.0002	0.0219
Sexual	0.78	0.13	5.79	<0.0001	0.0512
Exposure to intimate partner violence	0.37	0.15	2.51	0.0125	0.010
Emotional abuse	0.58	0.12	4.99	<0.0001	0.0385
Neglect	0.35	0.10	3.38	0.0008	0.0182

†*Force type in 2018.*

‡*Military related is defined as the sexual trauma that happened in CAF workplace or by CAF/DND staff or while on deployment.*

NCM, non-commissioned member; NCO, non-commissioned officer.

TABLE 4 | Multiple linear regression model of MIES scores regressed on military/sociodemographic factors among deployed CAF personnel (weighted $n = 43,700$).

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value
Demographics				
Sex				
Male (ref)				
Female	0.14	0.09	1.62	0.1059
Education				
Secondary or lower (ref)				
Postsecondary or higher	−0.02	0.05	−0.40	0.6868
Military factors				
Force type†				
Regular (ref)				
Reserve	−0.04	0.07	−0.62	0.5373
Rank†				
Junior NCM	0.39	0.08	4.91	<0.0001
Senior NCO	0.26	0.07	3.70	0.0002
Junior officer	0.16	0.10	1.65	0.0994
Senior officer (ref)				
Years in military	0.001	0.003	2.66	0.0078
Sexual assault or unwanted sexual touching				
No trauma (ref)				
Military-related‡	0.61	0.09	6.98	<0.0001
Non-military	0.10	0.08	1.33	0.1831
Child maltreatment				
Physical abuse	0.19	0.05	3.73	0.0002
Exposure to intimate partner violence	−0.04	0.07	−00.50	0.6194
Emotional abuse	0.48	0.06	7.39	<0.0001
Neglect	0.19	0.05	3.75	0.0002
Deployment experience				
Known someone seriously injured or killed	0.09	0.05	1.75	0.0809
In threatening situation—unable to resp. bc of rules of engage	0.27	0.06	4.86	<0.0001
Ever been injured	0.19	0.05	3.68	0.0002
Ever received incoming artillery, rocket or mortar fire	−0.13	0.05	−2.49	0.0127
Had close call, e.g., shot/hit but were protected	0.22	0.06	3.62	0.0003
Seen ill/injured women/children who you were unable to help	0.19	0.05	3.56	0.0004
Felt responsible for death of Canadian or ally personnel	0.51	0.09	5.72	<0.0001
Difficulty distinguishing between combatants and non-combatants	0.19	0.06	3.31	0.0009

†*Force type and Rank in 2018.*

‡*Military related is defined as the sexual trauma that happened in CAF workplace or by CAF/DND staff or while on deployment.*

NCM, non-commissioned member; NCO, non-commissioned officer.

previous 12 months of military service (28), indicating that this is a pervasive and preventable risk factor for the development of MI. Although civilian sexual trauma was not a significant predictor of MI in deployed CAF personnel, it did significantly predict MI scores in the non-deployed sample and among both simple linear regression models. It is plausible that there was overlapping variance between, for example, civilian sexual trauma and other variables (e.g., childhood maltreatment) that rendered these associations non-significant in the full deployed model. Additional research regarding the relative risk of civilian and military-related sexual trauma and their overlap in both deployed and non-deployed samples is warranted. Such studies are likely to shed additional light on the mechanisms and contextual factors associated with the development of MI.

Our analyses further indicated that childhood physical and emotional abuse and childhood neglect were positive predictors of increased MI scores in deployed CAF personnel, though only childhood neglect was a positive predictor in non-deployed personnel. The deployed sample results were consistent with previous findings in treatment-seeking CAF Veteran convenience samples (29). Consistent with our findings, a history of childhood abuse and its implications for negative mental and physical health outcomes in adults has been well-documented (30–35). In the same way that research has shown that childhood/earlier traumatic experiences

TABLE 5 | Multiple linear regression model of MIES scores regressed on military/sociodemographic factors among non-deployed CAF personnel (weighted $n = 8,800$).

Variables	Standardized regression coefficient	Standard error	*t*-value	*p*-value
Demographics				
Sex				
Male (ref)				
Female	0.10	0.12	0.85	0.3955
Education				
Secondary or lower (ref)				
Postsecondary or higher	0.18	0.10	1.88	0.0604
Military factors				
Force type[†]				
Regular (ref)				
Reserve	−0.12	0.11	−1.09	0.2760
Rank[†]				
Junior NCM	0.80	0.14	5.63	<0.0001
Senior NCO	0.33	0.13	2.56	0.0108
Junior Officer	0.31	0.16	1.93	0.0544
Senior officer (ref)				
Years in military	0.02	0.001	4.00	<0.0001
Sexual assault or unwanted sexual touching				
No trauma (ref)				
Military-related	0.81	0.16	5.13	<0.0001
Non-military	0.54	0.14	3.84	0.0001
Child maltreatment				
Physical	0.12	0.10	1.24	0.2139
Exposure to intimate partner violence	−0.04	0.16	−0.23	0.8189
Emotional abuse	0.14	0.14	1.06	0.2902
Neglect	0.22	0.11	2.09	0.0371

[†]*Force type and Rank in 2018.*
NCM, non-commissioned member; NCO, non-commissioned officer.

increase risk for exposure to future trauma and PTSD (23), these findings indicate that the same may be true for PMIEs and MI, with increased exposure to PMIEs in childhood possibly increasing the risk for exposure to other PMIEs or development of MI later in life. Although childhood trauma variables except neglect were not significant predictors of increased MI in non-deployed personnel, there were significant associations between childhood maltreatment variables and MIES scores in the simple regression models. It is plausible, then, that child maltreatment shared common variance with non-military-related sexual trauma that attenuated the associations between childhood maltreatment variables and MIES scores.

Limitations

Although the findings of this study provide novel information regarding predictors of MI in deployed and non-deployed CAF personnel, we acknowledge several limitations. Due to the longitudinal nature of the CAFVMHS, the 2018 sample is representative of the original 2002 CAF sample that took part in the initial survey and is not necessarily representative of current CAF demographics. In addition, because the sample was primarily composed of men, this limited our ability to assess how sex and gender may be associated with moral distress in the CAF. Furthermore, variables included in the analyses are not an exhaustive list of potential predictors of MI, especially given that the study of MI remains in its infancy. Importantly, psychological traumas external to military experiences aside from sexual assault were not included in analysis, as the MIES alludes exclusively to military experiences. There is also the possibility that other peri-deployment or post-deployment experiences captured in this survey that were not included in the analyses may have influenced the endorsement of MI. Due to response bias, there may also be unknown differences between survey responders and non-responders, which may theoretically have altered findings of this study. However, previous research on attrition in this sample found that military status, mental health disorders, traumatic experiences and childhood adversity were not associated with loss to follow-up (18).

Childhood maltreatment was also assessed retrospectively during adulthood in this survey, which may introduce recall bias. However, research indicates that this is unlikely, as retrospective recall of childhood trauma seems to be reliable (18, 36, 37). Although relevant literature points to a strong correlation between childhood sexual abuse and negative

mental health outcomes (38–43), childhood sexual trauma was not included in the regression models due to being captured by the item endorsing lifetime sexual trauma. This precluded us from determining how or whether childhood sexual trauma may influence MI endorsement in this population.

Although it is currently the most widely used measure of MI, the MIES has been previously criticized for conflating MI exposure and subjective experience without differentiating between the constructs during scoring, which may inadvertently introduce extraneous variance when attempting to determine severity of MI (20). The subjective self-report nature of the measure, as well as the logic skipping that was used during Statistics Canada administration may also have introduced response biases in the survey. The CAFVMHS 2018 MIES scoring logic, wherein a participant selecting *strongly disagree* for certain items automatically imputed *strongly disagree* for a subsequent item, could have created issues with total MIES scoring. However, following previous research (20) regarding MIES response patterns in this population, we believe that it is unlikely that this logic skipping introduced bias within the survey.

Future directions should include assessing MI using a scale that focuses on the expressed outcomes that make up the MI construct (e.g., spiritual struggles, guilt) and investigate the nuances present in how exposures and outcomes are related. Since the time that data were collected for this study, a number of measures that clearly differentiate outcomes of PMIEs from exposures to PMIEs have been developed, although additional psychometric validation for these measures is warranted. Future research should also consider separate risk factors for endorsement of MI that were not captured in this survey, such as personality traits. Finally, while consensus is amounting that MI is a clinically useful construct [e.g., (44, 45)], additional research is needed to establish effective screening and intervention strategies within military and other populations at heightened risk of MI. Implications of these results indicate that specific care should be taken to incorporate discussion surrounding MI, and tailored treatments to reduce symptoms of MI (e.g., anger, shame) within treatment-seeking military contexts. Focus of future interventions should also be placed on pre-deployment training and preparation for military personnel to effectively understand and cope with morally injurious experiences.

Notwithstanding these limitations, this is the first study to evaluate predictors of MI endorsement in a representative sample of CAF personnel. Our findings emphasize the critical importance of explicitly screening for and addressing deployment experiences and military sexual trauma in the context of evaluating and addressing MI in military populations. Results also point to several demographic and developmental factors that should be further investigated in future research aiming to understand individual vulnerability to MI.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because the data can be accessed in Canada with permission of Statistics Canada through the Statistics Canada Research Data Centers. Statistics Canada collected and provided the data for academic purposes, but the analyses are the sole responsibility of the authors. The opinions expressed do not represent the views of Statistics Canada. Requests to access the datasets should be directed to Statistics Canada's Statistical Information Service, STATCAN.infostats-infostats.STATCAN@canada.ca. Further enquiries can be directed to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Statistics Canada. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

BE, AN, SH, RP, AL, MM, and JR contributed to the conception, design of this project, and made changes in online comments. BE, AN, SH, RP, and AL created the conceptual models. AL conducted the analyses. BE wrote the first draft of the manuscript. SH, RP, AA, NM, TA, and ME made important contributions to sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

REFERENCES

1. Boulos D, Zamorski MA. Deployment-related mental disorders among Canadian Forces personnel deployed in support of the mission in Afghanistan, 2001-2008. *CMAJ.* (2013) 185:E545–52. doi: 10.1503/cmaj.122120
2. Van Til L, Sweet J, Poirier A, McKinnon K, Pedlar D. *Well-Being of Canadian Regular Forces Veterans, Findings From LASS 2016 Survey*. Charlottetown, PE: Veterans Affairs Canada. Research Directorate Technical Report (2017).
3. Norman SB, Haller M, Hamblen JL, Southwick SM, Pietrzak RH. The burden of co-occurring alcohol use disorder and PTSD in U. S Military veterans: comorbidities, functioning, and suicidality. *Psychol Addict Behav.* (2018) 32:224–9. doi: 10.1037/adb0000348
4. Arenson MB, Whooley MA, Neylan TC, et al. Posttraumatic stress disorder, depression, and suicidal ideation in veterans: results from the mind your heart study. *Psychiatr Res.* (2018) 265:224–30. doi: 10.1016/j.psychres.2018.04.046
5. Ramchand R, Rudavsky R, Grant S, Tanielian T, Jaycox L. Prevalence of, risk factors for, and consequences of posttraumatic stress disorder and other mental health problems in military populations deployed to Iraq and Afghanistan. *Curr Psychiatr Rep.* (2015) 17:37. doi: 10.1007/s11920-015-0575-z
6. Fikretoglu D, Liu A, Zamorski MA, Jetly R. Perceived need for and perceived sufficiency of mental health care in the Canadian Armed Forces: changes in the past decade and comparisons to the general population. *Can J Psychiatr*. (2016) 61(Suppl. 1):36S−45S. doi: 10.1177/0706743716628855
7. Rusu C, Zamorski MA, Boulos D, Garber BG. Prevalence comparison of past-year mental disorders and suicidal behaviours in the Canadian Armed Forces and the Canadian general population. *Can*

J Psychiatr. (2016) 61(Suppl. 1): 46S−55S. doi: 10.1177/0706743716628856
8. Statistics Canada. Canadian Armed Forces Members and Veterans Mental Health Follow-Up Survey 2018. Available online at: https://www150.statcan.gc.ca/n1/daily-quotidien/190423/dq190423d-eng.htm (accessed April 3, 2021).
9. Sareen J, Cox BJ, Afifi TO, Stein MB, Belik SL, Meadows G, et al. Combat and peacekeeping operations in relation to prevalence of mental disorders and perceived need for mental health care. *Arch Gen Psychiatr*. (2007) 64:843–52. doi: 10.1001/archpsyc.64.7.843
10. Nazarov A, Jetly R, McNeely H, Kiang M, Lanius R, McKinnon MC, et al. Role of morality in the experience of guilt and shame within the armed forces. *Acta Psychiatr Scand*. (2015) 132:4–19. doi: 10.1111/acps.12406
11. Nazarov A, Fikretoglu D, Liu A, Thompson M, Zamorski MS. Greater prevalence of post-traumatic stress disorder and depression in deployed Canadian Armed Forces personnel at risk for moral injury *Acta Psychiatr Scand*. (2018) 137:1–13. doi: 10.1111/acps.12866
12. Thompson MM. *Moral Injury in Military Operations: A Review of the Literature and Key Considerations for the Canadian Armed Forces*. Ottawa, Scientific Report. Defence Research and Development Canada Publications, DRDC-RDDC-2015-R029, (2015).
13. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: preliminary model and intervention strategy. *Clin Psychol Rev*. (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
14. Lewis HB. *Shame and Guilt in Neurosis*. New York, NY: International Universities Press (1971).
15. Wisco BE, Marx BP, May CL, Martini B, Krystal JH, Southwick SM, et al. Moral injury in US combat veterans: results from the national health and resilience in veterans study. *Depress Anxiety*. (2017) 34:340–7. doi: 10.1002/da.22614
16. Smith-MacDonald LA, Morin JS, Brémault-Phillips S. Spiritual dimensions of moral injury: Contributions of mental health chaplains in the Canadian Armed Forces. *Front Psychiatr*. (2018) 9:592. doi: 10.3389/fpsyt.2018.00592
17. Afifi TO, Bolton SL, Mota N, Marrie RA, Steib MB, Enns MW, et al. Rationale and Methodology of the 2018 Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS): a 16-year follow-up survey. *Can J Psychiatr*. (2020) 66:942–50. doi: 10.1177/0706743720974837
18. Bolton SL, Afifi TO, Mota NP, Enns MW, de Graaf R, Marrie RA, et al. Patterns of attrition in the Canadian Armed Forces Members and Veterans Mental Health Follow-up Survey (CAFVMHS). *Can J Psychiatry*. (2021) 66:996–8. doi: 10.1177/07067437211002697
19. Nash WP, Marino Carper TL, Mills MA et al. Psychometric evaluation of the moral injury events scale. *Mil Med*. (2013) 1778:646–52. doi: 10.7205/MILMED-D-13-00017
20. Plouffe RA, Easterbrook B, Liu A, McKinnon MC, Richardson JD, Nazarov A. Psychometric evaluation of the moral injury events scale in two Canadian armed forces samples. *Assessment*. (2021) 10731911211044198. doi: 10.1177/10731911211044198. [Epub ahead of print].
21. Guyker WM, Donnelly K, Donnelly JP et al. Dimensionality, reliability, and validity of the combat experiences scale. *Mil Med*. (2013) 178:377–84. doi: 10.7205/MILMED-D-12-00223
22. Walsh CA, MacMillan HL, Trocme N, Jamieson E, Boyle MH. Measurement of victimization in adolescence: development and validation of the Childhood Experiences of Violence Questionnaire. *Child Abuse Negl*. (2008) 32:1037–57. doi: 10.1016/j.chiabu.2008.05.003
23. Afifi TO, MacMillan HL, Boyle M, Taillieu T, Cheung K, Sareen J. Child abuse and mental disorders in Canada. *Can Med Assoc J*. (2014) 186:E324–32. doi: 10.1503/cmaj.131792
24. Currier JM, Drescher KD, Nieuwsma J. Introduction to moral injury. In: Currier JM, Drescher KD, Nieuwsma J, editors. Addressing Moral Injury in Clinical Practice. Washington, DC: American Psychological Association (2021). p. 3–18
25. Bryan CJ, Bryan AO, Anestis MD, Anestis JC, Green BA, Etienne N, et al. Measuring moral injury: psychometric properties of the moral injury events scale in two military samples. *Assessment*. (2015) 23:557–70. doi: 10.1177/1073191115590855
26. Skinner KM, Kressin N, Frayne S, Tripp TJ, Hankin CS, Miller DR, et al. The prevalence of military sexual assault among female Veterans' Administration outpatients. *J Interpersonal Violence*. (2000) 15:291–310. doi: 10.1177/088626000015003005
27. El-Gabalawy R, Blaney C, Tsai J, Sumner JA, Pietrzak RH. Physical health conditions associated with full and subthreshold PTSD in US military veterans: results from the National Health and Resilience in Veterans Study. *J Affective Disorders*. (2018) 227:849–53. doi: 10.1016/j.jad.2017.11.058
28. Cotter A. *Sexual misconduct in the Canadian Armed Forces Regular Force, 2018*. Ottawa, ON: Statistics Canada (2019).
29. Battaglia AM, Protopopescu A, Boyd JE, Lloyd C, Jetly R, O'Connor C, et al. The relation between adverse childhood experiences and moral injury in the Canadian Armed Forces. *Eur J Psychotraumatol*. (2019) 10:1546084. doi: 10.1080/20008198.2018.1546084
30. Bifulco A, Bernazzi O, Moran PM. Ball C. Lifetime stressors and recurrent depression: preliminary findings of the Adult Life Phase Interview (ALPHI). *Soc Psychiatry Psychiatr Epidemiol*. (2000) 35:264–75. doi: 10.1007/s001270050238
31. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. (1998) 14:245–58. doi: 10.1016/S0749-3797(98)00017-8
32. Ferguson KS, Dacey CM. Anxiety, depression, and dissociation in women health care providers reporting a history of childhood psychological abuse. *Child Abuse Negl*. (1997) 21:941–52. doi: 10.1016/S0145-2134(97)00055-0
33. Kessler RC, Magee WJ. Childhood family violence and adult recurrent depression. *J Health Soc Behav*. (1994) 35:13–27. doi: 10.2307/2137332
34. Widom CS. Posttraumatic stress disorder in abused and neglected children grown up. *Am J Psychiatry*. (1999) 156:1223–9.
35. Kendler KS, Bulik CM, Silberg J, Hettema JM, Myers J, Prescott CA. Childhood sexual abuse and adult psychiatric and substance use disorders in women: an epidemiological and cotwin control analysis. *Arch Gen Psychiatry*. (2000) 57:953–9. doi: 10.1001/archpsyc.57.10.953
36. Hardt J, Rutter M. Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. *J Child Psychol Psychiatry*. (2004) 45:260–73. doi: 10.1111/j.1469-7610.2004.00218.x
37. Hardt J, Sidor A, Bracko M, Egle UT. Reliability of retrospective assessments of childhood experiences in Germany. *J Nerv Ment Dis*. (2006) 194:676–83. doi: 10.1097/01.nmd.0000235789.79491.1b
38. Hardt J, Vellaisamy P, Schoon I. Sequelae of prospective versus retrospective reports of adverse childhood experiences. *Psychol Rep*. (2010) 107:425–40. doi: 10.2466/02.04.09.10.16.21.PR0.107.5.425-440
39. Amado BG, Arce R, Herraiz A. Psychological injury in victims of child sexual abuse: a meta-analytic review. *Psychosoc Interv*. (2015) 24:49–62. doi: 10.1016/j.psi.2015.03.002
40. Chen LP, Murad MH, Paras ML, Colbenson KM, Sattler AL, Goranson EN, et al. Sexual abuse and lifetime diagnosis of psychiatric disorders: systematic review and meta-analysis. *Mayo Clin Proc*. (2010) 85:618–29. doi: 10.4065/mcp.2009.0583
41. Maniglio R. Child sexual abuse in the etiology of anxiety disorders: a systematic review of reviews. *Trauma Violence Abuse*. (2013) 14:96–112. doi: 10.1177/1524838012470032
42. Hillberg T, Hamilton-Giachritsis C, Dixon L. Review of meta-analyses on the association between child sexual abuse and adult mental health difficulties: a systematic approach. *Trauma Violence Abuse*. (2011) 12:38–49. doi: 10.1177/1524838010386812
43. Lindert J, von Ehrenstein OS, Grashow R, Gal G, Braehler E, Weisskopf MG. Sexual and physical abuse in childhood is associated with depression and anxiety over the life course: systematic review and meta-analysis. *Int J Public Health*. (2014) 59:359–72. doi: 10.1007/s00038-013-0519-5

44. Drescher, K. D., Foy, D. W., Kelly, C., Leshner, A., Schutz, K., & Litz, B. (2011). An Exploration of the Viability and Usefulness of the Construct of Moral Injury in War Veterans. *Traumatology*, 17:8–13. doi: 10.1177/1534765610395615
45. Yeterian, J. D., Berke, D. S., Carney, J. R., McIntyre-Smith, A., St Cyr, K., King, L., Kline, N. K., Phelps, A., Litz, B. T., Members of the Moral Injury Outcomes Project Consortium (2019). Defining and Measuring Moral Injury: Rationale, Design, and Preliminary Findings From the Moral Injury Outcome Scale Consortium. *Journal of Traumatic Stress*, 32:363–372. doi: 10.1002/jts.22380

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Potential Circumstances Associated With Moral Injury and Moral Distress in Healthcare Workers and Public Safety Personnel Across the Globe During COVID-19: A Scoping Review

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Healthcare workers (HCWs) and public safety personnel (PSP) across the globe have continued to face ethically and morally challenging situations during the COVID-19 pandemic that increase their risk for the development of moral distress (MD) and moral injury (MI). To date, however, the global circumstances that confer risk for MD and MI in these cohorts have not been systematically explored, nor have the unique circumstances that may exist across countries been explored. Here, we sought to identify and compare, across the globe, potentially morally injurious or distressful events (PMIDEs) in HCWs and PSP during the COVID-19 pandemic. A scoping review was conducted to identify and synthesize global knowledge on PMIDEs in HCWs and select PSP. Six databases were searched, including MEDLINE, EMBASE, Web of Science, PsychInfo, CINAHL, and Global Health. A total of 1,412 articles were retrieved, of which 57 articles were included in this review. These articles collectively described the experiences of samples from 19 different countries, which were comprised almost exclusively of HCWs. Given the lack of PSP data, the following results should not be generalized to PSP populations without further research. Using qualitative content analysis, six themes describing circumstances associated with PMIDEs were identified: (1) Risk of contracting or transmitting COVID-19; (2) Inability to work on the frontlines; (3) Provision of suboptimal care; (4) Care prioritization and resource allocation; (5) Perceived lack of support and unfair treatment by their organization; and (6) Stigma, discrimination, and abuse. HCWs described a range of emotions related to these PMIDEs, including anxiety, fear, guilt, shame, burnout, anger, and helplessness. Most PMIDE themes appeared to be shared globally, particularly the 'Risk of contracting or transmitting COVID-19' and the 'Perceived lack of support and unfair treatment by their organization.' Articles included within the theme of 'Stigma, discrimination, and abuse'

represented the smallest global distribution of all PMIDE themes. Overall, the present review provides insight into PMIDEs encountered by HCWs across the globe during COVID-19. Further research is required to differentiate the experience of PSP from HCWs, and to explore the impact of social and cultural factors on the experience of MD and MI.

Keywords: COVID-19, healthcare workers, public safety personnel, moral injury, moral distress, scoping review, global

INTRODUCTION

The COVID-19 pandemic has brought about unprecedented challenges for all citizens globally, with healthcare workers (HCWs; including nurses, physicians, personal support workers, social workers, etc.) (1) and public safety personnel (PSP; including police and correctional officers, firefighters, paramedics, etc.) (2) at the forefront of efforts to manage, contain, and remediate healthcare and societal impacts. HCWs and PSP have encountered ethically and morally challenging situations related to the unique circumstances of the COVID-19 pandemic. For example, global shortages of personal protective equipment (PPE) (3) forced HCWs and PSP to balance personal safety with their duty to the public (4–7). Similarly, perceived uneven and inequitable distribution of care in the face of shortages of life-saving resources has appeared particularly distressing, carrying heavy moral weight for HCWs (4, 5, 8, 9). Novel and challenging interactions with distressed families, patients, and the public that may include issues surrounding dying alone and enforcing limited visitation policies, have also been commonly described (10, 11). Given increased exposure to potentially traumatic and morally challenging events during the pandemic (12, 13), beyond that anticipated in these professions, it appears that the risk of developing COVID-19 related moral distress (MD) and/or moral injury (MI) may be exacerbated among HCWs and PSP. Despite this increased exposure and risk, scant literature exists to identify potentially morally injurious/distressful events (PMIDEs), shared across the globe. Moreover, unique PMIDEs across countries or continents remain to be identified. The present scoping review aimed to address these gaps in the literature.

The concept of MD originated in healthcare literature, being first described as the psychological distress that arises in a situation where one is constrained from pursuing the right course of action (14). Since then, a variety of definitions of MD have been proposed, spanning numerous professions. Morley et al. (15) surmised MD as arising from the experience of a "moral event" (e.g., a moral dilemma or moral uncertainty) which has a direct causal relationship with an experience of "psychological distress." MD is associated with a range of negative sequelae, including lower job satisfaction, greater intention to leave one's profession, reduced psychological empowerment and autonomy, and negative feelings that include anger, guilt, and powerlessness (16–18).

The concept of MI, which originated in the military context (19), has also assumed various definitions in recent decades, evolving independently from MD. Working from a syndromal perspective, Jinkerson (20) defined MI as the psychological, behavioral, interpersonal, and existential issues that arise following perceived violations of deep moral beliefs by either oneself or other trusted individuals. As defined by Litz et al. (19), these potentially morally injurious experiences may involve perpetuating, failing to prevent, bearing witness to, or learning about actions that transgress deeply held moral beliefs. The concept of MI has gained traction in HCWs and PSP in recent years, but it continues to remain ill-defined in these populations (21, 22). Although empirical studies in the healthcare context remain limited, it is probable that existing relationships between MI and increased susceptibility to various mental health outcomes, including the emergence of posttraumatic stress disorder (PTSD), major depressive disorder, and increased suicidality among military (23–25) and public safety personnel (26), will extend to members of the healthcare professions.

Although the concepts of MD and MI share similarities, there remains ambiguity around their definitions (15, 27, 28). One approach proposed by Litz and Kerig (29) is to conceptualize MD and MI as existing on a continuum, with MD appearing on the less severe end of this spectrum. However, others have suggested that MD and MI result from different types of insults, with MD resulting from the long-term accumulation of damage from organizational oppression, while MI results from the immediate harm resulting from a single substantial act going against individual beliefs (30). Given the limitations of these definitions, it has been suggested to integrate and synthesize the concepts of MD and MI as one, to better explore moral stressors holistically (28). Accordingly, we have taken a similar approach to explore these concepts conjointly in the context of COVID-19. The goal of this review was not to delineate the conceptual similarities and differences between MD and MI, but rather to gain a better appreciation of the moral stressors faced by HCWs and PSPs during the pandemic, particularly given their potential relationship to negative mental health outcomes Indeed, HCWs working during the pandemic have reported symptoms of depression, anxiety, insomnia, and distress, up to 50.4, 44.6, 34.9, and 71.5%, respectively, in a sample of 1,257 HCWs, with frontline workers involved directly in the care of COVID-19 patients having a significantly higher risk of all symptoms (31). PSP have also reported anxiety and depressive symptoms during the pandemic, with those exposed to the virus reporting significantly higher alcohol use severity compared to their non-exposed counterparts (13).

Although the majority of interest is focused on shared circumstances that may give rise to MD/MI across the globe, unique circumstances across countries and continents during

the COVID-19 pandemic exert the potential to expose HCWs and PSP to unique PMIDEs across different geographic regions. Together, these unique circumstances may include a country's population density and healthcare capacity, along with cultural and social factors (e.g., civil society and trust in the healthcare system) that influence pandemic response (32, 33). In addition, HCWs and PSP may be differentially accustomed to the resource shortages experienced during the pandemic (34).

On balance, the extant literature suggests that HCWs and PSP appear susceptible to the development of MD and MI related to their pandemic service. Despite this knowledge, it is unclear to date which unique and shared PMIDEs across geographies may contribute to the development of MD and MI in the COVID-19 context. Accordingly, the purpose of this scoping review was to better identify and describe the existing literature examining COVID-19 related PMIDEs in HCWs and PSP on a global scale, with particular focus on shared and non-shared PMIDEs.

MATERIALS AND METHODS

Given the emerging and complex nature of MD and MI in HCWs and PSP during COVID-19, a scoping review approach was chosen to explore the nuanced and heterogeneous literature in this field (35).

This scoping review followed the five-step approach outlined by Arksey and O'Malley (36) and further built upon by Levac et al. (37). The five steps include: identifying the research question, identifying relevant studies, selecting studies, charting the data, and collating, summarizing, and reporting the results. The present study complies with the preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) checklist (38) (**Supplementary Table 1**).

Identification of the Research Question

To gain a better understanding of the global context of MD and MI in HCWs and PSP during COVID-19, the research question was: 'What are the shared and unique circumstances of HCWs and PSP during COVID-19 across the globe that are potentially associated with MD and MI?'

Identification of Relevant Studies

The search terms were established through discussion with experienced researchers and clinicians within the field (MCM, KR), followed by the iterative drafting of the search strategy with an experienced librarian (LB) (**Supplementary Data 1**). A total of six databases (Medline, Embase, Global Health, CINAHL, Web of Science, and PsychInfo) were searched from January 1, 2020 to May 21, 2021 for articles that focused on HCWs (1) and select PSP (i.e., paramedics, firefighters, police officers, correctional officers, and emergency dispatchers), the COVID-19 context, and MD or MI. Handsearching of relevant studies and the references of included review articles were also performed.

Selection of Studies

The eligibility criteria included: published articles that focused on HCWs (including but not limited to nurses, physicians, respiratory therapists, occupational therapists, physical therapists, physician assistants, psychologists, social workers, and supporting healthcare staff) and select PSP (paramedics, firefighters, police officers, correctional officers, and emergency dispatchers) during the COVID-19 pandemic. Articles were included if they provided an in-depth focus on circumstances that may lead to MD or MI. As MD and MI are not universal terms used across the world, articles that did not mention MD or MI were also included if they: (a) provided events that may be considered a PMIDE; (b) reported outcome(s) within the scope of MD or MI; and (c) provided probable or direct connections between the PMIDE (a) and outcome(s) (b). The specific criteria were informed by literature on MD and MI and are listed below:

(a) PMIDEs included events where HCWs or PSP performed, witnessed, or were placed in situations that forced them to engage in acts violating deeply held personal or professional moral beliefs or expectations (19, 27); experienced moral uncertainty due to constraints within or outside of their control (internal or external) (15); or experienced organizational betrayal (39, 40).
(b) Emotional, psychological, behavioral, social, spiritual/existential, or functional outcomes, including, but not limited to, moral emotions such as shame, guilt, and anger, betrayal, anhedonia, inward hostility, social alienation, loss of trust in self or others (20, 39), and mental health diagnoses such as PTSD or major depressive disorder (23, 25).
(c) Connections between PMIDEs and associated outcomes were determined by the reviewers using both the phrasing of the articles' findings as well as statistical analyses connecting the PMIDE and outcome, if applicable.

Quantitative, qualitative, and mixed-method primary studies available in English were included, in addition to editorials and commentaries that provided primary data or explicit personal narratives. Review articles were appraised to identify additional relevant articles. Although the inclusion of articles written in any language would have been ideal, given resource limitations, and the complex nature of conceptualizing MD and MI, which may not be sufficiently understood using language translation software, a decision was made to focus on articles available in English. Given the global scope of the review, there were no limits placed on the geographical location of the study. Exclusion criteria included gray literature as well as published articles that were primarily focused on ethical analyses, policy recommendations, settings outside of healthcare and public safety, or which lacked an in-depth focus on MD or MI. Two reviewers (YX and JL) independently screened the full text of all articles against the eligibility criteria. Any conflicts in inclusion were resolved by a third reviewer (KR).

A total of 1,412 articles were identified from seven databases, handsearching, and references of review articles, of which 620 duplicates were removed (**Figure 1**). The full text of 792 articles was screened for eligibility, and 57 were included in this review. The full text of four articles was unable to be retrieved and was not screened for eligibility.

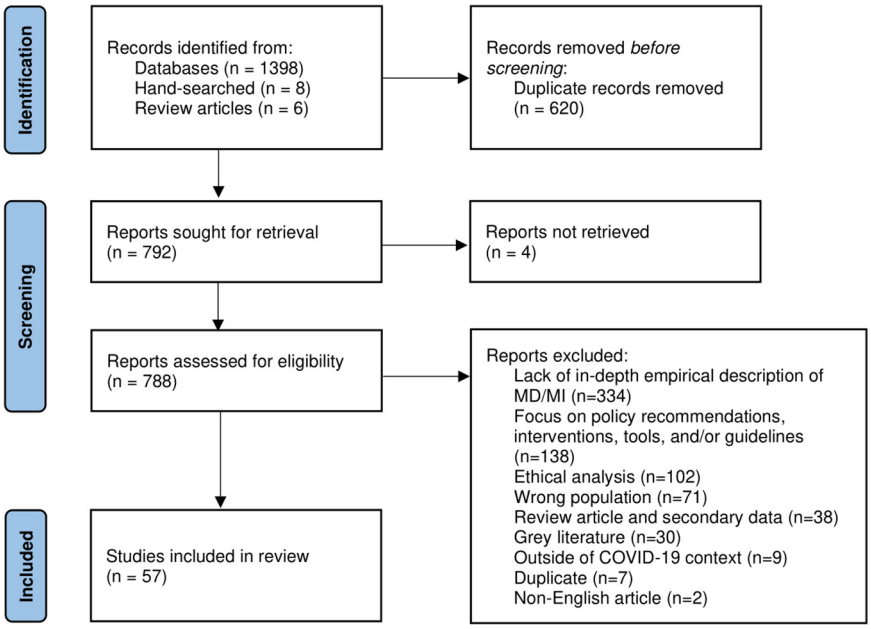

FIGURE 1 | PRISMA flow diagram.

Charting the Data

A data extraction form was jointly created by the research team and piloted by two reviewers (YX and JL). Charted data items included basic study characteristics (study type, country of origin, setting, study period, concept of interest, population of interest, aims of the study, and outcome measures), and the following MD- and MI-related data as defined above: (i) description of PMIDE(s) or the circumstances contributing to the PMIDE(s), (ii) outcomes within the scope of MD and MI, and (iii) direct connections between (i) and (ii). Determining the type of data that constituted the description of the PMIDE(s) (i) required a degree of interpretation by the reviewers given the complex nature of the concept of morals. Nonetheless, inclusion was guided by the definition of a PMIDE as described above. Factors, practices, and interventions described to protect against MD and MI were initially included in the data extraction form, but following further discussion, these items were excluded as many articles that reported this data failed to meet the study's eligibility criteria.

Collating, Summarizing, and Reporting the Results

Following Levac et al. (37), the following steps were taken at this stage: analyzing the data, reporting the results, and applying meaning to the results. To identify the key characteristics related to our concept of interest, basic qualitative coding was performed on the extracted data as suggested by Peters et al. (35). These data were duplicated onto a separate Excel spreadsheet and the three data items related to MD and MI, (i) to (iii), were coded by one reviewer (YX) into three distinct sets of codes using the conventional qualitative content analysis approach (41, 42). Within each set of codes, themes were formed by first grouping common codes, followed by subsequent grouping by meaning. A descriptive numerical summary of included articles was also conducted with respect to all study characteristics. To better understand the universality of the identified PMIDE themes, a geographical summary of the articles included in each theme, specifically focused on the geography of the studied population, was conducted. Geographic regions outlined by the World Health Organization (WHO) were used to define geography (43). Meaning derived from identified categories and their geographical distribution was iteratively generated and discussed amongst the team, with any discrepancies resolved through consensus.

RESULTS

Of the 57 included articles, the majority were conducted on populations in the United States (n = 15), followed by India (n = 6), China (n = 5), United Kingdom (n = 4), Canada (n = 4), Turkey (n = 3), Australia (n = 2), Lebanon (n = 2), Pakistan (n = 2), Ireland (n = 2), and one study from Belgium, Indonesia, Iran, Libya, Palestine, Saudi Arabia, South Africa, Spain, and Vietnam. Two studies recruited participants globally (44, 45) and another study was focused on the North American context (46). The geographical distribution of included studies is illustrated in **Figure 2**. The majority of articles were published in 2020 (n = 31) and recruited participants or collected data in April (n = 15), May (n = 17), June (n = 18), and/or July (n = 10) of that year. About 35.1% of articles used surveys only (n = 20), 36.8% used interviews only (n = 21), 3.51% used focus groups only (n = 2), 1.75% used interviews and focus

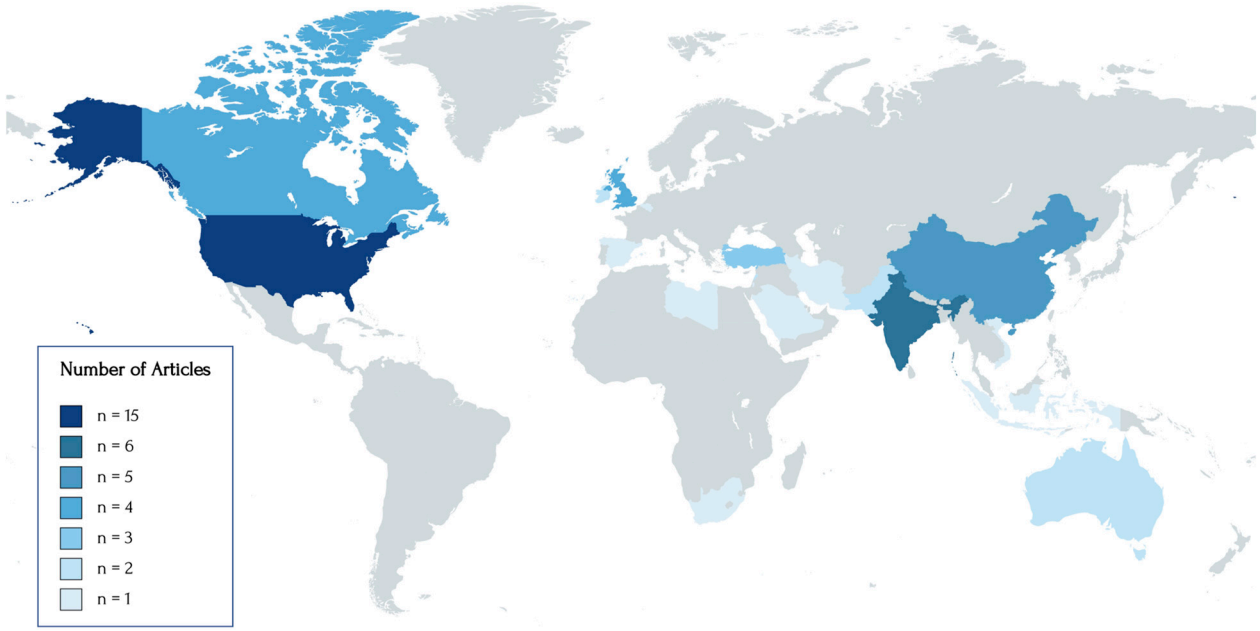

FIGURE 2 | World map of the geographical distribution of included studies. The following geographies were represented: United States (*n* = 15), India (*n* = 6), China (*n* = 5), Canada (*n* = 4), United Kingdom (*n* = 4), Turkey (*n* = 3), Australia (*n* = 2), Ireland (*n* = 2), Lebanon (*n* = 2), Pakistan (*n* = 2), Belgium (*n* = 1), Indonesia (*n* = 1), Iran (*n* = 1), Libya (*n* = 1), Palestine (*n* = 1), Saudi Arabia (*n* = 1), South Africa (*n* = 1), Spain (*n* = 1), and Vietnam (*n* = 1). Two studies conducted with global participants and one study conducted on North American participants were not included in the following figure.

groups (*n* = 1), 3.51% used both surveys and interviews/focus groups (*n* = 2), and the remaining articles provided data from the authors' personal experiences or from their discussions with peers (*n* = 11). All articles using surveys had a cross-sectional design. Five articles using surveys included questions with free-text responses. Demographic information for all included studies is presented in **Table 1**.

A total estimated sample size of 12,488 participants is represented by all articles that provided a sample size (*n* = 46). The sample size of these articles ranged from 10 to 3,006 participants (median of 63 participants). All articles primarily focused on HCWs, and in articles specifying the occupation of HCWs, the most common populations studied were physicians (37 of 57 studies) and nurses (34 of 57 studies). Data on the PSP population were extremely limited, including very small samples of paramedics, emergency medical technicians, police officers, and/or firefighters, aggregated with the data of HCWs within six studies. Given the lack of literature on PSP, the findings presented here are based almost exclusively on the experience of HCWs.

The included articles focused on exploring the experiences, challenges, and stressors faced by HCWs, their coping strategies, and psychological outcomes. Two studies used a validated measure of MI and MD respectively (**Supplementary Data 2**).

Six overarching themes describing the circumstances associated with PMIDEs were identified. The themes were: (1) Risk of contracting or transmitting COVID-19; (2) Inability to work on the frontlines; (3) Provision of suboptimal care; (4) Care prioritization and resource allocation; (5) Perceived lack of support and unfair treatment by their organization; and (6) Stigma, discrimination, and abuse. The studies included under each PMIDE category as well as their geographic distribution are provided in **Supplementary Table 2**.

Risk of Contracting or Transmitting COVID-19

Fear of contracting COVID-19 and infecting family, colleagues, and/or patients, was described by HCWs in 34 articles (59.6%). These studies collectively had the greatest global spread of all PMIDE categories, representing data from participants in the Americas (*n* = 10) (7, 11, 47–54), Europe (*n* = 8) (55–62), South-east Asia (*n* = 6) (63–68), Western Pacific (*n* = 5) (69–73), Eastern Mediterranean (*n* = 4) (74–77), and globally (*n* = 1) (44). Feelings of fear (58, 68, 72, 73, 75–77), anxiety (7, 44, 47, 52, 73), guilt (50, 54, 56, 63, 65), and depression (73) were commonly described throughout the included studies. The following sections highlight the strenuous moral decisions HCWs often faced in balancing professional duties with personal and familial safety.

The fear associated with contracting and transmitting COVID-19 was especially prominent among HCWs who had additional vulnerabilities to infection due to an underlying health condition (44, 54, 55, 59), or who lived with children, older adults, or individuals with other vulnerabilities (44, 50, 55, 65, 72) (Turkey, India, Global, China, and United States). Feelings of guilt were commonly reported due to feeling as though one was putting one's family and colleagues at risk of infection or in relation to not wanting to be on the frontlines because of an underlying health condition (50, 54, 56, 63, 65) (United States,

TABLE 1 | Study characteristics of included articles.

Author	Region	N	Population(s) (n)	Setting	Research design	Recruitment/Data collection period	Study purpose
Ayyala et al. (46)	North America	251	Physicians (n = 251)	Pediatric radiology (hospital and remote)	Quantitative (cross-sectional, survey)	April–May 2020	Explore the sources of stress and anxiety for faculty in pediatric radiology during the early stage of COVID-19
Banerjee et al. (63)	India	172	Physicians (n = 172)	COVID-19-designated hospital	Qualitative (interview)	April–August 2020	Explore the adversities of HCWs and construct a conceptual framework of their psychological resilience.
Bayrak et al. (55)	Turkey	618	Nurses (n = 618)	Health institution	Quantitative (cross-sectional, survey)	May 2020	Explore the relationship between anxiety levels and the anger expression styles of nurses during the COVID-19 pandemic.
Billings et al. (91)	United Kingdom	28	Mental health professionals (n = 28)	NR	Qualitative (interview)	June 8 - July 23, 2020	Explore the experiences, views, and needs of United Kingdom mental health professionals during the COVID-19 pandemic.
Brophy et al. (47)	Canada	10	Nurses (n = 5) Personal support workers (n = 2) Administrative staff (n = 2) Cleaner (n = 1)	Long-term care home/Hospital	Qualitative (interview)	April–May 2020	Explore how HCWs are navigating the compromised healthcare system in Ontario while facing the increased risk and pressures of COVID-19.
Creese et al. (56)	Ireland	48	Physicians (n = 48)	Hospital	Qualitative (Interview)	June–July 2020	Explore the perceptions of doctors of their own mental and physical well-being during the first wave of COVID-19.
Ditwiler et al. (48)	United States	10	Physical therapists (n = 10)	NR	Qualitative (interview)	23 June–17 July 2020	Explore the experiences of physical therapists on the professional and ethical issues encountered during COVID-19.
Fawaz and Itani (74)	Lebanon	18	Nurses (n = 18)	Ground zero hospital	Qualitative (interview)	January 2021	Explore the psychological experience of Lebanese frontline nurses serving at ground zero hospitals.
Ffrench-O'Carroll et al. (60)	Ireland	408	Nurses (n = 273) Physicians (n = 71) Allied health professionals (n = 35) General support staff (n = 16) Managerial/administrative/IT staff (n = 7)	Intensive care unit (adult and pediatrics)	Correspondence (quantitative (cross-sectional, survey))	7 May–5 June 2020	Explore the extent of psychological distress on staff working in pediatric and adult ICUs during COVID-19.
Gaucher et al. (49)	Canada	187	Physicians (n = 187)	Emergency department (general and pediatrics)	Quantitative/qualitative (cross-sectional, survey)	29 June–29 July 2020	Explore the experiences, concerns, and perspectives during the first wave of the pandemic.
Gunawan et al. (66)	Indonesia	17	Nurses (n = 17)	Hospital	Qualitative (interview)	March–June 2020	Explore the lived experiences of nurses combatting COVID-19.
Jia et al. (70)	China	18	Nurses (n = 18)	COVID-19-designated unit	Qualitative (interview)	February–March 2020	Examine ethical challenges encountered by nurses and their coping styles to ethical conflicts and dilemmas.
Kaelen et al. (58)	Belgium	44	Nurse-aid (n = 17) Nurse (n = 10) Occupational therapist or physical therapist (n = 9) Support staff (n = 8)	Nursing home	Qualitative (focus groups)	15 June–3 July 2020	Examine the psychosocial and mental health needs of nursing home residents during of the first wave of COVID-19 and how nursing home staff perceived their preparedness to address those needs.
Kanaris (90)	United Kingdom	NA	Healthcare workers (NA)	Intensive care unit	Commentary	NA	NR
Maraqa et al. (96)	Palestine	357 (quantitative), 15 (qualitative)	Quantitative: nurses (n = 161), physicians (n = 156), others (n = 40); Qualitative: physicians (n = 7), nurses (n = 6), lab technician (n = 1), radiology technician (n = 1)	Hospitals and public health centres	Mixed methods (cross-sectional, survey; interviews)	Quantitative: 2nd month of COVID-19 outbreak in Palestine Qualitative: 3rd month of COVID-19 outbreak in Palestine	Explore healthcare workers' willingness to work and the associated factors, in addition to the ethical dilemmas during COVID-19.

(Continued)

TABLE 1 | (Continued)

Author	Region	N	Population(s) (n)	Setting	Research design	Recruitment/Data collection period	Study purpose
Al Muharraq (77)	Saudi Arabia	215	Nurses (n = 215)	Hospital	Quantitative (survey, cross-sectional)	Aug-20	Explore the psychological impact of COVID-19 and coping strategies in frontline nurses working in Jazan, Saudi Arabia.
O'Neal et al. (44)	Global (primarily United States, Kenya, Canada)	839	Physicians (n = 540) Nurses (n = 111) Mental healthcare provider (n = 52) Physician assistant (n = 11) Paramedic or EMT (n = 10) Laboratory technician (n = 3) Respiratory therapists (n = 2) Others (n = 49)	Various settings[a]	Quantitative (cross-sectional, survey)	19 May–30 June 2020	Explore the scope and specifics of moral distress and HCWs perception of risk during COVID-19 and generate discussion around ethical resource allocation.
Patterson et al. (54)	United States	34	Medical family therapists and trainees (NR) Physicians and residents (NR)	Family medicine clinic	Qualitative (cross-sectional, survey)	May–June 2020	Explore moral distress in clinicians working in a family medicine setting.
Rao et al. (51)	United States	50	Physicians (n = 22) Nurses (n = 21) Respiratory therapists (n = 2) Paramedics (n = 4) Emergency medical technician (n = 1) Physician assistant (n = 1)	Safety net hospital	Qualitative (interview)	22 April–8 July 2020	Examine factors driving distress and motivation in interdisciplinary clinicians caring for patients with COVID-19.
Şahin and Kulakaç (59)	Turkey	356	Nurses (n = 210) Physicians (n = 51) Emergency medical technicians/ Anaesthesia technician/Cleaning personnel (NR) Others (n = 27)	Hospital	Quantitative (cross-sectional, survey)	10-15 May 2020	Explore anxiety levels of healthcare workers during COVID-19 and associated factors.
Silverman et al. (83)	United States	31	Nurses (n = 31)	Academic Medical Centres (Acute Care)	Qualitative (focus groups/interviews)	April–June 2020	Explore the causes of moral distress in nurses caring for COVID-19 patients and identify strategies to cope with threatened moral integrity.
Sukhera et al. (84)	Canada	22	Resident physician (n = 17) Faculty member (n = 5)	Hospital	Qualitative (interview)	April–June 2020	Explore how residents perceive moral distress in relation to structural stigma during COVID-19.
Tate (87)	United States	NA	Physician (n = 1)	Pediatric palliative care	Commentary	NA	NR
Wanigasooriya et al. (61)	United Kingdom	2638	Nurses (n = 775) Physicians (n = 460) Others[b] (n = 1403)	Hospital (acute general and mental health)	Quantitative (cross-section, survey)	5 June–31 July 2020	Evaluate rates of clinically significant symptoms of anxiety, depressive and post-traumatic stress disorder and associated exposures and characteristics in HCWs following the first COVID-19 peak.
Whitehead et al. (88)	United States	19	Nurse managers (n = 19)	Healthcare organizations	Qualitative (interview)	NR	Examine the moral distress experience of nurse managers.
Wiener et al. (11)	United States	207	Nurses (NR) Physicians (NR) Child life specialists (NR) Social workers (NR) Chaplains (NR) Psychologists (NR)	Pediatric palliative care	Quantitative/qualitative (cross-section, survey)	1 May–26 June 2020	Explore the impact of COVID-19 on end-of-life care and the approach taken by providers toward bereavement care in pediatric palliative care.
Yıldırım et al. (62)	Turkey	17	Nurse (n = 17)	Hospital (COVID-19 unit)	Qualitative (interview)	27 May–25 August 2020	Explore the experiences of nurses working during the onset of the COVID-19 outbreak in Turkey.
Wang et al. (99)	China	3006	Physicians (n = 2423) Nurses (n = 583)	Hospital	Quantitative (cross-sectional, survey)	27 March–26 April 2020	Examine prevalence and correlates of moral injury in physicians and nurses in during COVID-19.

(Continued)

TABLE 1 | (Continued)

Author	Region	N	Population(s) (n)	Setting	Research design	Recruitment/Data collection period	Study purpose
Ananda-Rajah et al. (69)	Australia	569	Physicians (n = 331) Nurses (n = 188) Allied health professionals (n = 25) Paramedics (n = 13) Administrative staff (n = 7) Midwives (n = 5)	NR	Qualitative (open-letter with one free-text response question)	August–October 2020	Explore the working condition and issues faced by HCWs during COVID-19.
Benzel (52)	United States	NR	Healthcare workers (NR)	Hospital	Commentary	NA	NR
Butler et al. (85)	United States	61	Physicians (n = 50) Nurses (n = 10)	Academic institutions, private institution, other	Qualitative (interview)	April–May 2020	Describe the perspectives and experiences of clinicians involved in the institutional planning for resource limitation or patient care during COVID-19.
Cai et al. (71)	China	534	Nurse (n = 248) Physician (n = 233) Medical technician (n = 48) Hospital staff (n = 5)	Hospital	Quantitative (cross-sectional, survey)	January–March 2020	Explore the psychological impact and coping strategies of frontline healthcare staff in the Hunan province.
Cheng and Li Ping Wah-Pun Sin (89)	United Kingdom	NA	Physician (n = 2)	Palliative care	Commentary	NA	NR
Cheriyan and Kumar (94)	India	286	Medical residents (n = 286)	Urology	Editorial (quantitative (cross-sectional, survey)	21 June–11 July 2020	Explore the impact of COVID-19 on the training and academics, clinical work, and personal life of urology residents.
Collado-Boira et al. (57)	Spain	62	Medical students (n = 33) Nursing students (n = 29)	Hospital	Qualitative (Interview)	March–April 2020	Explore the perceptions of nursing and medical students during COVID-19.
Dewar et al. (86)	Canada	165	Physicians (n = 165)	Hospital	Quantitative/Qualitative (cross-sectional, survey)	3–13 April 2020	Explore the preparedness and attitudes of physicians on resource allocation decisions.
Dhar and Wani (67)	India	NA	Surgeons (NR)	NR	Commentary	NA	NR
Do Duy et al. (82)	Vietnam	61	Nurses (45) Clinicians (7) Others (9)	Hospital	Editorial (quantitative, cross-sectional, survey)	26–29 April 2020	Measure the stigma experienced by HCWs after 3 weeks of quarantine and its association with mental health problems.
Elhadi et al. (98)	Libya	745	Physicians (NR) Nurses (NR)	Hospital	Quantitative (cross-sectional, survey)	18–28 April 2020	Measure the prevalence of anxiety and depression in HCWs during COVID-19 and the civil war in Libya.
Evans et al. (92)	Australia	NA	Healthcare workers (NA)	Palliative care	Ethics Rounds	NA	NR
Fawaz and Samaha (97)	Lebanon	13	Nurses (n = 9) Physicians (n = 4)	Hospital	Qualitative (interview)	NR	Explore psychosocial effects of being quarantined following COVID-19 exposure in HCWs.
George et al. (65)	India	64	Physicians (n = 20) Nurses (n = 14) Field staff (n = 14) Allied health professionals (n = 10) Others (n = 6)	Urban slum	Mixed methods (cross-section survey, interview and focus group)	First 40 days of pandemic	Explore dilemmas, mental stress, adaptive measures, and coping strategies in healthcare teams providing healthcare services in urban slums.
Iheduru-Anderson (50)	United States	28	Nurses (n = 28)	Hospital (acute care)	Qualitative (interview)	15 May–20 June 2020	Explore experiences of nurses working with limited PPE during COVID-19.
Kling (81)	South Africa	NA	Physician (n = 1)	Hospital	Commentary	NA	Explore the duty of care and side-line guilt during COVID-19.
Koven (80)	United States	1	Physician (n = 1)	Hospital	Commentary	NA	NA
Li et al. (73)	China	150	Nurse (n = 107) Physician (n = 43)	Hospital	Quantitative (cross-sectional, survey)	1-20 February 2020	Examine the relationships between sociodemographic characteristics and anxiety and depression in frontline medical workers.

(Continued)

TABLE 1 | (Continued)

Author	Region	N	Population(s) (n)	Setting	Research design	Recruitment/Data collection period	Study purpose
Liu et al. (72)	China	13	Nurses (n = 9) Physicians (n = 4)	COVID-19-designated Hospital	Qualitative (interview)	10-15 Feb 2020	Explore experience of HCWs during early stages of outbreak
Mehra et al. (64)	India	88	Medical residents (n = 23) Paramedical staff (n = 23) Faculty members (n = 17) Medical officers (n = 3) Security staff (n = 3) Nursing staff (n = 1) Others (n = 18)	Tertiary care center	Quantitative (cross-sectional, survey)	April–May 2020	Evaluate the prevalence of psychological issues in HCWs working in a tertiary care center.
Mohindra et al. (68)	India	NR	Frontline healthcare providers (NR)	Tertiary hospital	Qualitative (interview)	NR	NR
Noreen et al. (76)	Pakistan	250	Consultant (n = 40) Medical officers (n = 70) Faculty (n = 53) Resident (n = 47) House officer (n = 40)	NR	Quantitative (cross-sectional survey)	NR	Explore the factors impacting psychological health and coping strategies of healthcare professionals during COVID-19.
Raza et al. (75)	Pakistan	12	Physicians (n = 7) Nurses (n = 5)	COVID-19-designated hospital	Qualitative (interview)	6-14 April 2020	Explore factors that impede healthcare providers to effectively treat COVID-19 patients.
Reuben (78)	United States	NA	Physician (n = 1)	NR	Perspective	NA	NR
Rezaee et al. (93)	Iran	24	Nurses (n = 24)	Educational and medical centers	Qualitative (interview)	September–October 2020	Explore perceived ethical challenges of nurses caring for patients with COVID-19.
Shanafelt et al. (7)	United States	69	Physicians (NR) Nurses (NR) Advanced practice clinicians (NR) Residents (NR) Fellows (NR)	NR	Perspective (focus groups)	First week of the COVID-19	Explore the concerns of healthcare professionals, the messaging and behaviours they need from their leaders, and the sources of support they believe would be most useful for them.
Tsai (79)	United States	1	Physician (n = 1)	Hospital	Commentary	NA	NA
Viswanathan et al. (53)	United States	130/57[c]	Attending physicians (n = 40) Residents (n = 40) Nurses (n = 50) Unknown (n = 57)	Hospital	Perspective	Beginning March 28 2020	Describe experience of providing peer support groups and individual counseling to HCWs that focus on issues and emotions related to their work during COVID.
Zolnikov & Furio (45)	Global (primarily United States)	31	Nurses (n = 14) Physician (n = 3) Police offers (n = 3) Firefighters and paramedics (n = 3) Firefighter and emergency medical technician (n = 1) Paramedics (n = 1) Others[d] (n = 6)	NR	Qualitative (interview)	NR	Explore the stigma toward first responders during COVID-19 and its associated consequences on mental health.

[a]*Academic medical center (n = 270), community private health system (n = 234), government health system (n = 113), long-term care or assisted living (n = 7), out-of-hospital/ambulance (n = 9), prison or other detention health system (n = 4), veterans health administration system (n = 16), other (n = 114).*
[b]*Non-clinical staff, allied health professions, and other.*
[c]*130 individuals participated in the support group sessions, 57 individuals participated in the individual mental health care sessions.*
[d]*Behavioral therapist (n = 1), orthodontist (n = 1), dialysis technician (n = 1), medical surgery technician (n = 1), data specialist (n = 1), tech (n = 1).*
NR, not reported.

Ireland, and India). Concerns around infection sometimes led to taking time off from work (47) (Canada).

Exacerbating these concerns were shortages in PPE and the uncertainty around what constituted sufficient PPE (48, 54, 74) (United States and Lebanon). In a global cross-sectional study (44), 62.9% of participants reported a PPE shortage, which was present in nearly all settings and was reported similarly between physicians and other HCWs. Regional studies replicated these concerns around PPE supply.About 49% of physicians working in the emergency department reported concerns around lack of PPE, with 31% occasionally providing care without appropriate PPE (49) (Canada). Similarly, nursing home staff have reported insufficient or a complete lack of appropriate PPE for weeks (58) (Belgium). The lack of adequate PPE sometimes forced HCWs to clean and reuse their equipment (66) (Indonesia). In relation to mental health outcomes, HCWs who lacked access to adequate

PPE experienced significantly greater symptoms of generalized anxiety disorder, major depressive disorder, and PTSD (61) (United Kingdom). Additionally, workers in the adult intensive care unit (ICU) reported significantly higher levels of stress with respect to equipment and staff shortages than did workers in the pediatric ICU (60) (Ireland).

Inability to Work on the Frontlines

Thirteen articles (22.8%) described situations where some HCWs were unable to work to the same extent as their colleagues on the frontlines, representing samples from the Americas (n = 8) (46, 50, 52–54, 78–80), South-east Asia (n = 2) (67, 68), and one article each from Africa (81), Europe (56), and Western Pacific (82). These situations were described by some HCWs to be associated with feelings of guilt and shame (50, 52, 53, 56, 78, 81, 82).

Feelings of guilt were reported by HCWs who felt that they did not have the same level of exposure or risk as their colleagues, including surgeons (52, 67) (United States, India), radiologists (46) (North America), students (54) (United States), and other HCWs not assigned to work in-person, or who chose to switch to telemedicine due to underlying comorbidities (50, 54, 79, 80) (United States). Similar feelings were reported by HCWs who were required to isolate and quarantine following exposure or infection by COVID-19 (53, 56, 82) (Ireland, Vietnam, and United States). These feelings have been termed "sideline guilt" (78, 81) (United States, South Africa). In addition, consistent with the concept of survivor guilt, some HCWs have reported feelings of guilt and sorrow in relation to recovering from illness or not becoming ill while some of their colleagues died (50) (United States).

Provision of Suboptimal Care

The uncertainty and ambiguity experienced by HCWs around patient care were also pervasive. Given an early lack of clinical guidelines and evidence surrounding COVID-19, HCWs described difficulty deciding on and communicating an appropriate therapeutic course of action and a realistic prognosis in many cases (48, 51, 53, 81, 83) (United States, South Africa). Thirty-three articles (57.9%) discussed the idea of providing suboptimal care, representing diverse samples across the globe, including the Americas (n = 15) (7, 11, 48–54, 83–88), Europe (n = 9) (56–58, 60–62, 89–91), Western Pacific (n = 3) (70, 72, 92), Eastern Mediterranean (n = 2) (74, 93), South-east Asia (n = 2) (67, 94), and one from Africa (81) and another with a global scope (44). From these articles, three subcategories were formed: "PPE negatively impacting care"; "Inability to provide a good death"; and "Unprepared for novel tasks." HCWs drew connections between providing suboptimal care or seeing patients dying alone and feelings of guilt (50, 54, 74), sorrow (11, 51), worry (70, 88), and powerlessness (72, 84).

Concerns about the quality of care and support provided to patients were commonly reported (48, 49, 54, 83, 88, 93) (United States, Canada, Iran). HCWs often reported feeling responsible for the patients' outcomes and experiencing intrusive thoughts and feelings of guilt, despite following institutional recommendations (54, 74, 83, 85) (United States, Lebanon). Being unable to observe patients achieve the outcomes that they would typically achieve prior to the pandemic led to feelings of hopelessness and lack of control (48, 53, 72) (United States, China). These experiences were also reported in HCW managers who described their own MD when managing and supporting staff, in addition to the MD experienced by their team (88) (United States). Conflicts between colleagues in patient care plan decisions and witnessing inadequate provision of care were described as a source of MD (83) (United States). Witnessing the disproportionate harm to stigmatized groups impacted by restrictive services and policy decisions, including limited access to culturally and linguistically appropriate services and mental health and addiction care needs, also led to considerable MD (84) (Canada).

PPE Negatively Impacting Care

Eight studies across the Americas (n = 4) (49, 51, 53, 83), Europe (n = 2) (58, 89), South-east Asia (n = 1) (67), and Western Pacific (n = 1) (70), described how the use of PPE by HCWs acted as a significant physical and emotional barrier to patient care. The use of PPE and the need for distancing made it difficult to verbally communicate with patients (49, 58, 89) (United Kingdom, Canada, Belgium) and convey emotion, with some HCWs reporting that the use of PPE increased fear in patients (49, 51, 53, 70, 89) (Canada, United States, China, United Kingdom). These challenges depersonalized care and made it difficult for HCWs to develop trust and rapport with patients (51, 53, 86, 89) (United States, Canada, United Kingdom). Moreover, the additional time required to don and doff PPE sometimes led to treatment delays and failures (49, 70, 83) (Canada, China, United States).

Inability to Provide a Good Death

Ten articles described how HCWs were unable to provide patients with a "good death" given the circumstances of the pandemic. These articles represented samples from the Americas (n = 6) (11, 53, 83, 86–88), Europe (n = 2) (89, 90), Eastern Mediterranean (n = 1) (93), and Western Pacific (n = 1) (92).

Healthcare workers reported how it was overwhelming to see patients die alone without their loved ones (53, 83, 90, 93) (United States, United Kingdom, Iran), and how visitation policies added to the distress experienced by families (49) (Canada). Moreover, the delivery of bad news to families by telephone was described as limiting the humane aspect of being a care provider (89) (United Kingdom). HCWs described feeling responsible for allowing patients to die alone and experienced ruminating thoughts related to these experiences (90) (United Kingdom). These challenges were especially prominent in the end-of-life care of pediatric patients where visitation policies often allowed only a single parent to be with a child until he or she was reaching the end of life (11, 60) (Ireland, United States). HCWs enforcing these policies described a feeling of participating in something "evil" which went against their morals (60) (Ireland). In the United States, these providers further described morally distressing experiences where they felt constrained from doing what they believed to be ethically appropriate (e.g., being instructed to separate a dying infant from the mother), observed potentially traumatic events

that they were unable to change (e.g., informal funerals in a family's yard), and experienced ambivalence about the morals of their actions (e.g., making decisions around employee furloughs, salaries and hiring) (11). Witnessing or learning about colleagues providing inappropriate end-of-life care for patients and their families was also described as increasing MD in HCWs (83, 88) (United States).

Unprepared for Novel Tasks

Another factor that may have limited HCWs' ability to provide optimal care was the lack of preparation for novel tasks beyond the scope of their role. Nineteen articles described the events of participants from the Americas (n = 6) (7, 48, 49, 51, 54, 83), Europe (n = 8) (57, 58, 60–62, 89–91) South-east Asia (n = 2) (67, 94), Western Pacific (n = 2) (70, 72), and globally (n = 1) (44). Many HCWs were redeployed during the pandemic to assignments where they took on unfamiliar roles—junior doctors were now regularly breaking bad news (89) (United Kingdom), allied health professionals assisted in kitchen and nursing tasks (58) (Belgium), and pediatric ICU providers cared for adult patients (90) (United Kingdom). Many HCWs felt unprepared to perform their tasks (49, 57, 70, 83, 94) (Canada, Spain, China, United States, India), which included the management of psychological issues experienced by patients (70) (China) and frontline staff (91) (United Kingdom), as well as palliative care provision (86) (Canada). Some HCWs were also working in intensive care wards and handling infectious diseases for the first time (72, 83) (China, United States). In a United Kingdom study, redeployment was found to be significantly associated with PTSD symptoms, but not with symptoms of generalized anxiety disorder or major depressive disorder (61). Moreover, certain populations were differentially impacted by redeployment. When compared to their adult ICU counterparts, pediatric ICU workers reported significantly more stress toward being redeployed and treating patients outside of their trained role (60) (Ireland). Nurses also experienced significantly more stress than doctors and other professionals with respect to being redeployed and caring for patients outside of their trained role (60) (Ireland).

Care Prioritization and Resource Allocation

Given the influx of patients infected by COVID-19 as well as limited material and human resources, HCWs were often faced with decisions surrounding care prioritization and resource allocation. Twelve articles described these challenges, representing HCWs from the Americas (n = 6) (11, 48, 51, 83, 85, 86), Europe (n = 2) (89, 91), Western Pacific (n = 2) (72, 92), Eastern Mediterranean (n = 1) (74), and globally (n = 1) (44). These experiences were sometimes associated with feelings of fear (85), anxiety (86), sadness (86), or guilt (91).

Many articles described the very high levels of fear and worry that HCWs experienced in relation to rationing resources, particularly critical care resources, and delaying elective treatment (51, 85, 89) (United States, United Kingdom). A survey in Canada found that the most common feelings experienced by physicians when making ventilator allocation decisions were sadness (24%) and guilt (19%) (86). Many HCWs felt that they did not receive adequate training to make these decisions; 53.9% of HCWs in a global study reported that they "disagreed" or "strongly disagreed" with statements related to having received sufficient training to allocate limited resources (44). Moreover, experiencing a higher exposure to moral dilemmas, which may encompass difficult allocation decisions, was associated with significantly higher symptoms of generalized anxiety disorder, major depressive disorder, and PTSD (61) (United Kingdom). Mental health professionals struggled with the need to prioritize psychological support as they were sometimes required to prioritize support of staff over support of vulnerable patients (91) (United Kingdom).

Perceived Lack of Support and Unfair Treatment by Their Organization

A highly pervasive theme among HCWs was the lack of support or unfair treatment experienced by their institutions during the pandemic. A total of 16 articles discussed these experiences, which accounted for a global spread of countries across the Americas (n = 8) (7, 47, 48, 51–53, 88, 95), South-east Asia (n = 3) (63, 64, 66), Europe (n = 2) (58, 62), Eastern Mediterranean (n = 2) (75, 96), and Western Pacific (n = 1) (69). These experiences were often associated with feelings of anger (47, 50, 53, 58, 64, 69, 74) and betrayal (47, 50, 66, 69). Within this PMIDE category, a variety of subcategories were present: "Lack of adequate benefits"; "Decisions placing HCWs' health at risk"; and "Lack of communication and transparency."

Lack of Adequate Benefits

Many articles spoke to the inadequate support and benefits that some HCWs experienced during their work on the frontlines. In a study on Indian HCWs, the three highest unmet needs reported by participants were flexible work policies (88%), medical/insurance benefits (70%), and administrative understanding (60%) (63). HCWs were also concerned about the support that would be provided by their organization for their personal and familial needs, including the support that would be provided if they contracted COVID-19 (7) (United States). A study in the United States reported that many nurses lacked paid leave during their mandatory 2- to 3-week quarantines, which fostered a sense of betrayal toward their organization (50).

Decisions Placing HCWs' Health at Risk

Healthcare workers commonly reported experiences of their institution placing their lives at risk and expressed concerns about workplace health and safety measures (63, 64, 69, 75) (India, Australia, Pakistan). In a study on Australian HCWs, PPE safety guidelines were inadequate and dictated by the resources available, rather than the safety of the staff (69). Other HCWs felt that financial resources and staff decisions were not allocated according to true need but were instead gauged using poor metrics that failed to account for on-the-ground realities (88) (United States). Some HCWs reported that their organization only improved the quality of PPE after providers were infected and became critically ill (69). Despite the inadequate PPE provided by their organization, many HCWs reported being shamed or facing repercussions such as

work suspension for requesting or using personal supplies of PPE that was of better quality than that provided by their workplace (50, 69) (United States, Australia). These experiences were associated with a loss of trust in leadership, feelings of anger, frustration, and betrayal toward their organization for not protecting them, and thoughts of leaving the profession (50, 51, 58, 64, 69) (United States, Belgium, India, Australia). Similar concerns were found regarding the condition of COVID-19 wards, which sometimes lacked the necessary measures and facilities to ensure patient and staff safety (75) (Pakistan). In addition, staffing shortages were common among some HCWs and were described as a source of MD that overburdened staff and placed patients' health at risk (88) (United States). HCWs also described feeling as though their institution did not care about their lives and they felt like a "pawn in a chess game" or a "machine" forced to face the situation regardless of the protection available (50, 53, 58, 62) (United States, Belgium, Turkey). Feeling vulnerable, dispensable, and abandoned were also described by some HCWs (51, 62, 88) (United States, Turkey). These feelings were not directed exclusively toward their institution, but at times toward the public which did not adhere to regulations, toward the government perceived as making poor decisions, and toward infectious disease experts who were not responsive to the concerns on the frontlines (47, 58, 69) (Canada, Belgium, Australia).

Lack of Communication and Transparency

Many issues were reported regarding the institutional transparency of decision-making processes and interactions with the public. HCWs reported a lack of consultation and inadequate communication with respect to the development of organizational policies (48, 58, 62, 69, 88) (United States, Belgium, Turkey, Australia). Some HCWs felt that their employers were not honest with the public regarding the situation at their institutions, communicating false scenarios of sufficient PPE and adequate employee safety (50) (United States). These issues appear to have been further exacerbated by reports of institutions silencing their workers' concerns. Some HCWs were told to not express their concerns to the public, with some fearing or experiencing disciplinary action for speaking up (47, 50, 52, 66) (Canada, United States, Indonesia).

Stigma, Discrimination, and Abuse

A total of 13 articles discussed the stigma that HCWs experienced during the COVID-19 pandemic. Unlike other categories, the geographic distribution of these articles was outside of the Americas, with the exception of one article (47) and included: South-east Asia (n = 4) (63, 65, 66, 68), Eastern Mediterranean (n = 3) (93, 97, 98), Western Pacific (n = 2) (82, 99), Europe (n = 2) (58, 62), and one global (45). These experiences were described by some HCWs alongside feelings of anger or frustration (98), betrayal (99), isolation (45, 63), depression (82, 97), and anxiety (82, 97). Many HCWs perceived that they were stigmatized by others (63, 68, 98) (India, Libya), especially workers on the COVID-19 unit (97) (Lebanon). This stigma was reported in 71% of Indian HCWs (63) and 31% of Libyan physicians (98) in two studies respectively. Other studies described experiences where family, friends, or colleagues rejected or treated HCWs as virus carriers (45, 62, 66, 82, 93, 97) (Global, Turkey, Indonesia, Vietnam, Iran, Lebanon). These events were associated with feelings of anger and pain in HCWs (62, 66, 97) (Turkey, Indonesia, Lebanon), as well as a reduction in spirits and motivation (58) (Belgium). The stigma faced by HCWs sometimes resulted in stigma toward their entire family (93) (Iran). In a study from Vietnam, 9.84% of HCWs felt blamed by their relatives or friends, and 39.34% reported that people were talking about them behind their backs (82). Another study found that stigma was significantly associated with both depressive and anxiety symptoms (98) (Libya).

Given the stigma experienced by frontline workers, some HCWs and PSP reported that they wished to hide their professional identity from others (45, 47, 65) (Global, Canada, India). These experiences were further amplified by negative portrayals of HCWs in the media (63) (India) and discriminatory actions against HCWs (63, 65, 82) (India, Vietnam). Two studies in India reported HCWs who were evicted from their apartments or asked to leave their job and residence by their communities (63, 65). Moreover, articles from Canada, Libya, and China (47, 98, 99) reported violence against HCWs by patients or patients' family members. In a study of 745 Libyan HCWs, 52.3% reported experiencing abuse from patients or their relatives, with 45.8% facing three or more episodes of abuse, and 14.6% reporting physical abuse (98). In relation to anxiety and depressive symptoms, only verbal abuse was significantly associated with anxiety in these HCWs (98).

DISCUSSION

The present scoping review sought to provide a preliminary snapshot of PMIDEs encountered by HCWs and PSPs globally during the COVID-19 pandemic. A total of 57 articles were included, which focused almost exclusively on HCWs. Given the dearth of literature surrounding PSP, PMIDEs specific to this population were not identified, and further research is strongly needed to better understand the PMIDEs this population may be encountering during the pandemic. Overall, the identified PMIDE categories in HCWs cover a broad spectrum of moral dilemmas (**Supplementary Table 3**), including the need to manage competing responsibilities to patients, colleagues, oneself, or loved ones, uncontrollable factors limiting one's ability to fulfill their duty to patients or colleagues, and risking one's life for organizations or the public who treat them unfairly.

Although the empirical literature on MI in HCWs remains limited, insight can be drawn from the field of MD, which originated in the healthcare setting (14). Here, many of the major factors associated with MD described prior to the COVID-19 pandemic (14, 100, 101) largely parallel the PMIDE categories described in this review. For instance, the provision of care not in patients' best interests ("Suboptimal care"), the emergence of organizational factors conflicting with patient care needs ("Care prioritization and resource allocation decisions"), and the presence of organizational hierarchies and a lack of administrative support ("Perceived lack of support

and unfair treatment by their organization"). As described in numerous articles, the novel challenges of the COVID-19 pandemic, including human and resource supply limitations and the uncertainty around adequate infection control, triage, and treatment protocols for both frontline HCWs and leadership alike, likely exacerbated many of these factors. Finally, additional PMIDE categories specific to the COVID-19 context were identified in this review, including the "Risk of contracting or transmitting COVID-19," "Inability to work on the frontlines," and "Stigma, discrimination, and abuse." Many of these categories are consistent with recent commentaries and editorials in the literature (102–109).

Overall, most categories of PMIDEs appear to be largely global in nature, encompassing diverse samples across the globe (**Supplementary Table 2**). However, given the uneven distribution of articles across geographies and the small sample sizes and number of articles available, further research is required to confirm these preliminary findings. In particular, the "Risk of contracting or transmitting COVID-19" encompassed the greatest distribution of articles globally, spanning over seven countries (**Supplementary Table 2**). The seemingly global nature of this PMIDE category may not be surprising as this phenomenon underlies the basic human need to survive and maintain the wellbeing of oneself, one's family, and community members. Similar experiences have also been described by HCWs during past pandemics (110).

During the COVID-19 pandemic, the conflict that arose between HCWs' duty to their patients and their duty to their families also emerged strongly as a source of moral suffering (103) and MI (109). One risk factor for MI included the loss of life of vulnerable individuals (111), elucidated further by the heightened feelings of fear, guilt, and anxiety reported by HCWs regarding the possibility of infecting children, older persons, and other vulnerable populations through their workplace. Additional factors impacting concerns around the infection in HCWs included their specific profession and amount of experience (61, 72), as well as reciprocal concerns from their family members (112). As described by Williamson et al. (111), insights gained earlier in military contexts may be helpful in remediating these mental health impacts of PMIDE exposure globally among HCWs.

Another PMIDE category that emerged as global in scale involved a "Perceived lack of support and unfair treatment of HCWs by their organization." This category highlights the inadequate protection and support, as well as hostility, that some HCWs encountered from their organizations. Taken together, these findings may represent the institutional betrayal associated previously with MD (39) and MI (114), where institutional betrayal has been described as a violation of trust by an organization toward an individual who identifies with it (39, 115). Here, it is possible that COVID-19 has exacerbated and highlighted similar issues that existed pre-pandemic (116). As described in the articles included in this review, betrayal may take various forms in the healthcare setting, including inadequate workplace protections, disregard for HCW and patient needs, and gaslighting (39). These experiences have been linked to feelings of anger or frustration and thoughts of leaving the profession, and are thought to exacerbate the physical and psychological impacts of stressful events (39, 114, 117). For example, a recent study on betrayal-based MI during the COVID-19 pandemic indicated that HCWs commonly reported feeling abandoned and treated as dispensable by leadership, who were perceived as detached and dishonest at times (114). Interestingly, the study suggests that the behavior of the leadership team following acts of betrayal may be as impactful as the act itself. In the same study, HCWs reported that the lack of accountability, recognition, and apology, significantly influenced their experience of distress and burnout (114).

By contrast, the PMIDE category of 'Stigma, discrimination, and abuse' showed the least global spread among included articles. Despite North American articles accounting for the greatest proportion of studies included in this review (20 of 57 studies), 85% of the articles included in this category were outside North America. Although these findings may appear to highlight the uniqueness of this type of PMIDE in certain regions, it nonetheless remains possible that this issue is underreported or understudied in other regions across the globe. Here, a cross-sectional study evaluating the attitudes of non-HCWs in the United States and Canada found that over a quarter of respondents felt that severe restrictions should be placed on the freedom of HCWs, which included actions keeping them isolated from their communities and families (113). In one global study on COVID-19-related stigma, harassment, and bullying experienced by HCWs and non-HCWs, these experiences were reported to be the highest in Sub-Saharan Africa (14.0%), South Asia (10.7%), and North America (10.6%), with the latter two also containing the highest proportion of HCW respondents (118). Further research is urgently needed to better understand the context and severity of these experiences, which may or may not differ significantly across geographies. Potential factors that may impact these experiences regionally include the presence of a culture of blame within the society (119) and differences in how HCWs are portrayed by the media (120). When comparing different cultural responses to illness during the COVID-19 pandemic, one study found that individuals from China were more likely to behave aggressively toward doctors compared to individuals from the United States, who were more likely to direct their blame toward the health system (119). Finally, the media may play a role in perpetuating violence against HCWs, as noted by reports of misleading journalism in India (120).

The present scoping review provides insight into the PMIDEs reported in the literature by HCWs during the COVID-19 pandemic (until May 2021), as well as the potential universality of PMIDEs across the globe. These preliminary findings provide further insight into the scope of MI and MD experienced by HCWs and provide information that will be central to further research surrounding the moral experiences faced by HCWs during COVID-19. The authors of this review hope to enhance recognition of the universal challenges HCWs experienced globally during the pandemic, while strongly recognizing the need to dismantle the 'hero narrative' toward HCWs, which may perpetuate an unhealthy perception of invulnerable and self-sacrificing individuals (121) and ignore their suffering.

Study Limitations

It is important to interpret these results with care, given the language constraints of included articles as well as the uneven distribution of articles across geographies, of which a substantial proportion originated from the United States ($n = 15$). Additionally, it is important to recognize the limitations of extracting quantitative and qualitative data from the included articles. Without the original study-level data, it is challenging to ascertain the true relevance of the circumstances associated with PMIDEs. While the extracted quantitative data provided measurable information on the circumstances associated with PMIDEs, it sometimes lacked the detail necessary to appreciate and interpret the specific circumstances. Likewise, accounts extracted from qualitative studies or personal narratives provided the necessary detail but may lack generalizability to the study's sample as a whole or to the geography of the sample. In order to gain a better understanding of the universality of the PMIDE categories reported in this review, larger studies across the globe are needed, which use mixed method approaches to both identify and quantify the association of certain circumstances to PMIDEs across diverse samples and geographies. Furthermore, the lack of PSP-specific data and literature limits the generalizability of these findings beyond the HCW population. The limited data was partially attributable to differences in defining PSP and HCW, with some articles including paramedics and emergency medical technicians as HCWs and aggregating their results. Future work in this area focused on PSP populations specifically is needed. Further exploration of the impact of cultural and social factors on the experience of MI and MD among HCWs is also necessary to advance understanding of COVID-19 related PMIDEs globally. Finally, it is important to disentangle the longstanding systemic issues experienced by HCWs from specific issues resulting from the COVID-19 pandemic, which will help to further inform discussion and action both during and following the pandemic.

Emerging Treatments

Despite such limitations, by revealing the scope of MI and MD among HCWs worldwide, these results have important implications for preventative and early intervention efforts aimed at restoring the mental health and wellbeing of HCWs globally. While measures to address MD have primarily focused on the preventative and supportive personal or organizational level efforts (16), insight regarding treatment may be drawn from the field of MI. Emerging approaches for the treatment of MI (e.g., Adaptive Disclosure; Acceptance and Commitment Therapy; Cognitive Processing Therapy) have tended to focus on top-down, cognitively driven approaches (19, 122–124); however, our work focuses on neuroscientifically-guided treatments (125) suggests strongly that approaches that combine top-down, cognitive approaches with bottom-up, physiological and somatosensory-focused approaches, are more likely to achieve success in the prevention and treatment of MI. Accordingly, therapeutic interventions, such as deep brain re-orienting (126, 127) and alpha-rhythm neurofeedback (128, 129), aimed at the integration of somatosensory experience and regulation of visceral response through a combination of bottom-up and top-down mechanisms, are expected to assist in preventative and early intervention efforts for COVID-19-related MI, while also reducing distress driven by lower-level patterns of neural activation.

Notably, regulation of bottom-up driven patterns of response to MI targeted at the midbrain (i.e., the periaqueductal grey) (130, 131), including through breath exercises, may also be expected to further widen the window of tolerance for emotional arousal, thus allowing HCWs to experience a heightened state of regulatory control better situated to the processing of morally injurious experiences. Notably, our own work has revealed that early patterns of emotional abuse (132, 133), and diminished emotional regulation (133), may contribute to the risk for the development of MI. Compassion-focused therapeutic approaches (134, 135) that directly address developmental attachment trauma may further reduce shame and guilt surrounding MI and assist in its processing, particularly when combined with bottom-up, sensory-driven approaches. Finally, given established patterns of perceived social exclusion, poor social support, and a lack of social acknowledgment among HCWs throughout the COVID-19 pandemic, preventative and early intervention efforts focused on the strengthening of interpersonal relationships and enhancing social support would be expected to also assist in addressing MI among HCWs (136), particularly given that meta-analytic research consistently confirms social support as a strong predictor of the development of PTSD following trauma exposure (137, 138).

CONCLUSION

On balance, COVID-19 has resulted in novel, potentially morally injurious or distressful, experiences for HCWs across the globe. Although many of these experiences and their associated sequelae appear largely similar across global regions, further research is required to confirm these findings, and identify the prevalence and impact of these experiences within their respective social and cultural contexts. In particular, stigma, discrimination, and violence toward HCWs and their families during COVID-19 may be underreported in some global regions and would benefit greatly from further study and analysis.

DATA AVAILABILITY STATEMENT

The original contributions presented in this study are included in the article/**Supplementary Material**, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

YX, JL, KR, LB, and MM contributed to the conception and design of the study. YX, JL, KR, and LB contributed to the data collection. YX wrote the initial draft of the manuscript. JL wrote

sections of the manuscript. YX, JL, KR, AD'A, RM, AH, RL, and MM contributed to the interpretation of the work. All authors contributed to the critical review and revision of the manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2022.863232/full#supplementary-material

REFERENCES

1. World Health Organization. *Classification of Health Workforce Statistics*. Geneva: World Health Organization (n.d.).
2. Canadian Institute for Public Safety Research and Treatment. *Public Safety Personnel (PSP)*. (2020). Available online at: https://www.cipsrt-icrtsp.ca/en/glossary/public-safety-personnel-psp?fbclid=IwAR2lO2AnO-iKJzdsIyI3XXFVpfjwfBNxTA1dkVjvwnm6R-xHl0s3NP4lUcE (Accessed October 15, 2021).
3. Burki T. Global shortage of personal protective equipment. *Lancet Infect Dis.* (2020) 20:785–6. doi: 10.1016/S1473-3099(20)30501-6
4. Awais SB, Martins RS, Khan MS. Paramedics in pandemics: protecting the mental wellness of those behind enemy lines. *Br J Psychiatry.* (2021) 218:75–6. doi: 10.1192/bjp.2020.193
5. Morley G, Grady C, McCarthy J, Ulrich CM. Covid-19: ethical challenges for nurses. *Hastings Cent Rep.* (2020) 50:35–9. doi: 10.1002/hast.1110
6. Ranney ML, Griffeth V, Jha AK. Critical supply shortages — the need for ventilators and personal protective equipment during the Covid-19 pandemic. *N Engl J Med.* (2020) 382:41. doi: 10.1056/nejmp2006141
7. Shanafelt T, Ripp J, Trockel M. Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. *J Am Med Assoc.* (2020) 323:2133–4. doi: 10.1001/jama.2020.5893
8. Faggioni MP, González-Melado FJ, di Pietro ML. National health system cuts and triage decisions during the COVID-19 pandemic in Italy and Spain: ethical implications. *J Med Ethics.* (2021) 47:300–7. doi: 10.1136/medethics-2020-106898
9. Nouvet E, Strachan P, Luciani M, de Laat S, Conti A, Oliphant A, et al. *Triaging Critical Care During Covid-19: Global Preparedness, Socio-Cultural Considerations, and Communication*. Hamilton, ON: Humanitarian Health Ethics Research Group (2020).
10. Frenkel MO, Giessing L, Egger-Lampl S, Hutter V, Oudejans RRD, Kleygrewe L, et al. The impact of the COVID-19 pandemic on European police officers: stress, demands, and coping resources. *J Crim Justice.* (2021) 72:101756. doi: 10.1016/j.jcrimjus.2020.101756
11. Wiener L, Rosenberg AR, Pennarola B, Fry A, Weaver M. Navigating the terrain of moral distress: experiences of pediatric end-of-life care and bereavement during COVID-19. *Palliat Support Care.* (2021) 19:129–34. doi: 10.1017/S1478951521000225
12. Heber A, Testa V, Smith-Macdonald L, Brémault-Phillips S, Nicholas Carleton R. Rapid response to covid-19: addressing challenges and increasing the mental readiness of public safety personnel. *Health Promot Chronic Dis Prev Can.* (2020) 40:350–5. doi: 10.24095/hpcdp.40.11/12.04
13. Vujanovic AA, Lebeaut A, Leonard S. Exploring the impact of the COVID-19 pandemic on the mental health of first responders. *Cogn Behav Ther.* (2021) 50:320–35. doi: 10.1080/16506073.2021.1874506
14. Jameton A. *Nursing Practice: the Ethical Issues*. Hoboken, NJ: Prentice-Hall (1984).
15. Morley G, Ives J, Bradbury-Jones C, Irvine F. What is 'moral distress'? A narrative synthesis of the literature. *Nurs Ethics.* (2019) 26:646–62. doi: 10.1177/0969733017724354
16. Burston AS, Tuckett AG. Moral distress in nursing: contributing factors, outcomes and interventions. *Nurs Ethics.* (2013) 20:312–24. doi: 10.1177/0969733012462049
17. Lamiani G, Borghi L, Argentero P. When healthcare professionals cannot do the right thing: a systematic review of moral distress and its correlates. *J Health Psychol.* (2017) 22:51–67. doi: 10.1177/1359105315595120
18. Whitehead PB, Herbertson RK, Hamric AB, Epstein EG, Fisher JM. Moral distress among healthcare professionals: report of an institution-wide survey. *J Nurs Scholarsh.* (2015) 47:117–25. doi: 10.1111/jnu.12115
19. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
20. Jinkerson JD. Defining and assessing moral injury: a syndrome perspective. *Traumatology.* (2016) 22:122–30. doi: 10.1037/trm0000069
21. Èartolovni A, Stolt M, Scott PA, Suhonen R. Moral injury in healthcare professionals: a scoping review and discussion. *Nurs Ethics.* (2021) 28:590–602. doi: 10.1177/0969733020966776
22. Lentz LM, Smith-MacDonald L, Malloy D, Carleton RN, Brémault-Phillips S. Compromised conscience: a scoping review of moral injury among firefighters, paramedics, and police officers. *Front Psychol.* (2021) 12:639781. doi: 10.3389/fpsyg.2021.639781
23. Nazarov A, Fikretoglu D, Liu A, Thompson M, Zamorski MA. Greater prevalence of post-traumatic stress disorder and depression in deployed Canadian armed forces personnel at risk for moral injury. *Acta Psychiatr Scand.* (2018) 137:342–54. doi: 10.1111/acps.12866
24. Williamson V, Stevelink SAM, Greenberg N. Occupational moral injury and mental health: systematic review and meta-analysis. *Br J Psychiatry.* (2018) 212:339–46. doi: 10.1192/bjp.2018.55
25. Levi-Belz Y, Greene T, Zerach G. Associations between moral injury, PTSD clusters, and depression among Israeli veterans: a network approach. *Eur J Psychotraumatol.* (2020) 11:1736411. doi: 10.1080/20008198.2020.1736411
26. Papazoglou K, Blumberg DM, Chiongbian VB, Tuttle BMQ, Kamkar K, Chopko B, et al. The role of moral injury in PTSD among law enforcement officers: a brief report. *Front Psychol.* (2020) 11:310. doi: 10.3389/fpsyg.2020.00310
27. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral injury: an integrative review. *J Trauma Stress.* (2019) 32:350–62. doi: 10.1002/jts.22362
28. Grimell J, Nilsson S. An advanced perspective on moral challenges and their health-related outcomes through an integration of the moral distress and moral injury theories. *Mil Psychol.* (2020) 32:380–8. doi: 10.1080/08995605.2020.1794478
29. Litz BT, Kerig PK. Introduction to the special issue on moral injury: conceptual challenges, methodological issues, and clinical applications. *J Trauma Stress.* (2019) 32:341–9. doi: 10.1002/jts.22405
30. Day P, Lawson J, Mantri S, Jain A, Rabago D, Lennon R. Physician moral injury in the context of moral, ethical and legal codes. *J Med Ethics.* (2021). doi: 10.1136/medethics-2021-107225 [Epub ahead of print].
31. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open.* (2020) 3:e203976. doi: 10.1001/jamanetworkopen.2020.3976

32. Chan HF, Brumpton M, Macintyre A, Arapoc J, Savage DA, Skali A, et al. How confidence in health care systems affects mobility and compliance during the COVID-19 pandemic. *PLoS One.* (2020) 15:e0240644. doi: 10.1371/journal.pone.0240644
33. Khan JR, Awan N, Islam MM, Muurlink O. Healthcare capacity, health expenditure, and civil society as predictors of COVID-19 case fatalities: a global analysis. *Front Public Health.* (2020) 8:347. doi: 10.3389/fpubh.2020.00347
34. Camporesi S, Mori M. Ethicists, doctors and triage decisions: who should decide? And on what basis? *J Med Ethics.* (2020) 47:e18. doi: 10.1136/medethics-2020-106499
35. Peters MDJ, Marnie C, Tricco AC, Pollock D, Munn Z, Alexander L, et al. Updated methodological guidance for the conduct of scoping reviews. *JBI Evid Synth.* (2020) 18:2119–26. doi: 10.11124/JBIES-20-00167
36. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol.* (2005) 8:19–32. doi: 10.1080/1364557032000119616
37. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci.* (2010) 5:69. doi: 10.1186/1748-5908-5-69
38. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med.* (2018) 169:467–73. doi: 10.7326/M18-0850
39. Brewer KC. Institutional betrayal in nursing: a concept analysis. *Nurs Ethics.* (2021) 28:1081–9. doi: 10.1177/0969733021992448
40. Bryan AO, Bryan CJ, Morrow CE, Etienne N, Ray-Sannerud B, Bryan C. Moral injury, suicidal ideation, and suicide attempts in a military sample. *Traumatology.* (2014) 20:156–60. doi: 10.1037/h0099852
41. Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs.* (2008) 62:107–15. doi: 10.1111/j.1365-2648.2007.04569.x
42. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* (2005) 15:1277–88. doi: 10.1177/1049732305276687
43. World Health Organization. *WHO Regional Offices*. Geneva: World Health Organization (n.d.).
44. O'Neal L, Heisler M, Mishori R, Haar RJ. Protecting providers and patients: results of an internet survey of health care workers' risk perceptions and ethical concerns during the COVID-19 pandemic. *Int J Emerg Med.* (2021) 14:1–11. doi: 10.1186/s12245-021-00341-0
45. Zolnikov TR, Furio F. Stigma on first responders during COVID-19. *Stigma Health* (2020) 5:375–9.
46. Ayyala RS, Baird G, Bloom DA, McDaniel JD, Lampl B. Evaluation of stress and anxiety caused by the coronavirus disease 2019 (COVID-19) pandemic in pediatric radiology. *Pediatr Radiol.* (2021) 51:1589–96. doi: 10.1007/s00247-021-05088-7
47. Brophy JT, Keith MM, Hurley M, McArthur JE. Sacrificed: Ontario healthcare workers in the time of COVID-19. *New Solut.* (2021) 30:267–81. doi: 10.1177/1048291120974358
48. Ditwiler RE, Swisher LL, Hardwick DD. Professional and ethical issues in United States acute care physical therapists treating patients with COVID-19: stress, walls, and uncertainty. *Phys Ther.* (2021) 101:pzab122. doi: 10.1093/ptj/pzab122
49. Gaucher N, Trottier ED, Côté AJ, Ali H, Lavoie B, Bourque CJ, et al. A survey of Canadian emergency physicians' experiences and perspectives during the COVID-19 pandemic. *Can J Emerg Med.* (2021) 23:466–74. doi: 10.1007/s43678-021-00129-4
50. Iheduru-Anderson K. Reflections on the lived experience of working with limited personal protective equipment during the COVID-19 crisis. *Nurs Inq.* (2021) 28:e12382. doi: 10.1111/nin.12382
51. Rao H, Mancini D, Tong A, Khan H, Santacruz Gutierrez B, Mundo W, et al. Frontline interdisciplinary clinician perspectives on caring for patients with COVID-19: a qualitative study. *BMJ Open.* (2021) 11:e048712. doi: 10.1136/bmjopen-2021-048712
52. Benzel E. Emotional health in the midst of the coronavirus disease 2019 (COVID-19) pandemic. *World Neurosurg.* (2020) 138:xxv–xxvi.
53. Viswanathan R, Myers MF, Fanous AH. Support groups and individual mental health care via video conferencing for frontline clinicians during the COVID-19 pandemic. *Psychosomatics.* (2020) 61:538–43. doi: 10.1016/j.psym.2020.06.014
54. Patterson JE, Edwards TM, Griffith JL, Wright S. Moral distress of medical family therapists and their physician colleagues during the transition to COVID-19. *J Marital Fam Ther.* (2021) 47:289–303. doi: 10.1111/jmft.12504
55. Bayrak NG, Uzun S, Kulakaç N. The relationship between anxiety levels and anger expression styles of nurses during COVID-19 pandemic. *Perspect Psychiatr Care.* (2021) 57:1829–37. doi: 10.1111/ppc.12756
56. Creese J, Byrne JP, Conway E, Barrett E, Prihodova L, Humphries N. "We all really need to just take a breath": composite narratives of hospital doctors' well-being during the COVID-19 pandemic. *Int J Environ Res Public Health.* (2021) 18:2051. doi: 10.3390/ijerph18042051
57. Collado-Boira EJ, Ruiz-Palomino E, Salas-Media P, Folch-Ayora A, Muriach M, Baliño P. The COVID-19 outbreak"—an empirical phenomenological study on perceptions and psychosocial considerations surrounding the immediate incorporation of final-year Spanish nursing and medical students into the health system. *Nurse Educ Today.* (2020) 92:104504. doi: 10.1016/j.nedt.2020.104504
58. Kaelen S, van den Boogaard W, Pellecchia U, Spiers S, de Cramer C, Demaegd G, et al. How to bring residents' psychosocial wellbeing to the heart of the fight against Covid-19 in Belgian nursing homes—a qualitative study. *PLoS One.* (2021) 16:e0249098. doi: 10.1371/journal.pone.0249098
59. Şahin CU, Kulakaç N. Exploring anxiety levels in healthcare workers during COVID-19 pandemic: turkey sample. *Curr Psychol.* (2021) 41:1057–64. doi: 10.1007/s12144-021-01730-7
60. Ffrench-O'Carroll R, Feeley T, Tan MH, Magner C, L'Estrange K, Efrimescu CI, et al. Psychological impact of COVID-19 on staff working in paediatric and adult critical care. *Br J Anaesth.* (2021) 126:39–41. doi: 10.1016/j.bja.2020.09.040
61. Wanigasooriya K, Palimar P, Naumann DN, Ismail K, Fellows JL, Logan P, et al. Mental health symptoms in a cohort of hospital healthcare workers following the first peak of the COVID-19 pandemic in the UK. *BJPsych Open.* (2021) 7:24. doi: 10.1192/bjo.2020.150
62. Yıldırım N, Aydoğan A, Bulut M. A qualitative study on the experiences of the first nurses assigned to COVID-19 units in Turkey. *J Nurs Manag.* (2021) 29:1366–74. doi: 10.1111/jonm.13291
63. Banerjee D, Sathyanarayana Rao TS, Kallivayalil RA, Javed A. Psychosocial framework of resilience: navigating needs and adversities during the pandemic, a qualitative exploration in the Indian frontline physicians. *Front Psychol.* (2021) 12:622132. doi: 10.3389/fpsyg.2021.622132
64. Mehra A, Sahoo S, Nehra R, Verma M, Grover S. Psychological issues faced by the healthcare workers during the COVID-19 pandemic. *J Postgrad Med Educ Res.* (2020) 54:88–93. doi: 10.5005/jp-journals-10028-1394
65. George CE, Inbaraj LR, Rajukutty S, de Witte LP. Challenges, experience and coping of health professionals in delivering healthcare in an urban slum in India during the first 40 days of COVID-19 crisis: a mixed method study. *BMJ Open.* (2020) 10:e042171. doi: 10.1136/bmjopen-2020-042171
66. Gunawan J, Aungsuroch Y, Marzilli C, Fisher ML, Nazliansyah, Sukarna A. A phenomenological study of the lived experience of nurses in the battle of COVID-19. *Nurs Outlook.* (2021) 69:652–9. doi: 10.1016/j.outlook.2021.01.020
67. Dhar SA, Wani ZA. My fear, my morals: a surgeon's perspective of the COVID crisis. *Philos Ethics Humanit Med.* (2020) 15:10. doi: 10.1186/s13010-020-00094-3
68. Mohindra R, Ravaki R, Suri V, Bhalla A, Singh SM. Issues relevant to mental health promotion in frontline health care providers managing quarantined/isolated COVID19 patients. *Asian J Psychiatr.* (2020) 51:102084. doi: 10.1016/j.ajp.2020.102084
69. Ananda-Rajah M, Veness B, Berkovic D, Parker C, Kelly G, Ayton D. Hearing the voices of Australian healthcare workers during the COVID-19 pandemic. *BMJ Leader.* (2021) 5:31–5. doi: 10.1136/leader-2020-000386
70. Jia Y, Chen O, Xiao Z, Xiao J, Bian J, Jia H. Nurses' ethical challenges caring for people with COVID-19: a qualitative study. *Nurs Ethics.* (2021) 28:33–45. doi: 10.1177/0969733020944453
71. Cai H, Tu B, Ma J, Chen L, Fu L, Jiang Y, et al. Psychological impact and coping strategies of frontline medical staff in Hunan between January and March 2020 during the outbreak of coronavirus disease 2019 (COVID-19) in Hubei, China. *Med Sci Monit.* (2020) 26:e924171. doi: 10.12659/MSM.924171

72. Liu Q, Luo D, Haase JE, Guo Q, Wang XQ, Liu S, et al. The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study. *Lancet Glob Health.* (2020) 8:790–8. doi: 10.1016/S2214-109X(20)30204-7
73. Li L, Sun N, Fei S, Yu L, Chen S, Yang S, et al. Current status of and factors influencing anxiety and depression in front-line medical staff supporting Wuhan in containing the novel coronavirus pneumonia epidemic. *Jpn J Nurs Sci.* (2021) 18:e12398. doi: 10.1111/jjns.12398
74. Fawaz M, Itani M. The psychological experiences of Lebanese ground zero front-line nurses during the most recent COVID-19 outbreak post Beirut blast: a qualitative study. *Int J Soc Psychiatry.* (2022) 68:754–61. doi: 10.1177/00207640211004989
75. Raza A, Matloob S, Rahim NF, Halim HA, Khattak A, Ahmed NH. Factors impeding health-care professionals to effectively treat coronavirus disease 2019 patients in Pakistan: a qualitative investigation. *Front Psychol.* (2020) 11:572450. doi: 10.3389/fpsyg.2020.572450
76. Noreen K, Umar M, Sabir SA, Rehman R. Outbreak of coronavirus disease 2019 (COVID-19) in Pakistan: psychological impact and coping strategies of health care professionals. *Pak J Med Sci.* (2020) 3:1478. doi: 10.12669/pjms.36.7.2988
77. Al Muharraq EH. The psychological impact of coronavirus disease 2019 on nurses in Saudi Arabia and their coping strategies. *SAGE Open Nurs.* (2021) 7:1–10. doi: 10.1177/23779608211011322
78. Reuben DB. Sideline guilt. *JAMA Intern Med.* (2020) 180:1150–1.
79. Tsai C. Personal risk and societal obligation amidst COVID-19. *JAMA.* (2020) 323:1555–6. doi: 10.1001/jama.2020.5450
80. Koven S. They call us and we go. *N Engl J Med.* (2020) 382:1978–9.
81. Kling SK. The Covid-19 pandemic: conflicting duties and 'side-line guilt'. *Curr Allergy Clin Immunol.* (2020) 33:180–2.
82. Do Duy C, Nong VM, Van AN, Thu TD, Do Thu N, Quang TN. COVID-19 related stigma and its association with mental health of health-care workers after quarantined in Vietnam. *Psychiatry Clin Neurosci.* (2020) 74:566–8. doi: 10.1111/pcn.13120
83. Silverman HJ, Kheirbek RE, Moscou-Jackson G, Day J. Moral distress in nurses caring for patients with Covid-19. *Nurs Ethics.* (2021) 28:1137–64. doi: 10.1177/09697330211003217
84. Sukhera J, Kulkarni C, Taylor T. Structural distress: experiences of moral distress related to structural stigma during the COVID-19 pandemic. *Perspect Med Educ.* (2021) 10:222–9. doi: 10.1007/s40037-021-00663-y
85. Butler CR, Wong SP, Wightman AG, O'Hare AM. US clinicians' experiences and perspectives on resource limitation and patient care during the COVID-19 pandemic. *JAMA Netw Open.* (2020) 3:11. doi: 10.1001/jamanetworkopen.2020.27315
86. Dewar B, Anderson JE, Kwok ES, Ramsay T, Dowlatshahi D, Fahed R, et al. Physician preparedness for resource allocation decisions under pandemic conditions: a cross-sectional survey of Canadian physicians, April 2020. *PLoS One.* (2020) 15:e0238842. doi: 10.1371/journal.pone.0238842
87. Tate T. When following the rules feels wrong. *Hastings Cent Rep.* (2021) 51:4–5. doi: 10.1002/hast.1211
88. Whitehead PB, Carter KF, Garber JS, Epstein B. The nurse manager's experience of moral distress. *JONA J Nurs Adm.* (2021) 51:334–9. doi: 10.1097/NNA.0000000000001023
89. Cheng JO, Li Ping Wah-Pun Sin E. The effects of nonconventional palliative and end-of-life care during COVID-19 pandemic on mental health—Junior doctors' perspective. *Psychol Trauma Theory Res Pract Policy.* (2020) 12:S146–7. doi: 10.1037/tra0000628
90. Kanaris C. Moral distress in the intensive care unit during the pandemic: the burden of dying alone. *Intensive Care Med.* (2021) 47:141–3. doi: 10.1007/s00134-020-06194-0
91. Billings J, Biggs C, Ching BC, Gkofa V, Singleton D, Bloomfield M, et al. Experiences of mental health professionals supporting front-line health and social care workers during COVID-19: qualitative study. *BJPsych Open.* (2021) 7:e70. doi: 10.1192/bjo.2021.29
92. Evans AM, Jonas M, Lantos J. Pediatric palliative care in a pandemic: role obligations, moral distress, and the care you can give. *Pediatrics.* (2020) 146:e20201163. doi: 10.1542/peds.2020-1163
93. Rezaee N, Mardani-Hamooleh M, Seraji M. Nurses' perception of ethical challenges in caring for patients with COVID-19: a qualitative analysis. *J Med Ethics Hist Med.* (2020) 13:23. doi: 10.18502/jmehm.v13i23.4954
94. Cheriyan A, Kumar S. Impact of COVID-19 on urology residency in India–results of a nationwide survey. *Indian J Urol J Urol Soc India.* (2020) 36:243. doi: 10.4103/iju.IJU_413_20
95. Iheduru-Anderson K. Reflections on the lived experience of working with limited personal protective equipment during the COVID-19 crisis. *Nurs Inq.* (2021) 28:e12382.
96. Maraqa B, Nazzal Z, Zink T. Mixed method study to explore ethical dilemmas and health care workers' willingness to work amid COVID-19 pandemic in Palestine. *Front Med.* (2021) 7:576820. doi: 10.3389/fmed.2020.576820
97. Fawaz M, Samaha A. The psychosocial effects of being quarantined following exposure to COVID-19: a qualitative study of Lebanese health care workers. *Int J Soc Psychiatry.* (2020) 66:560–5. doi: 10.1177/0020764020932202
98. Elhadi M, Msherghi A, Elgzairi M, Alhashimi A, Bouhuwaish A, Biala M, et al. Psychological status of healthcare workers during the civil war and COVID-19 pandemic: a cross-sectional study. *J Psychosom Res.* (2020) 137:110221. doi: 10.1016/j.jpsychores.2020.110221
99. Wang Z, Harold KG, Tong Y, Wen J, Sui M, Liu H, et al. Moral injury in Chinese health professionals during the COVID-19 pandemic. *Psychol Trauma Theory Res Pract Policy.* (2022) 14:250–7. doi: 10.1037/tra0001026
100. Hamric AB. Empirical research on moral distress: issues, challenges, and opportunities. *HEC Forum.* (2012) 24:39–49. doi: 10.1007/s10730-012-9177-x
101. Bleicher J, Place A, Schoenhals S, Luppens C, Lambert L, McCrum M. Drivers of moral distress in surgical intensive care providers: a mixed methods study. *J Am Coll Surg.* (2020) 231:234–5. doi: 10.1016/j.jamcollsurg.2020.08.627
102. Dean W, Jacobs B, Manfredi RA. Moral injury: the invisible epidemic in COVID health care workers. *Ann Emerg Med.* (2020) 76:385–6. doi: 10.1016/j.annemergmed.2020.05.023
103. Godshall M. CPN coping with moral distress during COVID-19. *Nursing.* (2021) 51:55–8. doi: 10.1097/01.NURSE.0000731840.43661.99
104. Roycroft M, Wilkes D, Pattani S, Fleming S, Olsson-Brown A. Limiting moral injury in healthcare professionals during the COVID-19 pandemic. *Occup Med.* (2020) 70:312–4. doi: 10.1093/occmed/kqaa087
105. Borges LM, Barnes SM, Farnsworth JK, Bahraini NH, Brenner LA. A commentary on moral injury among health care providers during the COVID-19 pandemic. *Psychol Trauma Theory Res Pract Policy.* (2020) 12:138–40. doi: 10.1037/tra0000698
106. Anderson-Shaw LK, Zar FA. COVID-19, moral conflict, distress, and dying alone. *J Bioeth Inq.* (2020) 17:777–82. doi: 10.1007/s11673-020-10040-9
107. Williams RD, Brundage JA, Williams EB. Moral injury in times of COVID-19. *J Health Serv Psychol.* (2020) 46:65–9. doi: 10.1007/s42843-020-00011-4
108. Rushton CH, Turner K, Nakashima Brock R, Braxton JM. Invisible moral wounds of the COVID-19 pandemic: are we experiencing moral injury? *AACN Adv Crit Care.* (2021) 32:119–25. doi: 10.4037/aacnacc2021686
109. Hossain F, Clatty A. Self-care strategies in response to nurses' moral injury during COVID-19 pandemic. *Nurs Ethics.* (2021) 28:23–32. doi: 10.1177/0969733020961825
110. Preti E, Di Mattei V, Perego G, Ferrari F, Mazzetti M, Taranto P, et al. The psychological impact of epidemic and pandemic outbreaks on healthcare workers: rapid review of the evidence. *Curr Psychiatry Rep.* (2020) 22:43. doi: 10.1007/s11920-020-01166-z
111. Williamson V, Murphy D, Greenberg N. COVID-19 and experiences of moral injury in front-line key workers. *Occup Med.* (2020) 70:317–9. doi: 10.1093/occmed/kqaa052
112. Ying Y, Ruan L, Kong F, Zhu B, Ji Y, Lou Z. Mental health status among family members of health care workers in Ningbo, China, during the coronavirus disease 2019 (COVID-19) outbreak: a cross-sectional study. *BMC Psychiatry.* (2020) 20:379. doi: 10.1186/s12888-020-02784-w
113. Taylor S, Landry CA, Rachor GS, Paluszek MM, Asmundson GJG. Fear and avoidance of healthcare workers: an important, under-recognized form of stigmatization during the COVID-19 pandemic. *J Anxiety Disord.* (2020) 75:102258. doi: 10.1016/j.janxdis.2020.102289
114. French L, Hanna P, Huckle C. If I die, they do not care": U.K. National Health Service staff experiences of betrayal-based moral injury during COVID-19.

Psychol Trauma Theory Res Pract Policy. (2022) 14:516–21. doi: 10.1037/tra0001134
115. Parse RR. Human dignity: a humanbecoming ethical phenomenon. *Nurs Sci Q.* (2010) 23:257–62. doi: 10.1177/0894318410371841
116. Klest B, Smith CP, May C, McCall-Hosenfeld J, Tamaian A. COVID-19 has united patients and providers against institutional betrayal in health care: a battle to be heard, believed, and protected. *Psychol Trauma Theory Res Pract Policy.* (2020) 12:159–61. doi: 10.1037/tra0000855
117. Jordan AH, Eisen E, Bolton E, Nash WP, Litz BT. Distinguishing war-related PTSD resulting from perpetration- and betrayal-based morally injurious events. *Psychol Trauma Theory Res Pract Policy.* (2017) 9:627–34. doi: 10.1037/tra0000249
118. Dye TD, Alcantara L, Siddiqi S, Barbosu M, Sharma S, Panko T, et al. Risk of COVID-19-related bullying, harassment and stigma among healthcare workers: an analytical cross-sectional global study. *BMJ Open.* (2020) 10:12. doi: 10.1136/bmjopen-2020-046620
119. Yang Q, Young IF, Wan J, Sullivan D. Culturally grounded scapegoating in response to illness and the COVID-19 pandemic. *Front Psychol.* (2021) 12:632641. doi: 10.3389/fpsyg.2021.632641
120. Sakthivel P, Rajeshwari M, Malhotra N, Ish P. Violence against doctors: an emerging epidemic amidst COVID-19 pandemic in India. *Postgrad Med J.* (2022) 98:e74. doi: 10.1136/postgradmedj-2020-138925
121. Khan Z, Iwai Y, DasGupta S. Military metaphors and pandemic propaganda: unmasking the betrayal of 'Healthcare Heroes'. *J Med Ethics.* (2021) 47:643–4. doi: 10.1136/medethics-2020-106753
122. Litz BT, Rusowicz-Orazem L, Doros G, Grunthal B, Gray M, Nash W, et al. Adaptive disclosure, a combat-specific PTSD treatment, versus cognitive-processing therapy, in deployed marines and sailors: a randomized controlled non-inferiority trial. *Psychiatry Res.* (2021) 297:113761. doi: 10.1016/j.psychres.2021.113761
123. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy: The Process and Practice of Mindful Change*. New York, NY: Guilford press (2011).
124. Wachen JS, Evans WR, Jacoby VM, Blankenship AE. Cognitive processing therapy for moral injury. In: Currier JM, Drescher KD, Nieuwsma J editors. *Addressing Moral Injury in Clinical Practice*. Washington, D.C: American Psychological Association (2021). p. 143–61. doi: 10.1037/0000204-009
125. Lloyd CS, Nicholson AA, Densmore M, Théberge J, Neufeld RW, Jetly R, et al. Shame on the brain: neural correlates of moral injury event recall in posttraumatic stress disorder. *Depress Anxiety.* (2021) 38:596–605. doi: 10.1002/da.23128
126. Corrigan F, Grand D. Brainspotting: recruiting the midbrain for accessing and healing sensorimotor memories of traumatic activation. *Med Hypotheses.* (2013) 80:759–66. doi: 10.1016/j.mehy.2013.03.005
127. Corrigan FM, Christie-Sands J. An innate brainstem self-other system involving orienting, affective responding, and polyvalent relational seeking: some clinical implications for a "Deep Brain Reorienting" trauma psychotherapy approach. *Med Hypotheses.* (2020) 1:109502. doi: 10.1016/j.mehy.2019.109502
128. Nicholson AA, Ros T, Densmore M, Frewen PA, Neufeld RW, Théberge J, et al. A randomized, controlled trial of alpha-rhythm EEG neurofeedback in posttraumatic stress disorder: a preliminary investigation showing evidence of decreased PTSD symptoms and restored default mode and salience network connectivity using fMRI. *NeuroImage Clin.* (2020) 28:102490. doi: 10.1016/j.nicl.2020.102490
129. Kluetsch RC, Ros T, Théberge J, Frewen PA, Calhoun VD, Schmahl C, et al. Plastic modulation of PTSD resting-state networks and subjective wellbeing by EEG neurofeedback. *Acta Psychiatr Scand.* (2014) 130:123–36. doi: 10.1111/acps.12229
130. Subramanian HH. Descending control of the respiratory neuronal network by the midbrain periaqueductal grey in the rat in vivo. *J Physiol.* (2013) 591:109–22. doi: 10.1113/jphysiol.2012.245217
131. Subramanian HH, Balnave RJ, Holstege G. The midbrain periaqueductal gray control of respiration. *J Neurosci.* (2008) 28:12274–83. doi: 10.1523/jneurosci.4168-08.2008
132. Battaglia AM, Protopopescu A, Boyd JE, Lloyd C, Jetly R, O'Connor C, et al. The relation between adverse childhood experiences and moral injury in the Canadian armed forces. *Eur J Psychotraumatol.* (2019) 10:1546084. doi: 10.1080/20008198.2018.1546084
133. Roth SL, Andrews K, Protopopescu A, Lloyd C, O'Connor C, Losier BJ, et al. Mental health symptoms in public safety personnel: examining the effects of adverse childhood experiences and moral injury. *Child Abuse Negl.* (2022) 123:105394. doi: 10.1016/j.chiabu.2021.105394
134. Lee DA, James S. *The Compassionate-Mind Guide to Recovering from Trauma and PTSD: Using Compassion-Focused Therapy to Overcome Flashbacks, Shame, Guilt, and Fear*. Oakland, CA: New Harbinger Publications (2013).
135. Lee D, James S. *The Compassionate Mind Approach to Recovering from Trauma: Using Compassion Focused Therapy*. London: Hachette (2012).
136. D'Alessandro AM, Ritchie K, McCabe RE, Lanius RA, Heber A, Smith P, et al. Healthcare workers and COVID-19-related moral injury: an interpersonally-focused approach informed by PTSD. *Front Psychiatry.* (2021) 12:784523. doi: 10.3389/fpsyt.2021.784523
137. Ozer EJ, Best SR, Lipsey TL, Weiss DS. Predictors of posttraumatic stress disorder and symptoms in adults: a meta-analysis. *Psychol Bull.* (2003) 129:52. doi: 10.1037/0033-2909.129.1.52
138. Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Consult Clin Psychol.* (2000) 68:748. doi: 10.1037/0022-006X.68.5.748

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Case Conceptualizing in Acceptance and Commitment Therapy for Moral Injury: An Active and Ongoing Approach to Understanding and Intervening on Moral Injury

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Acceptance and Commitment Therapy for Moral Injury (ACT-MI; 10–11), is an application of Acceptance and Commitment Therapy principles designed to help individuals live their values, even in the presence of moral pain. ACT-MI differs from other emerging treatments for moral injury in that ACT-MI is not based on a traditional syndromal approach to conceptualizing moral injury, which treats moral injury as a collection of signs and symptoms to be reduced. Rather than assuming moral injury causes suffering through a constellation of symptoms that a person *has*, in ACT-MI, moral injury is defined by what a person *does* in response to moral pain. Consistent with this framework, we present a unique approach to moral injury case conceptualization that emphasizes function over form, providing clients the opportunity to break free from the patterns of behavior that cause moral injury-related suffering to persist. Rooted in approaches to conceptualizing that have demonstrated utility in extant interventions (e.g., ACT), ACT-MI clinicians conduct ongoing functional analyses to inform case conceptualization and intervention. Functional analysis is used to disrupt the processes maintaining moral injury, as the client and therapist work to identify and intervene on the behaviors reinforcing avoidance and control of painful internal experiences causing moral injury. In the current article, we guide the reader through a framework for applying functional analysis to the conceptualization of moral injury where the reinforcers driving moral injury are explored. We also provide examples of questions that can be used to help uncover the functions of moral injury consistent behavior. Case examples based on our experiences treating moral injury are presented to demonstrate how various types of morally injurious events can evoke different features of moral pain which in turn motivate different repertoires of avoidance and control. These inflexible patterns of avoidance and control create suffering by engaging in behavior designed to escape moral pain,

such as social isolation, spiritual disconnection, reduced self-care, suicidal ideation, and substance use. We discuss how to target this suffering using functional analysis to guide treatment decisions, matching interventional processes within ACT-MI to the specific functions that moral injury-related behavior is serving for an individual. We suggest that the use of functional analytic case formulation procedures described herein can assist clients in disrupting behavioral patterns maintaining moral injury and thereby free them to pursue lives of greater meaning and purpose.

Keywords: moral injury, Acceptance and Commitment Therapy (ACT), veterans, health care providers, functional contextualism

INTRODUCTION

Conceptualizing Moral Injury From a Syndromal Perspective

Moral injury is at a critical juncture in its conceptualization. There is no agreed upon definition for moral injury, no diagnosis for moral injury in the Diagnostic and Statistical Manual for Mental Disorders (DSM), no consensus regarding measures or cut points to determine the presence or absence of "moral injury," and disagreement about the components of moral injury that are critical for assessment and intervention. Researchers have noted several varying definitions of moral injury and the need for uniformity regarding a definition, however, there is still no authoritative definition of the construct (1–5). While moral injury is not yet characterized as a diagnostic syndrome in the DSM, the mental health community is moving toward a syndromal model of conceptualizing moral injury (1, 6). Syndromal models of moral injury include conceptualization that classifies experiences like guilt and shame as symptoms causal to psychopathology (3–5), a focus on creating measures to identify signs and symptoms, establishing cut points for these measures indicating the presence or absence of moral injury, and targeting the reduction of these symptoms in treatment (7–10). Syndromal approaches to conceptualization focus on understanding the topography of a psychological disorder and its boundary conditions. In determining boundary conditions or cut points for moral injury, researchers hope to better understand when instances of moral injury are clinically significant and when there is not sufficient symptom severity to apply the clinical label.

Treatment following a syndromal conceptualization would entail an emphasis on reducing moral injury symptoms such that successful treatment results in "moral injury" no longer being diagnosed. Relying on the presence or absence of moral injury and focusing on these symptoms in treatment assumes that the experiences of the group for whom a scale was developed leads providers to the most salient variables to target for an individual. However, because clinical cut points are rooted in the statistical averages of large groups, such an approach may not be sensitive to the nuanced and contextual processes maintaining moral injury for specific individuals and therefore could serve as a barrier to efficient and effective psychotherapy (11, 12). Caution regarding the establishment of cut points for moral injury is warranted given that applying such methods have not historically clarified the etiology of other psychological syndromes, predicted the course of psychopathology, or facilitated treatment responsivity (11, 13, 14).

Conceptualizing Moral Injury From a Functional Contextual Perspective

Functional contextualism is a philosophy of science rooted in pragmatism, where behavior is viewed as an "act in context." Any analysis of a behavior is interpreted as an ongoing act inseparable from its current and historical context (15). As an alternative to a *syndromal* approach to conceptualization focused on assessing the symptom topography of moral injury, a *functional* approach to conceptualization is focused on understanding behaviors maintaining moral injury through the purpose(s) they serve for the individual (11, 13, 14, 16–19). Rather than focusing on reducing what would be conceptualized as symptoms of a moral injury disorder from a syndromal perspective (e.g., reducing self-blaming thoughts), from a functional contextual perspective it is the person's relationship with their experiences (e.g., how they relate to self-blaming thoughts) that is emphasized in treatment. In this approach, practitioners are more concerned with the *functions* of a person's behavior (i.e., What are the consequences that maintain the behavior?) and the *contextual factors* that give rise to these behaviors (i.e., Under what conditions does this behavior occur?) to understand "what is the purpose of this behavior for this individual in this context?", rather than focusing on shifting the *form* or content of a person's experience (e.g., Is the thought itself changing?).

Functional Contextual Definition of Moral Injury

Moral injury is a *pattern of behavior* defined by an individual engaging in efforts to avoid or control their moral pain. This avoidance and control behavior often functions to reduce and/or change a person's experience of moral pain. Control efforts, for instance drinking alcohol, may temporarily decrease an individual's experience of moral pain. However, these control efforts often lead to long-term consequences causing social, psychological, and spiritual suffering (17). From a functional contextual perspective, an individual's specific pattern of moral injury is assessed through a functional analysis.

To assess moral injury, first it is necessary to identify the behavior that is causing the cycle of suffering in relating to their moral pain to persist. To do this, an individual's experience of a potentially morally injurious event (PMIE), the event that violated their moral code, should be explored. PMIEs can occur

through a person's own actions, inactions, or through other peoples' actions or inactions. These moral code violations may be particularly salient when they are experienced as being at odds with a person's socially held values. For instance, PMIEs that violate a person's religious or spiritual beliefs, sense of social justice, and ethics about what is right and wrong may be more likely to evoke distressing experiences. Determining a person's PMIE exposure is an important step in understanding their experience of moral pain.

Moral pain can be defined as the thoughts (e.g., self-directed such as, "I don't deserve to be happy" and other-directed such as, "I'll never be able to forgive them"), emotions (e.g., guilt, shame, contempt, anger, and disgust), sensations (e.g., feeling of nausea), and urges (e.g., urges to isolate and hide from others) that exposure to the PMIE has evoked. Moral pain is assessed so that the client and therapist can understand how the individual responds to these internal experiences. Because moral emotions are painful and often aversive, responses to these experiences tend to include strategies that facilitate avoiding, fixing, or attempting to control one's moral pain in some form. Attempts to avoid and control moral pain make sense, given social and verbal learning histories that support avoidance of painful internal content (e.g., "Don't feel bad," "Just get over it," and "Be happy"). However, if these behaviors are the only strategies used in response to moral pain, they can profoundly impact a person's life over time.

Suppose an individual experiences intense moral pain due to exposure to a PMIE, and consistently seeks to avoid these painful experiences, thus providing temporary relief. In that case, escape will be continuously reinforced, variation in behavior reduced, and opportunity for other sources of reinforcement eliminated (e.g., isolation in multiple contexts and for long periods reducing the possibility of experiencing other emotions such as joy). This could lead to additional difficulties connecting to sources of meaning and purpose. Social relationships, sacred practices, and even the individual's relationship with themselves begins to suffer. Adding to this, suffering can expand and deepen as the strategies some individuals may use to avoid moral pain (e.g., attempting suicide) often create new sources of moral pain for both the person and their loved ones, thereby expanding and deepening the self-reinforcing cycle of avoidance and suffering.

From a functional contextual perspective taking into account the context in which a behavior is elicited and the purposes that behavior serves for the individual, behavior causing moral injury to persist occurs when an individual's *relationship* to moral pain creates suffering. Furthermore, in conceptualizing painful moral emotions as serving important social and evolutionary functions (20–25), the presence of moral pain is not a signal of psychopathology, but a signal that an individual has experienced a moral code violation. Thus, rather than seeking only to reduce the pain, a functional approach seeks to address the underlying issues communicated by the pain. Therefore, instead of applying the label of "moral injury" to clients once their moral pain has crossed a certain subjective threshold, within a functional contextual framework "moral injury" is defined as the behavior(s) someone *does* in response to their moral pain that negatively impacts their ability to live a meaningful life. As noted, these behaviors tend to include avoidance, control, or doing something to temporarily fix an individual's experience of that pain which can cause social, psychological, and spiritual suffering. An approach to treatment following this conceptual framework emphasizes changing the client's relationship with their moral pain for the sake of building a life lived based on the client's chosen values rather than a life centered around their reflexes to their moral pain.

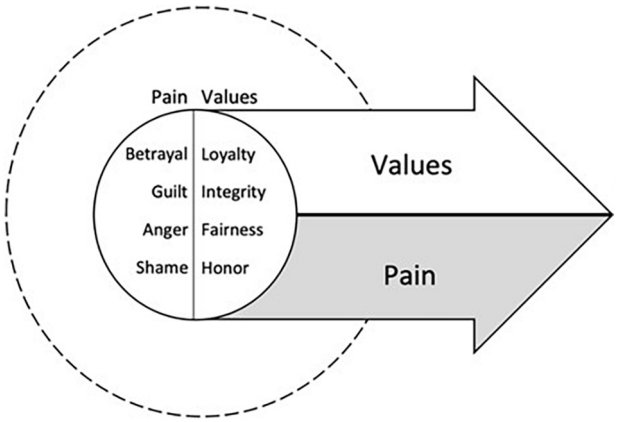

FIGURE 1 | The treatment targets of Acceptance and Commitment Therapy for Moral Injury (ACT-MI), pursuing values in the presence of moral pain.

In this article, we describe case conceptualizing in Acceptance and Commitment Therapy for Moral Injury (ACT-MI) (**Figure 1**), an approach to intervening on moral injury that is rooted in functional contextualism (17, 18). Rather than assuming moral injury causes suffering through a constellation of symptoms that a person *has*, in ACT-MI, moral injury is defined by what a person *does* in response to moral pain that interferes with living their values. We describe how functional analysis is implemented in ACT-MI and walk the reader through in-depth functional analysis via chain analysis and abbreviated, in-session functional analysis that occurs in the context of our therapy groups. Two detailed case examples are described, the first related to moral injury stemming from how a warzone Veteran related to his moral pain following a perpetration-based MIE (killing a child in war who was around the same age as his girlfriend's child) involving a violation of his moral code (**Figure 2**). The second case example includes a health care provider who experiences a betrayal-based MIE from her supervisor and a betrayal by her institution prompting difficulties relating to her moral pain (i.e., a health care provider's patient died alone of COVID-19 after she promised she would be there with him due to her boss and institution asking her to be elsewhere) (**Figure 3**). These cases provide examples of how functional analysis is used to guide assessment and treatment in ACT-MI.

What Is Functional Analysis?

Functional assessment or *functional analysis* is central to behavioral therapy (19, 26, 27). To determine the functions of behavior which maintains moral injury, an assessment of the

functions of that behavior is necessary. Extending the principles of behaviorism to understanding internal experiences including language and cognition in context, different interventions have been developed and organized targeting the relationships between an individual's environment, covert, and overt experiences [e.g., Acceptance and Commitment Therapy (ACT), Dialectical Behavior Therapy (DBT), Process Based Cognitive Behavioral Therapy (PBCBT)]. Within these interventions, different methods have been implemented for understanding complex networks of thoughts, emotions, sensations, memories, urges, and behaviors to facilitate functional analysis (28–30). All methods of functional analysis include identification of a behavior maintaining suffering, the function(s) that behavior serves, and the contexts in which the behavior occurs. Each of these components is critical to not only understanding *why* an individual is suffering, but to facilitating intervention on the processes *maintaining* moral injury.

How Functional Analysis Is Applied in Acceptance and Commitment Therapy for Moral Injury

Functional analysis is a core component of assessment and treatment in ACT-MI. In addition to previous applications of ACT-MI in individual contexts (18), ACT-MI is also currently under investigation for individuals engaged in group psychotherapy. To participate in moral injury treatment in a psychotherapy group more effectively, throughout treatment the individual client and therapist must clearly understand the behaviors contributing to the client's moral injury. Since moral emotions are social experiences, we hold that learning new skills to relate to moral pain in the presence of other Veterans provides more opportunity to practice psychological flexibility and build a social community (17, 20). Group members can share their avoidance experiences and the costs and the benefits of changing their relationship to moral pain. Compassion and empathy for the costs of control can be validated by others while also supporting values-based behavioral change.

The group ACT-MI intervention also includes both individual functional analysis and in-session functional analysis in the therapy groups. There are three individual sessions for each group member devoted to case conceptualizing in ACT-MI: (1) the first before beginning the treatment group, (2) the second midway through treatment, and (3) the third after the final group session to promote skills generalization following treatment. These three sessions are devoted to functional analysis of behaviors maintaining moral injury.

Functional analysis also continues in group therapy sessions. These functional analyses are often abbreviated to fit into the allotted time, allowing patterns maintaining moral injury to be targeted in the moment so that group members can practice flexibly interacting with moral pain together. To facilitate a shortened within-group session functional analysis, a behavior occurring during that session is identified which is hypothesized to be maintaining moral injury and the contextual factors occurring immediately before the behavior and consequences immediately following the behavior are explored. For example, if a discussion in group evokes shame and a member tells a joke in response to that shame, the group's (and Veteran's) attention might shift from the content evoking shame to the content of the joke, reducing contact with shame (escaping the emotion). In this way telling the joke is negatively reinforcing because it reduces the group's experience of shame and the member(s) feel relief. However, this joking behavior does not facilitate the development of new skills to relate differently to that shame. Addressing the joking behavior in session helps determine the function of behaviors that maintain moral injury and teaches group members how to do a functional analysis of their own behavior, examining the impact and workability of the consequences. Additionally, engaging functional analysis within a group context can be helpful in highlighting shared experiences across group members (e.g., similar avoidance or control behaviors, similar experiences of moral pain, similar costs of avoiding and controlling moral pain), facilitating group connection. Functional analysis is an ongoing process, engaged through multiple levels (individually and in group) that is designed to disrupt the patterns of behavior that maintain moral injury.

Chain Analysis as a Method of Organizing Functional Analysis

In ACT-MI individual case conceptualizing sessions, chain analysis (a method of functional analysis most often associated with DBT) is used to organize the complex networks of behaviors, thoughts, emotions, sensations, memories, urges, and other events that can give rise to moral injury. Chain analysis provides the structure to identify the basic contingencies causing a behavior to persist (29, 31–33). In the following sections we describe the use of chain analysis to disrupt the patterns of behavior maintaining moral injury, and present two case examples to illustrate the application of chain analysis.

Starting With the Target Behavior

Because we contend that moral injury is not a syndrome existing *inside* of a person, but a pattern of behavior that someone *does* in response to moral pain which causes them suffering, individual actions [albeit external or internal (e.g., rumination)] become crucial sources of assessment data. Collaboratively choosing a behavior that the client and therapist believe could be maintaining moral injury is then a necessary starting point for a chain analysis. Without first identifying a specific behavior to assess, it is impossible to understand what reinforcing functions that behavior might serve and the contexts which might make the target behavior more likely. Specifying a target behavior that potentially maintains moral injury is therefore the first step toward the eventual goal of disrupting the cycle of moral injury-related suffering.

Several diagnostic syndromes and behaviors have been associated with exposure to potentially morally injurious events including PTSD, depression, substance use disorder, and suicidal ideation and suicidal behaviors (34–39). These syndromes and behaviors provide some clues about the kinds of behaviors that individuals may use to cope with their moral pain. For instance, research outside of the field of moral injury has demonstrated that experiential avoidance (avoiding experiences like moral pain) is

connected to a number of the behaviors that are characteristic of moral injury. Experiential avoidance has been associated with suicidal ideation and behavior, substance use, and social isolation (40–42). These overt behaviors can be easily observed by others, often making them clear areas of focus as potential target behaviors that are maintaining moral injury.

In addition to behaviors that seem more obviously connected to efforts to manage moral pain, subtle behaviors are also important to assess. Behaviors that appear in their *form* or content to be productive or even consistent with a client's values can nonetheless *function* as avoidance or control. While *any behavior* could serve the function of maintaining moral injury, supporting the need for idiographic assessment, overcorrecting and over-repairing are notably associated with moral injury. If someone engages in a behavior meant to repair a moral transgression, when they are participating in this reparative behavior, it could function as a means of avoiding or controlling their experience of moral pain. For instance, a client may donate to orphanages because children were harmed by their actions during their service in war. In the moments they are donating to the orphanage and shortly thereafter, the client might have less contact with their experience of guilt or shame, because they are focused on making amends and perhaps feel uplifted by donating. In the long term, however, if the donating behavior becomes a rule (e.g., "I must donate to repair") and the individual is seeking relief repeatedly in the service of feeling better at the expense of other areas of meaning, then the donating behavior can be conceptualized as maintaining moral injury. The client may feel compelled to repeat donating each time they experience moral pain. Rather than serving as an actual values-based choice regarding amends, donating behavior serves an escape function for this client.

Furthermore, donating to an orphanage does not support the client in learning new skills to relate differently to their moral pain. Instead, they may encounter financial hardships or other hardships (e.g., loss of time with family) due to the desire to feel less shame. While the form or content of this behavior may appear productive and values-consistent and be socially rewarded, it is functioning to maintain suffering for this individual client. Regardless of the behavior's form, if a client is engaging in that behavior for the purpose of "feeling better" it is possible that the behavior is maintaining moral injury.

Covert behaviors [e.g., the way a client interacts with their moral pain through behaviors not observable to others (for instance rumination, spending time trying to block a thought out)] may also cause moral injury to persist. For instance, a client who remembers killing a child in war might ruminate about what their involvement in this event means about themselves as a person. They may experience cycles of intentionally thinking thoughts like "I deserve to suffer," justifying their current dilemma but also perpetuating unworkable behavior. A functional analysis explored by the client and therapist would help the client notice that when they ruminate on the thought "I deserve to suffer," they also avoid having to directly contact the emotions associated with the memory of killing the child because instead they are focused on that thought. Rumination may serve to help them avoid the intensity of the pain of the incident, the pain of potential rejection by others, and suffice as self-punishment for past behavior. As another example, a client may have the same experience (killing a child in war). Instead of ruminating about a thought, they may mentally replay the details of the MIE over and over, attempting to problem solve the situation in a way that would lead to a different outcome (relinquishing the present moment to the past). Yet another possibility related to the same experience of killing a child in war could involve attempts to "block out" and "deliberately think about other things" when the thought "I deserve to suffer" appears. Blocking out and thinking about other things often causes rebound of the suppressed thought (43). This rebound can lead to even greater attempts to block the thought, and a vicious cycle ensues. Each of these scenarios would involve slightly different interventions to disrupt the patterns maintaining moral injury.

Over time, clients often develop complex behavioral networks including different strategies they use to avoid or control their moral pain. Several behaviors could be targeted through functional analysis and then intervened on using ACT-MI strategies. Determining which behaviors to target for intervention should always be done through collaborative discussion with the client. This said, initial target behaviors selected for intervention should ideally be those hypothesized as most impactful to the client's life and that are directly connected to the client's efforts to avoid or control moral pain. Although changing these behaviors will be more likely to elicit moral pain, it is helpful to explain to the client that starting with the highest impact behavior is also more likely to efficiently and effectively disrupt the networks maintaining moral injury, allowing the possibility for new learning to occur in the presence of moral pain.

To better understand how we apply chain analysis in ACT-MI, we first describe the components of chain analysis and then provide two case examples using functional analysis to facilitate assessment and intervention. In the first example (**Figure 2**), we describe a pattern maintaining moral injury for a Veteran whose MIE was related to killing a child in war.

We targeted this Veteran's behavior of staying late at work to avoid interacting with his girlfriend's son who reminded him of the child he killed in war. In the second example (**Figure 3**), we describe a pattern maintaining moral injury for a healthcare worker who is experiencing betrayal related to her institution whose target behavior was yelling at her husband (MIE of following her bosses' orders which resulted in an elderly patient dying alone).

Triggering Events

After identifying a target behavior, it can be useful to identify factors that triggered the series of thoughts, emotions, sensation, urges, memories, and other behaviors that led to the target behavior. Given that moral pain is rooted in social experience, additional considerations are warranted. For instance, shame and guilt are emotions that are generally prompted by how an individual's behavior has negatively impacted other people. In contrast, anger and contempt tend to arise from experiences of how other peoples' behavior has impacted the individual and their communities. Therefore, events that trigger moral pain

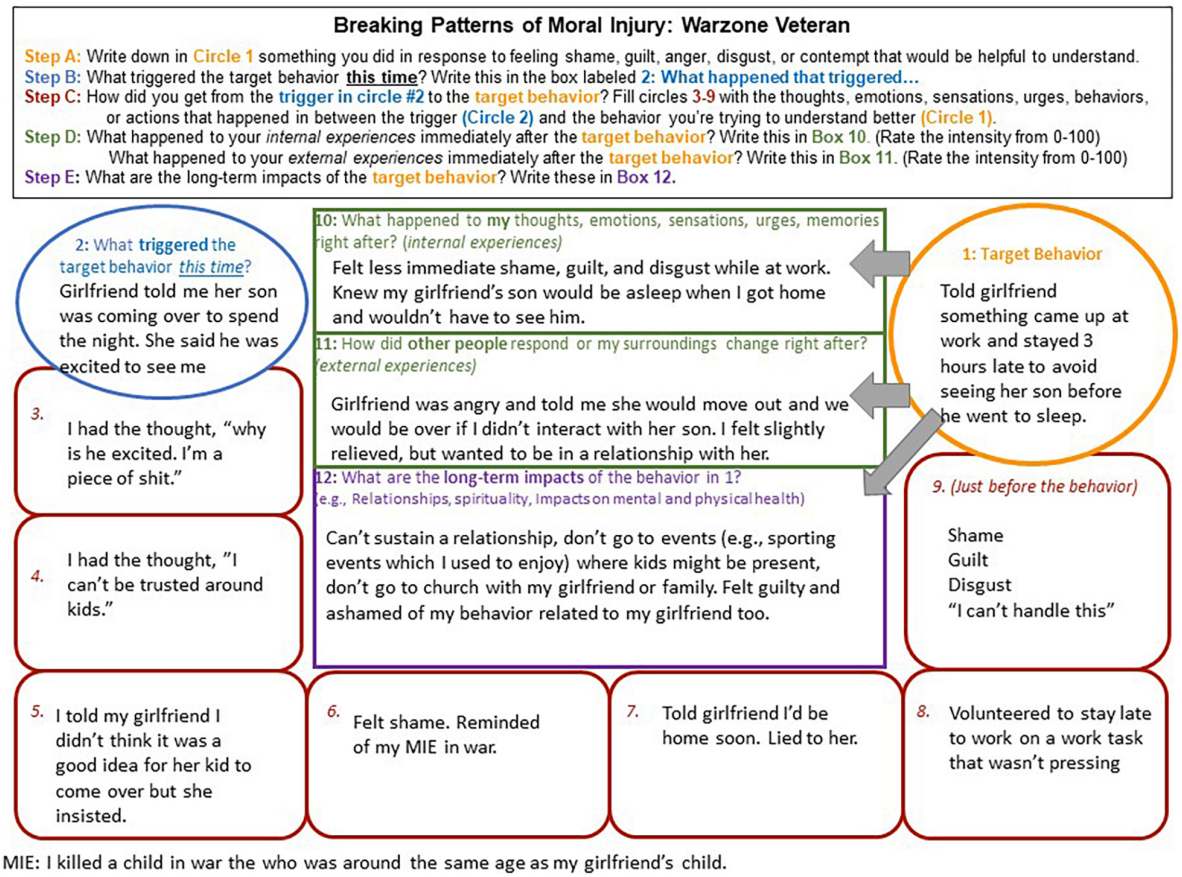

FIGURE 2 | A warzone Veteran case example of a chain analysis demonstrating the factors maintaining moral injury.

and subsequent attempts to avoid and control that pain are often interpersonal in nature. Particularly evocative triggering events might also be directly or indirectly tied to an individual's experience of their MIE.

Examples of specific events that go on to trigger a pattern of moral injury-maintaining behaviors might include interpersonal disputes (e.g., a Veteran who was betrayed by an officer later has a conflict with their supervisor at work), other social interactions (e.g., a First Responder who felt helpless to prevent death being invited to attend a funeral for a family member), and direct reminders of a MIE (e.g., returning to work as a health care provider perceiving that they killed a COVID-19 patient). If the individual is unaware of what triggered their target behavior, the provider and client can work backward from the target behavior through the links in the chain until it is clear what led to the target behavior. Please see the case examples for examples of a triggering event for a warzone Veteran (**Figure 2**) and a healthcare provider (**Figure 3**).

Links in the Chain

Links in the chain include any facets of moral pain, behavior connected to that moral pain, and relevant contextual factors important to a person having engaged in the target behavior. This includes the client's behaviors, events and interactions with others that are relevant contextual factors to the chain and may have prompted the client's behavior, thoughts (e.g., self-blaming thoughts, thoughts related to blaming others), emotions (e.g., anger, shame, guilt, contempt, and disgust), sensations (e.g., pit in the stomach, tightness in the chest, and difficulty breathing) urges (e.g., urges to isolate and urges to attack), and memories (e.g., the memory of the MIE). If the client's target behavior is indeed relevant to moral injury, then these links should always include such facets of moral pain. Furthermore, the links in the chain should form a complete narrative about the client's target behavior that is maintaining their moral injury, spanning the triggering event to the target behavior. If the chain does not make sense, important links are likely missing. Collaboratively sharing your experience with the client (e.g., "Help me understand how you got from seeing a picture of your grandfather to attempting suicide") may help uncover any factors that are important in maintaining moral injury. For detailed examples of links in the chain please see **Figures 2**, **3** for a Veteran and health care provider example.

Consequences

The immediate consequences of engaging in the target behavior are critical to uncover both in terms of how the behavior influences a person's private experiences and how the behavior

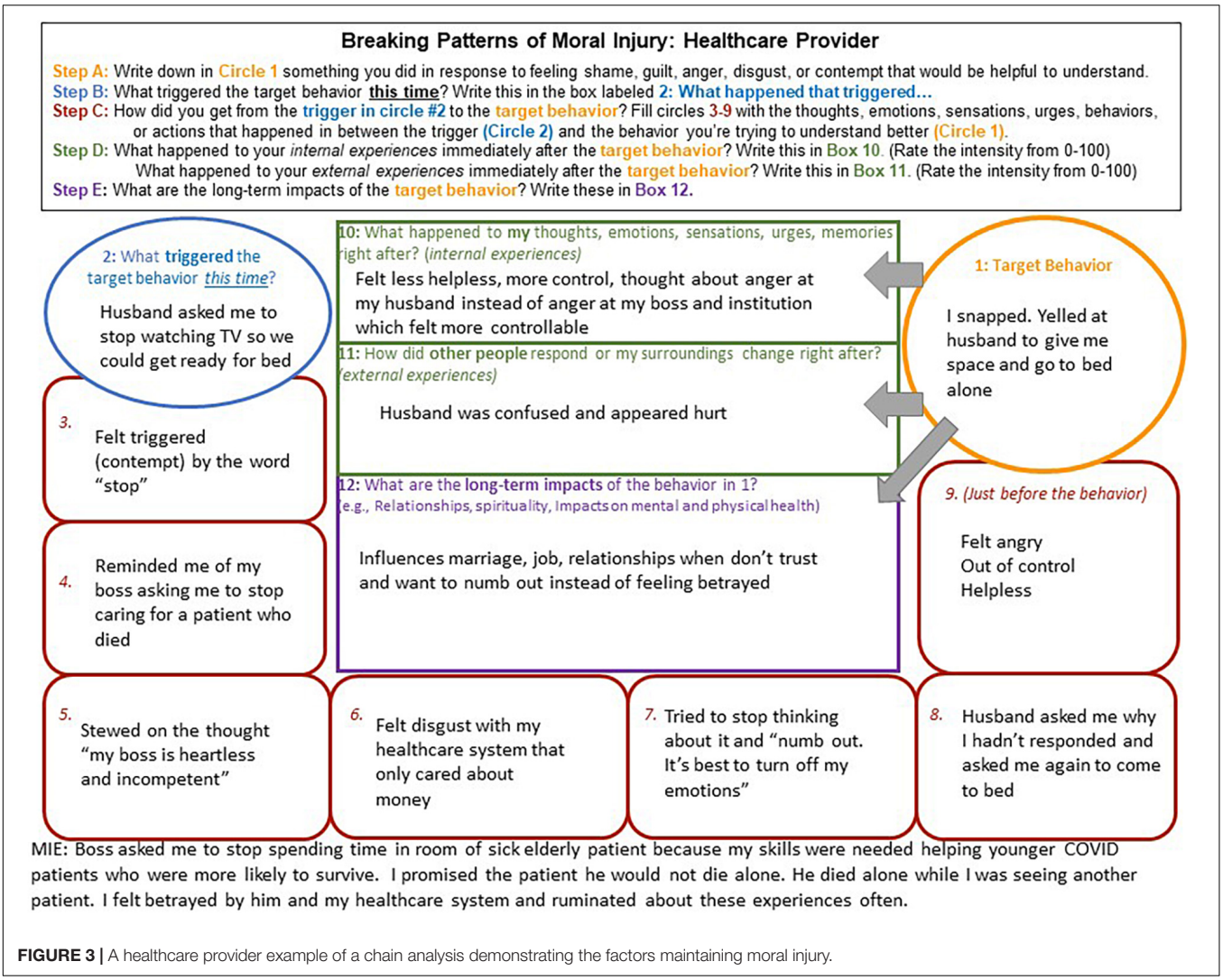

FIGURE 3 | A healthcare provider example of a chain analysis demonstrating the factors maintaining moral injury.

influences others in that person's life. If the consequences maintaining moral injury can be directly addressed through behavior change, the pattern creating moral injury can be disrupted, and suffering reduced. In examining consequences, we are interested in understanding how the client's thoughts, emotions, sensations, urges, and memories are impacted by the target behavior. In general, target behaviors tend to be maintained by experiential avoidance. This could take the form of negative reinforcement, wherein the target behavior facilitates escaping an aversive experience (e.g., thinking about suicide provides a sense of relief from current pain). Alternatively, positive reinforcement, where the target behavior facilitates contact with a preferred or more desirable experience, can also maintain moral injury (e.g., substance use, viewing pornography, and eating). Additionally, some target behaviors can be maintained through multiple processes (e.g., positive and negative reinforcement). For instance, isolating through video games could result in allowing someone to distract from shame and facilitate putting them in contact with emotional experiences that are more reinforcing than shame (e.g., anger, achievement, and excitement).

Responses from others can also influence moral injury. Continuing with the example of video games, consider a Veteran who finds spending time with their children aversive due to a previous MIE involving children. When the Veteran begins playing video games, their spouse keeps their children away from them in a well-intentioned attempt to help them control their moral pain through avoidance. This would be an example of negative reinforcement by the client's environment. As clients experiencing cycles of moral injury are often prone to making explanations for their behavior based on their sense of self (e.g., "I must be an evil person"), identifying these sources of reinforcement is also important. This assists in understanding how to disrupt moral injury. It can also be validating for the client to understand reasons for their target behavior and in turn generate motivation for change.

In addition to understanding the immediate consequences of behavior maintaining moral injury, it is also important to understand the costs of engaging in these behavior patterns over time. Determining the long-term costs of moral injury patterns, and how these costs affect functioning and a person's

ability to engage their values (opportunities to connect with meaning and purpose) can also help facilitate motivation for behavioral change. We often see difficulties in functioning and disengagement from values manifest in interpersonal relationships, spirituality, and self-care as behaviors in these domains often result in opportunity for exposure to moral pain. For a person to see how their behavior departs from their values and how this behavior (e.g., isolating in relationships) has not decreased or eliminated their moral pain – and in some ways has created more pain (e.g., caused important relationships to end) – is important in creating motivation to interact differently with moral pain. Please see **Figures 2**, **3** for the short and long-term consequences of behavioral patterns maintaining moral injury.

Abbreviated Functional Analysis

While formal chain analysis provides a comprehensive narrative about the behaviors maintaining moral injury, this level of detail may not always be feasible (e.g., in the context of a therapy group). However, the key components of functional analysis can still be applied to behaviors occurring within a group treatment session that are hypothesized to be maintaining moral injury. The key components of an abbreviated functional analysis involve assessing a behavior that facilitated experiential avoidance, the contextual factors in which the behavior occurred, and the consequences of that behavior. Essentially this approach is focused on understanding an antecedent, a behavior, and its consequences. While an abbreviated functional analysis may result in less depth, depending on the context it may facilitate greater opportunity to intervene on moral injury in the moment. Having completed more detailed chain analysis prior to group sessions may help to inform which of a specific group members' behaviors are most relevant for facilitators to focus on for skills training.

Questions to Elicit the Function of a Behavior

Whether engaging in a complete behavioral chain or abbreviated functional analysis, some specific questions can help identify the target behavior and uncover the function(s) of that behavior. In session, several behaviors can be observed that indicate processes related to experiential avoidance. When a noticeable shift occurs in the client's affect, tone, behavior, or attention, it can be helpful to ask questions to understand their current experience and what happened immediately before the behavior of focus. For instance, if the client shifts from crying to expressing anger toward group members or the facilitator, asking the client a question like "*what happened just before you became irritated?, Did anything change about your sadness when you became mad?*" may help to uncover what the purpose of their "angry" behavior was. These kinds of questions can help to assess what happened immediately before and after the target behavior maintaining moral injury.

If someone's behavior involves a less noticeable emotional shift, other kinds of questions may be helpful, such as questions that facilitate assessing the client's attention. Questions like "*where did your mind go just then?*" could reorient the client back to the room and allow for more information to be gathered about the functions of their attentional shift. Even responding to changes in body language can be useful in assessing and intervening on the behaviors maintaining moral injury. For example, suppose a client suddenly seems closed off to the group (e.g., hunched over, averting eye contact) in their body posture, a provider could comment on this behavior, stating "*I'm noticing you are sitting like this. . .what are you experiencing right now?*". If there are changes noticed within an ACT-MI psychotherapy group, asking group members for their experiences of the behavior or other trigger that created a shift for the group can also be useful.

Intervening With Acceptance and Commitment Therapy Processes Using the Functional Analysis

One of the most critical facets of functional analysis is its direct treatment utility. This occurs when functional analysis helps the clinician identify ACT processes in the moment, applying interventions immediately and for use in future situations assisting the client to break free from patterns of moral injury occurring in and out of session. ACT-MI is based on the principles of ACT, but explicitly focused on targeting flexible responding to moral pain. The primary purpose of ACT-MI is to use processes related to acceptance (contacting the present moment, defusion, acceptance, self as context) and change (values, committed action) to empower clients to move toward their values even in the presence of moral pain (**Figure 1**) (17, 18). While the purpose of this article is not to comprehensively describe ACT-MI, more detail is provided in the section that follows about how the processes of contacting the present moment, defusion, acceptance, self as context, values and committed action can be facilitated using functional analysis to disrupt the patterns of suffering maintaining moral injury.

Within ACT-MI sessions, engaging in functional analysis typically involves the client directly contacting moral pain and interacting with that pain flexibly (e.g., noticing moral pain, describing it to a provider/group). In this way participating in a functional analysis in a therapy session can evoke several treatment processes within ACT-MI [e.g., contacting the present moment through noticing one's experiences in the here and now, observing that experience and describing it through defusion, making space for moral pain to exist as an experience that you have rather than an experience you are through acceptance, stepping back from narratives about the need to control moral pain through self as context, interacting differently with moral pain to engage values (e.g., genuine in relationships, learning about myself), and practicing committed action related to values (e.g., engaging in an exercise where interacting differently with moral pain is practiced)]. More description of these ACT processes and how functional analysis can engage these processes is described in the section that follows.

In addition to in the moment intervention, functional analysis can also help the client identify how to intervene in future scenarios where moral pain is experienced. Through retrospective and in-the-moment chain analysis, future situations that are likely to trigger moral pain can be anticipated by the

client and thus better support the deliberate practice of ACT processes and flexible responding. Once the pattern causing a person's moral injury to persist is understood, specific parts of the chain that appear most consequential to maintaining moral injury can be targeted in treatment and matched with specific processes that might be more likely to disrupt the behavior maintaining moral injury. Detailed examples of how functional analysis can be used to facilitate ACT interventional processes are described at the end of each process section based on the chain analyses in **Figures 2**, **3**.

Contact With the Present Moment

The present moment is the only place behavior change can occur. Therefore, clients must develop the ability to flexibly contact the present moment to become more aware and relate to their moral pain differently. Functional analysis can be used to help individuals open up to their experiences in the here and now by identifying behaviors (i.e., storytelling, humor) that move the client away from the present. Noticing client experiences in the here and now can also be helpful in understanding what is driving the target behavior. Slowing down and considering each link in the chain analysis can help reinforce the client's experiences in the present moment, including noticing any urges to avoid or change those experiences. Content in the chain that reflects the client's attention is focused on the past (e.g., memory of MIE) or future (e.g., worry about the reaction to future reminders of the MIE) can serve as a signal to observe experiences in the present moment (rather than ruminating about the past or future).

The Veteran case example (**Figure 2**) provides many opportunities to contact the present moment and disrupt the cycle maintaining moral injury (e.g., The Veteran could slow down and notice his experience related to any link in the chain). The triggering event might be one of the most efficient intervention points in the chain related to contacting the present moment. Knowing that his girlfriend's child is a trigger for experiencing moral pain (and for his attention becoming consumed by past experiences), the Veteran could engage in a mindfulness practice focused on connecting with his experiences in the here and now and paying attention to what he experiences (including moral pain). With the case example of the health care provider (**Figure 3**), the triggering event may have been less obvious to the client as potentially provoking a pattern of behavior maintaining moral injury. Here, contact with the present moment might be facilitated in link 3 of the chain, working with the provider to notice her experience of contempt in the moment and any urges that come with experiencing contempt (e.g., urges to attack). Links 6 and 9 could also provide opportunities to slow down and notice her experiences in the here and now.

Defusion

When working with moral injury, thoughts, emotions, sensations, memories, and urges closely linked to an individual's MIE can be particularly evocative. Learning to take the perspective of an observer of one's moral pain is critical to interacting differently with that moral pain. Practicing observing thoughts, emotions, sensations, urges, and memories as an experience someone *has* rather than an experience they *are* can help individuals approach their moral pain. The more evocative the experience, the more applicable repeated practice of defusion is to learning to interact differently with that moral pain. Applying defusion to the content immediately precipitating the target behavior may be particularly impactful in helping the individual to choose alternatives to the target behavior that has facilitated avoidance or control of moral pain.

Early intervention through defusion could facilitate building new pathways of behavior that do not lead to the target behavior and instead are guided by the client's values. For the Veteran case example (**Figure 2**) many of the links in the chain would be good opportunities to practice defusion. Defusion in chain link 3 from the thought "I'm a piece of shit" could be an important intervention point. An ACT exercise like "thoughts on cards" might help to facilitate perspective taking associated with the thought "I'm a piece of shit," looking at this experience literally for what it is (a thought) rather than what the mind says it is (a truth) (44). Defusion from the thoughts and emotions indicated on links 4, 6, and 9 could also be practiced via thoughts on cards or other exercises that facilitate observing thoughts. Additionally, defusion could be applied to the urges evident in this chain. For instance, prior to lying to his girlfriend in link 7, the Veteran could have worked to defuse from this urge (e.g., watching the urge rise and fall in his body) and considered the extent to which it was consistent with who he wants to be in his relationship to lie to his girlfriend. Some of the most notable opportunities for defusion in the health care provider case example (**Figure 3**), to break the cycle of moral injury and potentially prevent the target behavior, include practicing observing the thought in link 5, "my boss is heartless and incompetent," the emotion in links 3 and 6, and the urge to numb out in link 7. Different approaches to defusion could be taken with a guided experiential exercise, for example practicing labeling these thoughts, emotions, and urges as they arise (e.g., "I'm noticing I'm having the thought that 'my boss is heartless and incompetent.'" "I'm noticing I'm experiencing an urge to numb out and get away from this feeling").

Acceptance

Part of avoiding, disengaging from, and attempting to control moral pain, typically involves being closed off to one's internal experiences and to opportunities for reinforcement in the environment. Within ACT-MI, acceptance processes emphasize opening up to and making space for any internal experiences in the present moment, including moral pain, in the service of greater freedom to live values. Acceptance processes can be used across the chain to open up to one's experiences and practice holding moral pain lightly. Facilitating acceptance of moral pain is particularly important from a functional contextual perspective because behavioral patterns linked to avoidance, control, and non-acceptance tend to maintain moral injury. Like defusion strategies, making room for the facets of moral pain that motivate the target behavior can be useful for shifting the individual's relationship to their moral pain, and create opportunities for behavioral change.

In both case examples, contact with the present moment and defusion processes help to slow down and notice experiences in the present moment rather than automatically responding to these experiences through a pattern of behavior that maintains moral injury. Activating the acceptance process can facilitate not only noticing experiences, but a willingness to allow oneself to have these experiences. For the Veteran (**Figure 2**), acceptance of shame in links 6 and 9 could be helpful in cultivating a new pathway of behavior, informed by his values rather than avoidance of shame. This could include noticing how shame shows up in his body, physically opening up to that shame with a shift in body posture, and watching the emotion rise and fall. Practicing acceptance for the health care provider (**Figure 3**) might be particularly important at links 3, 6, and 7. Engaging in an exercise to practice relating to her moral pain and opening up to it, for instance "physicalizing" her emotions (imagining the shape, color, weight, temperature of her emotions while practicing willingness to gently hold the emotional object), could be helpful in breaking her pattern of "numbing" and disconnecting from her emotions (18).

Self as Context

There are typically multiple opportunities in the context of functional analysis to step back from particular narratives and practice perspective taking. Living inside of stories about what it means to have experienced a MIE can prevent living a life "outside" of those narratives, a life connected to meaning and purpose. If a behavioral chain is focused on an event that happened in the past, it can be useful to practice perspective taking related to temporality. For example, the client may be encouraged to notice that their conscious self extends across time. This conscious "observer" self was present before and during the MIE, during the target behavior, and now is present in session. This awareness of perspective across time allows the client to engage with the idea that while their experiences may shift moment to moment, their ability to hold these experiences, including moral pain, remains constant. The realization of a conscious self that is aware of, and therefore transcends, moral pain is also helpful in reinforcing to the client that although the MIE and moral pain is part of a person's history or experience, it also need not define them as an individual.

Related to self as context, in the Veteran case example (**Figure 2**) link 4 in the chain, "I can't be trusted around kids," appears to be a story he generates to avoid the opportunity for exposure to moral pain that interacting with children will evoke. A self-compassion exercise could be helpful here, for the Veteran to practice holding this thought with kindness for the observer (himself) who experienced this thought and also the MIE in war. For the health care provider (**Figure 3**), engaging self as context related to her story about her emotions in link 7, "it's best to turn off my emotions," would be important for breaking the cycle of responding to her husband in anger. Exploring the historical contexts relevant to the development of this story (e.g., "Showing emotions is a sign of weakness" in the military or in health care settings) could be useful in practicing observations of experience, gaining distance from the most captivating facets of this narrative in the service of living values (rather than a life trapped in a story).

Values

A life guided by choice and what matters most to a person is impossible when their behavior is controlled by attempts to avoid moral pain. To break free from moral injury, it is critical to practice living one's values especially in the presence of moral pain. Contacting such values, and the experiential sense of vitality that accompanies living them, can serve as a motivator for clients to interact differently with moral pain, to connect to something vital. Related to the long-term impacts of the target behavior, living a life attempting to avoid and control moral pain interferes with an individual's ability to live their values. The triggering event can be a helpful starting point in identifying where an individual might consider living their values and even practice living them through committed action. Clients might be asked, "If you were to go back to this situation, what kinds of behaviors might align with your values?" The connection to values can also be made related to links in the chain containing a person's moral pain. For instance, on the one hand, the experience of shame may signal that a client cares about behaving honorably relative to their community. On the other hand, anger may signal that an individual cares about fairness. Helping a person see that their moral pain is actually an indicator of their values can help facilitate motivation to notice and interact differently with that pain.

To break cycles of moral injury and live values, exploring the pain linked to values is critical. For the Veteran described in **Figure 2** this would mean identifying the pain related to killing a child in war (link 3) and the pain associated with not being present for his girlfriend and her child (long-term impacts, box 12) and the values this pain indicates in both parts of the chain. This could be particularly important to actually living his values in these relationships. In the case example of the health care provider (**Figure 3**), values exploration could be facilitated through discussion of the long-term impacts of the target behavior. For instance, a provider might ask "How is it that you want to show up as a partner?, What matters most to you about your work?" It could also be helpful to slow down and reflect on values associated with the pain that shows up in links 3–6 and link 9.

Committed Action

Opportunities to live one's values are present in every moment. Therefore, functional analysis can be used as an exercise to identify of opportunities for behavioral change, emphasizing directly changing behavior in response to moral pain in session. When collaboratively choosing committed actions with a client to disrupt a cycle of persistent moral injury, it is important to select small, clear, values-consistent behaviors that are seen as feasible to the client to engage even while experiencing moral pain. Over time, clients can progress to increasingly more significant changes in behavior. Engaging in behaviors consistent with one's values in the face of moral pain often requires a degree of kindness for the experiencer (e.g., a willingness to do something kind for oneself even when experiencing thoughts like "I deserve to suffer"). Encouraging the client to practice self-compassion by gently holding in awareness the moral pain emerging in the

chain analysis links may therefore be particularly useful in disrupting moral injury.

For both the Veteran and health care provider, small behaviors consistent with values can be engaged to literally practice building new patterns of behavior guided by values. For the Veteran, an example of this could be spending a short amount of time with his girlfriend and her son participating in an activity they all enjoy that involves minimal conversation (e.g., going to see a movie). This could be a first step in disrupting the pattern maintaining moral injury that is negatively impacting his relationship. He could engage in this behavior in the future, or in the context of the chain (e.g., he could plan an activity that he participates in with his girlfriend and her child in response to the thought "I can't be trusted around kids"). In addition to overt behaviors that represent committed actions, covert behaviors can also facilitate committed action in the service of values. For example, if the Veteran engages in the physicalizing emotions exercise to interact differently with his shame, he is engaging flexibly with his emotions in the service of his values. Committed action for the health care provider (**Figure 3**) could take the form of having a conversation with her husband about her emotional experience associated with feeling triggered by his comment.

Acceptance and Commitment Therapy for Moral Injury Summarized

Through strategies that activate the processes of contact with the present moment, defusion, acceptance, self as context, values, and committed action we hope to directly intervene on the behaviors that maintain moral injury by targeting their functions. If moral injury is maintained through negative reinforcement, we would work to use ACT-MI skills to help an individual relate differently to their moral pain rather than relying on the target behavior to provide escape. Related to positive reinforcement, we might encourage the client to practice noticing urges to change their experience (e.g., planning suicide to facilitate a sense of peace) and instead practice making space for moral pain. We might take the opportunity to intervene on moral injury at an environmental level using functional analysis as well and in so doing help alter the *consequences* maintaining moral injury. Working with an individual's environment to respond differently to the target behavior (e.g., if the client asks his wife to watch his children because they evoke moral pain, instead working with the client and his family to keep the children in his environment) may directly alter the consequences of that behavior and disrupt the cycle of moral injury. In sum, if the target behavior can be identified and experiences related to moral pain observed and held gently to live a life driven by values, experiences in this network no longer require avoidance or control. Rather, the moral pain that had previously functioned as a cue to avoid and control, may instead be transformed into a cue to approach, connect, and more deeply live one's values.

DISCUSSION

In the current article, we describe a functional contextual approach to assessing and intervening on moral injury as an alternative to a syndromal model of conceptualization. Functional analysis is a purely idiographic form of assessment, allowing the determination of the specific behaviors maintaining moral injury, the function these behaviors serve, and interventions to alter them. Because any behavior can serve the function of being used to avoid or control moral pain, an approach ensuring the behaviors most relevant to moral injury are identified may facilitate more efficient intervention. We provided the reader with a framework for applying functional analysis using retrospective chain analysis (**Figures 2**, **3**) and in the moment abbreviated functional analysis. We discussed using ACT processes to intervene on moral injury to break patterns maintaining suffering. This approach to conceptualizing moral injury is meant to target the mechanisms maintaining suffering and to empower individuals to build new patterns of behavior in response to moral pain that are guided by their values (rather than being limited to avoidance and control).

Limitations

While there are significant benefits to a functional contextual approach to conceptualizing moral injury, there are also limitations. First, our approach to treating moral injury is incongruent with the assumption that pain must be reduced to live a meaningful life. Working with an individual to challenge and reduce their experience of shame could be helpful for some clients. However, this stance, even if presented unintentionally, could be invalidating to others who might firmly believe that shame should be felt for violating their morals. Challenging this experience, or even working to decrease this emotion, could communicate that we as clinicians are moral authorities telling a client that their experience is wrong. Many clients have found our approach to working with moral pain validating because the individual's rationale for their moral pain is not challenged. Instead of treating moral pain as a symptom of moral injury that needs to be reduced, the ACT-MI clinician targets one's behavior in response to their moral pain, as this behavior is maintaining the moral injury and related impairment in psychosocial functioning. The goal is to live well instead of feel good and in living well people tend to feel better [Gloster et al. (45)]. Learning skills to live with psychological pain in the service of one's values, has been shown to indirectly result in decreases in moral distress, suggesting that skills cultivating the willingness to have moral pain may indirectly result in a reduction of that moral pain [Gloster et al. (45)]. However, it could be the case that this theoretical approach does not fit for a particular client who is solely focused on wanting to reduce their moral pain. If the client remains committed to pain reduction after addressing the problem of internal control and its costs and is still seeking to feel good rather than live well, another treatment approach for moral injury might be indicated.

Second, a goal of a syndromal approach to classification concerns a standard demarcation of disorder form non-disorder. If moral injury becomes a diagnostic category, relying on a purely functional contextual model would pose difficulties for billing and insurance purposes. Relying on functional analysis does not directly allow comparing an individual's treatment progress to another individual with similar characteristics.

Third, it has also been historically challenging to research idiographic assessment measures, although this has become more accessible with methods like network analysis (12, 46, 47) and ecological momentary assessment procedures (12, 48). Investigators in the contextual behavioral science community have been working to develop measures and methods that can be more readily researched to facilitate functional analysis (46, 47).

Future Directions

While our approach to case conceptualizing is based on research supporting behavior analysis and ACT, more research is needed to understand how this approach facilitates breaking patterns of moral injury and enhancing client engagement with meaning and purpose. We are currently conducting a randomized controlled acceptability and feasibility trial of ACT-MI, and in the context of this study, we are also testing the acceptability of our approach to case conceptualizing across treatment, with feedback from participants thus far being positive (i.e., from completed qualitative interviews). Future directions for research include investigating the extent to which this approach to case conceptualizing is efficacious. This could include understanding if sessions devoted to case conceptualizing across ACT-MI bolster the efficacy of the intervention in disrupting moral injury through outcomes related to functioning and values-based living. Additionally new formal measures are being developed to facilitate process-based assessment. Future studies should include an investigation of the Process Based Assessment Tool's (PBAT) relevance in identifying the processes maintaining suffering associated with moral injury (47). The PBAT is a longitudinal assessment tool that includes process targets that are theoretically relevant to dimensions that maintain moral injury (affect, cognition, attention, social connection, motivation, overt behavior, and physical behavior) (47). Additionally, other repeated measures approaches using methodologies like ecological momentary assessment might help capture the processes maintaining moral injury at the level of individual clients. The incorporation of these assessment strategies may not only help to establish the utility of a functional contextual approach to moral injury, but may also expand the field's understanding of process-based interventions for human suffering.

AUTHOR CONTRIBUTIONS

All authors contributed to the conceptualization, writing, and editing of the manuscript.

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REFERENCES

1. Yeterian JD, Berke DS, Carney JR, McIntyre-Smith A, St Cyr K, King L, et al. Members of the moral injury outcomes project consortium. Defining and measuring moral injury: rationale, design, and preliminary findings from the moral injury outcome scale consortium. *J Trauma Stress.* (2019) 32:363–72. doi: 10.1002/jts.22380
2. Hodgson TJ, Carey LB. Moral injury and definitional clarity: betrayal, spirituality, and the role of chaplains. *J Relig Health.* (2017) 56:1212–28. doi: 10.1007/s10943-017-0407-z
3. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
4. Norman S. Trauma-informed guilt reduction therapy: overview of the treatment and research. *Curr Treat Options Psychiatry.* (2022) 1–11. doi: 10.1007/s40501-022-00261-7 [Epub ahead of print].
5. Burkman K, Gloria R, Mehlman H, Maguen S. Treatment for moral injury: impact of killing in war. *Curr Treat Options Psychiatry.* (2022) 1–14. doi: 10.1007/s40501-022-00262-6 [Epub ahead of print].
6. Koenig HG, Ames D, Youssef NA, Oliver JP, Volk F, Teng EJ, et al. The moral injury symptom scale-military version. *J Relig Health.* (2018) 57:249–65.
7. Gray MJ, Schorr Y, Nash W, Lebowitz L, Amidon A, Lansing A, et al. Adaptive disclosure: an open trial of a novel exposure-based intervention for service members with combat-related psychological stress injuries. *Behav Ther.* (2012) 43:407–15. doi: 10.1016/j.beth.2011.09.001
8. Maguen S, Burkman K, Madden E, Dinh J, Bosch J, Keyser J, et al. Impact of killing in war: a randomized, controlled pilot trial. *J Clin Psychol.* (2017) 73:997–1012. doi: 10.1002/jclp.22471
9. Norman SB, Capone C, Panza KE, Haller M, Davis BC, Schnurr PP, et al. A clinical trial comparing trauma-informed guilt reduction therapy (TrIGR), a brief intervention for trauma-related guilt, to supportive care therapy. *Depress Anxiety.* (2022) 39:262–73. doi: 10.1002/da.23244
10. Jones KA, Freijah I, Carey L, Carleton RN, Devenish-Meares P, Dell L, et al. Moral injury, chaplaincy and mental health provider approaches to treatment: a scoping review. *J Relig Health.* (2022) 6:1051–94.
11. Hayes SC, Hofmann SG, Ciarrochi J. A process-based approach to psychological diagnosis and treatment: the conceptual and treatment utility of an extended evolutionary meta model. *Clin Psychol Rev.* (2020) 82:101908. doi: 10.1016/j.cpr.2020.101908
12. Hayes SC, Hofmann SG, Stanton CE. Process-based functional analysis can help behavioral science step up to novel challenges: COVID – 19 as an example. *J Context Behav Sci.* (2020) 18:128–45. doi: 10.1016/j.jcbs.2020.08.009
13. Follette WC, Houts AC. Models of scientific progress and the role of theory in taxonomy development: a case study of the DSM. *J Consult Clin Psychol.* (1996) 64:1120–32.
14. Hayes SC, Wilson KG, Gifford EV, Follette VM, Strosahl K. Experiential avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment. *J Consult Clin Psychol.* (1996) 64:1152–68.
15. Gifford EV, Hayes SC. Functional contextualism: a pragmatic philosophy for behavioral science. In: O'Donohue W, Kitchener R, editors. *Handbook of Behaviorism*. San Diego, CA: Academic Press (1999). p. 285–327. doi: 10.1080/07347332.2018.1469565
16. Borges LM, Barnes SM, Farnsworth JK, Drescher KD, Walser RD. A contextual behavioral approach for responding to moral dilemmas in the age of COVID-19. *J Context Behav Sci.* (2020) 17:95–101. doi: 10.1016/j.jcbs.2020.06.006
17. Farnsworth JK, Drescher KD, Evans W, Walser RD. A functional approach to understanding and treating military-related moral injury. *J Context Behav Sci.* (2017) 6:391–7. doi: 10.1080/09540261.2019.1595545
18. Borges LM. A service member's experience of acceptance and commitment therapy for moral injury (ACT-MI) via telehealth: "learning to accept my pain and injury by reconnecting with my values and starting to live a meaningful life". *J Context Behav Sci.* (2019) 13:134–40.
19. Haynes SN, O'Brien WH. Functional analysis in behavior therapy. *Clin Psychol Rev.* (1990) 10:649–68.

20. Farnsworth JK, Drescher KD, Nieuwsma JA, Walser RB, Currier JM. The role of moral emotions in military trauma: implications for the study and treatment of moral injury. *Rev Gen Psychol.* (2014) 18:249–62. doi: 10.1037/gpr0000018
21. Haidt J. Chapter 45: the moral emotions. In: Davidson RJ, Scherer KR, Goldsmith HH, editors. *Handbook of Affective Sciences*. Oxford: Oxford University Press (2003). p. 852–70. doi: 10.1016/S0140-6736(18)32823-X
22. Nunney SJ, Schalk J, Manstead ASR. Emotion and intergroup cooperation: how verbal expressions of guilt, shame, and pride influence behavior in a social dilemma. *J Behav Decis Mak.* (2022). doi: 10.1002/bdm.2273 [Epub ahead of print].
23. Ketelaar T, Tung Au W. The effects of feelings of guilt on the behaviour of uncooperative individuals in repeated social bargaining games: an affect-as-information interpretation of the role of emotion in social interaction. *Cogn Emot.* (2003) 17:429–53. doi: 10.1080/02699930143000662
24. de Hooge IE, Breugelmans SM, Zeelenberg M. Not so ugly after all: when shame acts as a commitment device. *J Pers Soc Psychol.* (2008) 95:933–43. doi: 10.1037/a0011991
25. Shay J. *Achilles in Vietnam: Combat Trauma and the Undoing of Character*. New York, NY: Scribner (1994).
26. Skinner BF. *Verbal Behavior*. New York, NY: Appleton-Century-Crofts (1957). doi: 10.1037/11256-000
27. Skinner BF. *Contingencies of Reinforcement*. New York, NY: Appleton-Century-Crofts (1969).
28. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy: The Process and Practice of Mindful Change*. 2nd ed. New York, NY: Guilford Press (2011). p. 402.
29. Hayes SC, Hofmann SG. *Process-Based CBT: The Science and Core Clinical Competencies of Cognitive Behavioral Therapy*. Oakland, CA: New Harbinger Publications (2018). p. 480.
30. Linehan MM. *Skills Training Manual for Treating Borderline Personality Disorder. Diagnosis and Treatment of Mental Disorders*. New York, NY: Guilford Press (1993). p. 180.
31. Borges LM, Nazem S, Matarazzo BB, Barnes SM, Wortzel HS. Therapeutic risk management: chain analysis of suicidal ideation and behavior. *J Psychiatr Pract.* (2019) 25:46–53.
32. Rizvi SL. *Chain Analysis in Dialectical Behavior Therapy*. New York, NY: Guilford Publications (2019). p. 186.
33. Rizvi SL, Ritschel LA. Mastering the art of chain analysis in dialectical behavior therapy. *Cogn Behav Pract.* (2014) 21:335–49.
34. Currier JM, McDermott RC, Farnsworth JK, Borges LM. Temporal associations between moral injury and posttraumatic stress disorder symptom clusters in military veterans. *J Trauma Stress.* (2019) 32:382–92.
35. Battles AR, Bravo AJ, Kelley ML, White TD, Braitman AL, Hamrick HC. Moral injury and PTSD as mediators of the associations between morally injurious experiences and mental health and substance use. *Traumatology.* (2018) 24:246–54.
36. Maguen S, Griffin BJ, Vogt D, Hoffmire CA, Blosnich JR, Bernhard PA, et al. Moral injury and peri- and post-military suicide attempts among post-9/11 veterans. *Psychol Med.* (2022). doi: 10.1017/S0033291721002919 [Epub ahead of print].
37. Maguen S, Nichter B, Norman SB, Pietrzak RH. Moral injury and substance use disorders among US combat veterans: results from the 2019–2020 national health and resilience in veterans study. *Psychol Med.* (2021). doi: 10.1017/S0033291721002919 [Epub ahead of print].
38. Nichter B, Norman SB, Maguen S, Pietrzak RH. Moral injury and suicidal behavior among US combat veterans: results from the 2019-2020 national health and resilience in veterans study. *Depress Anxiety.* (2021) 38:606–14. doi: 10.1002/da.23145
39. Wisco BE, Marx BP, May CL, Martini B, Krystal JH, Southwick SM, et al. Moral injury in U.S. combat veterans: results from the national health and resilience in veterans study. *Depress Anxiety.* (2017) 34:340–7.
40. Roush JF, Brown SL, Mitchell SM, Cukrowicz KC. Experiential avoidance, cognitive fusion, and suicide ideation among psychiatric inpatients: the role of thwarted interpersonal needs. *Psychother Res.* (2019) 29:514–23. doi: 10.1080/10503307.2017.1395923
41. Levin ME, Lillis J, Seeley J, Hayes SC, Pistorello J, Biglan A. Exploring the relationship between experiential avoidance, alcohol use disorders, and alcohol-related problems among first-year college students. *J Am Coll Health.* (2012) 60:443–8. doi: 10.1080/07448481.2012.673522
42. Brem MJ, Shorey RC, Anderson S, Stuart GL. Does experiential avoidance explain the relationships between shame, PTSD symptoms, and compulsive sexual behaviour among women in substance use treatment? *Clin Psychol Psychother.* (2018) 25:692–700. doi: 10.1002/cpp.2300
43. Amstadter AB, Vernon LL. A preliminary examination of thought suppression, emotion regulation, and coping in a trauma-exposed sample. *J Aggress Maltreat Trauma.* (2008) 17:279–95. doi: 10.1080/10926770802403236
44. Harris R. *ACT Made Simple: An Easy-To-Read Primer on Acceptance and Commitment Therapy*. Oakland, CA: New Harbinger Publications (2019). p. 392.
45. Gloster AT, Walder N, Levin ME, Twohig MP, Karekla M. The empirical status of acceptance and commitment therapy: a review of meta-analyses. *J Context Behav Sci.* (2020) 18:181–92. doi: 10.2147/JPR.S144631
46. Christodoulou A, Michaelides M, Karekla M. Network analysis: a new psychometric approach to examine the underlying ACT model components. *J Context Behav Sci.* (2019) 12:285–9.
47. Ciarrochi J, Sahdra B, Hofmann SG, Hayes SC. Developing an item pool to assess processes of change in psychological interventions: the process-based assessment tool (PBAT). *J Context Behav Sci.* (2022) 23:200–13. doi: 10.1016/j.jcbs.2022.02.001
48. Levin ME, Krafft J, Pierce B, Potts S. When is experiential avoidance harmful in the moment? Examining global experiential avoidance as a moderator. *J Behav Ther Exp Psychiatry.* (2018) 61:158–63. doi: 10.1016/j.jbtep.2018.07.005

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Defining and Assessing the Syndrome of Moral Injury: Initial Findings of the Moral Injury Outcome Scale Consortium

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Potentially morally injurious events (PMIEs) entail acts of commission (e.g., cruelty, proscribed or prescribed violence) or omission (e.g., high stakes failure to protect others) and bearing witness (e.g., to grave inhumanity, to the gruesome aftermath of violence), or being the victim of others' acts of commission (e.g., high stakes trust violations) or omission (e.g., being the victim of grave individual or systemic failures to protect) that transgress deeply held beliefs and expectations about right and wrong. Although there is a proliferation of interest in moral injury (the outcome associated with exposure to PMIEs), there has been no operational definition of the putative syndrome and no standard assessment scheme or measure, which has hampered research and care in this area. We describe an international effort to define the syndrome of moral injury and develop and validate the Moral Injury Outcome Scale (MIOS) in three stages. To ensure content validity, in Stage I, we conducted interviews with service members, Veterans, and clinicians/Chaplains in each country, inquiring about the lasting impact of PMIEs. Qualitative analysis yielded six operational definitions of *domains of impact* of PMIEs and components within domains that establish the parameters of the moral injury syndrome. From the domain definitions, we derived an initial pool of scale items. Stage II entailed scale refinement using factor analytic methods, cross-national invariance testing, and internal consistency reliability analyses of an initial 34-item MIOS. A 14-item MIOS was invariant and reliable across countries and had two factors: *Shame-Related* (SR) and *Trust-Violation-Related* (TVR) Outcomes. In Stage III, MIOS total and subscale scores had strong convergent validity, and PMIE-endorsers had substantially higher MIOS scores vs. non-endorsers. We discuss and contextualize the results and describe research that is needed to substantiate these inaugural findings to further explore the validity of the MIOS and moral injury, in particular to examine discriminant and incremental validity.

Keywords: moral injury syndrome, moral injury outcome scale, multinational, psychometric evaluation, moral injury outcome scale consortium

INTRODUCTION

The idea that people can be lastingly psychologically and socially affected by their own or others' transgressive behavior is as old as humanity. It is only recently that these age-old concepts have been considered as clinically relevant social, biological, and psychological problems. The term that is used to describe the outcome of these transgressive harms is moral injury (MI). As is the case with the distinction between stressors and stress, transgressive experiences are best construed as *potentially* morally injurious events (PMIEs), rather than inherently and enduringly impairing. PMIEs entail acts of commission or omission by oneself (e.g., cruelty, failure to prevent serious injury), or bearing witness to, learning about, or being the direct victim of acts of commission or omission of others (e.g., high stakes betrayal by an individual or institution, witnessing cruel behavior), that transgress deeply held moral beliefs and expectations (1–4). MI has been most studied in Veterans for good reason; a sizeable minority (24%−40%) of deployed service members (SMs) and combat Veterans report exposure to PMIEs during their military service (2–4).

Litz et al. (1) posited that PMIEs are potentially harmful because they can undermine foundational beliefs about the goodness and trustworthiness of oneself or others, causing functionally impairing psycho-social-spiritual problems. Currier et al. (5), Farnsworth et al. (6), Jinkerson (7), and Litz et al. (1) posited that there are areas of overlap and distinction between MI and other mental and behavioral health outcomes. We hypothesized that the outcomes associated with exposure to PMIEs closely resemble PTSD, as is the case with the potential aftermath of *any* high magnitude life stressor. When PMIEs are impairing (a person putatively is experiencing MI), memories of the experiences can be haunting (intrusively reexperienced) and individuals are motivated to avoid reminders of the event(s) because they cue painful functionally impairing moral emotions, namely shame, guilt, anger, and disgust (1). Additional overlapping PTSD symptoms entail restricted range of non-moral emotions, disinterest in pleasurable activities, and detachment from others, which are also symptoms of depression. MI is posited to have two non-exclusive forms, namely, internalizing outcomes associated with personal transgressive acts and externalizing outcomes associated with being the victim of other's transgressions (8). The distinctive features of MI are posited to be unique enduring changes in self-schemas and beliefs about others that reflect over-accommodation of moral violation, culpability, or expectations of injustice, as well as estrangement, and risky (e.g., reckless) or self-destructive behaviors (1). Although a sizeable percentage of traumatic events endorsed by SMs and war Veterans with PTSD entail morally injurious events, MI is uniquely associated with additional symptoms and problems among PTSD cases (3). However, a frequent false assumption is that for PMIEs to substantively impact outcomes, these events are de facto Criterion-A traumas or take place within a life-threatening context. While PMIEs can be classified as traumatic events (e.g., sexual assaults in the military), many do not involve life-threat and/or sexual assault (e.g., drone strikes, humiliation of a prisoner of war, high stakes trust violations). Finally, although MI and PTSD overlap as described above, some apparently overlapping symptoms may differ functionally [e.g., vigilance about potential betrayal, detachment or anger as a means to avoid shame; (6)].

Reports of PMIEs have also been shown to be associated with suicidal ideation and behavior, anger/aggression, depression/hopelessness, guilt/self-blame, alcohol misuse (3, 4, 9, 10), impairments in occupational and social/relationship functioning (11), and spiritual or existential conflicts or deficits (12). However, these studies have been hampered by typically small samples of convenience, and the findings are generally of very small magnitude and have questionable replicability. Generally, research about MI and efforts to treat the putative clinical aftermath of exposure to PMIEs are hindered by a lack of consensus about the problems uniquely and reliably associated with exposure to PMIEs (the putative syndrome of MI) and the lack of a gold standard measure of MI as an outcome. The lack of a gold standard measure is particularly problematic with respect to identifying clinical cases of MI, planning treatment for those cases, tracking change in MI symptoms over the course of treatment, and evaluating effectiveness. Although treatments have been developed to purportedly target MI, this work has been somewhat cart before horse. Without a gold standard measure of MI as an outcome, it is impossible to demonstrate efficacy. Finally, advancements in the field have been particularly hampered by the absence of qualitative evaluations of the lived experiences of individuals exposed to moral harms. Instead, most studies that have generated ideas about the parameters of the MI construct have interviewed putative experts and clinicians or administered existing mental and behavioral health questionnaires. Given the lack of consensus about, and rhetorical fuzziness associated with MI (8, 13), expert opinion is widely varying and has uncertain validity. Consequently, the lack of qualitative data on how people suffer after exposure to transgressive acts represents a particularly significant knowledge gap in the field.

There are two extant measures of MI as an outcome, namely the Moral Injury Symptom Scale—Military Version [MISS-M (14)] and the Expressions of Moral Injury Scale—Military Version [EMIS-M (5)]. The MISS-M was created by compiling items from existing outcome scales that the authors judged to be face valid. Additional items that putatively assessed domains not assessed in existing scales were derived by the authors or from other studies. The initial scale was subjected to exploratory and confirmatory factor analyses in a sample of Veterans and active-duty SMs. The authors failed to follow state-of-the-art steps in test construction and validation (15) and failed to establish content validity (16), to ensure the meaningfulness of scale content.

The items for the EMIS-M (5) were developed in a four-stage process that included: (a) a literature review and consultation with three putative subject matter experts to identify MI; (b) an unspecified review of existing measures of relevant constructs; (c) creating an initial pool of items and soliciting feedback from clinicians and researchers; and (d) refining the item pool in consultation with putative subject matter experts. The initial scale was subjected to exploratory factor analysis in a college

student Veteran sample. The EMIS-M correlated positively with PTSD and depression symptoms and was inversely associated with social support, hope, and gratitude in the student Veteran sample. The authors generated content from existing scales and by appealing to putative experts. We argue that this constrains content validity, which should entail consulting the target population to ensure the meaningfulness and comprehensiveness of scale content (16). Another problem with the EMIS-M is that the scale items ask respondents to rate symptoms relative to "the military or the military experience," failing to index symptoms to a specific worst and currently distressing PMIE, which also limits the scale's applicability outside the military context. Without event linkage, the EMIS-M is questionably helpful to clinicians who may wish to target the meaning and implication of a specific event and to track change in MI yoked to the most currently distressing and targeted event. An additional problem with the EMIS-M is that respondents are not asked to rate symptoms within a specific time period. This means that the scale might be assessing traits rather than states and would have difficulty tracking clinical change. Finally, the EMIS-M does not measure the functional impact of the symptoms endorsed, which Litz and Kerig (8) argued is a way of distinguishing moral frustration and distress (resulting from moral challenges and stressors, respectively) from MI (based on exposure to PMIEs).

We describe an international effort to develop and validate a questionnaire measure of MI as an outcome, the Moral Injury Outcome Scale (MIOS). This research was conducted by a consortium comprised of researchers and clinicians working with active-duty military SMs and Veterans in the US, the United Kingdom (UK), Israel, Australia, and Canada. We paid considerable attention to ensuring a high degree of content validity for the MIOS. We conducted qualitative interviews of SMs, Veterans, clinicians (psychologists, social workers, mental health nurses), and Chaplains from each participating country. We then used the results, as well as theory, to generate operational definitions of the cross-country domains of impact of PMIEs (and components within domains) that do not overlap with PTSD or depression, with the dual aim of defining the syndrome of MI and to generate scale items (17). The construct and measure development process were divided into three stages, following the methods described by Haynes et al. (16) and Vogt et al. (18). Stage I included content generation and creation of the initial measure. Stage II entailed scale refinement and invariance testing (e.g., item reduction and revisions of the structure and format of scale). Stage III entailed an additional test of construct validity of the final iteration of the MIOS *via* an examination of convergent validity. (A study of discriminant and incremental validity is in the planning stages).

STAGE I: ITEM GENERATION AND INITIAL SCALE CONSTRUCTION

We used theory and consensus among consortium members to generate an initial set of domains of impact from exposure to PMIEs. These hypothesized domains of impact were used to generate prompt questions in a semi-structured interview, which was used to substantiate these domains and discover new domains and specific components (elements) within all domains. The aim was to use thematic analysis to capture the phenomenology of participants' lived experience (19), to generate operational definitions of an invariant, best-fitting set of domains of impact and components within domains, from which to generate content-valid items for the MIOS. The domains and components within domains were conceptualized as higher and lower order parts, respectively, of the nomological network that defines the MI construct. A large pool of items was generated from each component definition within each domain, and these were pared down by categorizing whether items well-fit each domain. Then, a card sort task was used to generate an initial item set for the MIOS (some items were re-worded and additional items were generated to fill gaps).

Methods

Procedure and Results

We conducted qualitative semi-structured interviews of SMs, Veterans, and clinicians (and clergy) with experience treating SMs and Veterans across consortium countries. Prior to SM and Veteran interviews, we asked respondents a series of demographic and military history questions, and we asked them to identify and describe the worst and most currently distressing military experience that went against their beliefs about right and wrong.

We generated a semi-structured interview in which we asked SMs and Veterans to describe the ways that their life changed as a result of the worst and most currently distressing PMIE (and we asked clinicians what they observed). The initial prompt questions asked SMs and Veterans to reflect on an initial hypothesized set of domains of impact, namely: (1) *the presence of moral emotions* (e.g., how do you feel now as you are thinking about this event?); (2) *alterations in self-perception* (e.g., how has this event changed the way you see or feel about yourself; the way you care for yourself; your plans for the future?); (3) *social impacts* (e.g., how has this event changed your relationships with family, friends, romantic partners, and co-workers; what about your trust in other people; dealing with authority figures; how close or distant you feel toward others; how you care for others?); and (4) *beliefs about life's meaning and purpose* (e.g., how has this event affected the way you make sense of life and your spirituality or religious beliefs [faith], your understanding of right and wrong, the principles that guide your life?). The interview for clinicians/clergy framed these questions as observations across patients.

Seven SMs, 65 Veterans, 64 clinicians, and 12 Chaplains were interviewed in total (see **Supplementary Material** for the consortium site contributions). Interviews were audio-taped and transcribed. All efforts were approved by the internal review (ethics) board of the respective sites. The initial qualitative analysis was conducted by two teams, one in the US and one in Canada. In Boston, two trained and well-versed research assistants, and in Ottawa, three clinicians, repeatedly read the transcripts, generated initial codes, and searched for and reviewed themes (20). This process was carried out using NVivo 12 qualitative coding software. The meta-frame for this process

TABLE 1 | Domains of impact and their operational definitions.

Domains of impact					
Self-perception	**Moral thinking**	**Social impacts**	**Self-harming/self-sabotaging**	**Impairing moral emotions**	**Beliefs about meaning and purpose**
Operational definitions of domains					
Alterations and disruptions in identity, which entail how individuals regard, understand, define, or see themselves (who they are), with respect to their core moral beliefs and what they are capable of	Changes in moral thinking, which entail the person judging situations or others moralistically and with condemnation	Alterations in degree of comfort with others, connectedness, social acceptance/belonging, changes in social behavior (e.g., the frequency and quality of engaging with others), trust in others and expectations of social safety	Deliberate and non-deliberate behaviors that negatively impact functioning, and impair health, personal safety, and quality of life / overall wellbeing	Predominant emotions and moods that arise when thinking of the event or that have been more prevalent since the event, as well as avoidance of emotions. Emotions/moods also include emotional behaviors and physiological reactions	Alterations in individuals' beliefs about life meaning or purpose, which may include religious or spiritual beliefs

was the assumption that PMIEs can adversely affect behavior and ways of thinking, feeling, and relating, and that MI subsumes two separable sub-constructs, namely, the unique aftermath of PMIEs that entail personal actions (or omissions), and the unique aftermath of PMIEs that entail bearing witness to or being directly impacted by the transgressions of others. In addition, raters understood that in theory, self-transgressions were associated with shame, a self-conscious and self-condemning emotion, and others' norm violations produce anger, an other-condemning emotion (1). The two teams met in person to discuss their findings and to generate consensus definitions of themes. We relied on theory and data to identify themes pertinent to generating operational definitions of domains of impact.

The US team coded eight interviews for the initial codebook, one active-duty US SM, four Veterans (one from Australia, two from the UK, and two from the US), and three clinicians (one from Australia, one from the UK, and one from the US). The codebook was then tested at each of the sites on at least four of their local interviews. A priori, consortium members decided that the MIOS should be designed to maximize incremental validity relative to related constructs, such as PTSD and depression. Consequently, at first, coders coded everything that was present in the data and then removed all codes that entailed prototypic DSM-5 diagnostic criteria for PTSD and depression (e.g., intrusive experiences, anhedonia). They also removed codes that described PMIEs and codes suggesting positive outcomes of exposure to PMIEs. An initial codebook was sent to consortium sites so they could code their site-specific data. Consortium members met monthly *via* conference calls to identify gaps and inconsistencies and to further refine the codebook. The final codebook consisted of "themes," subsequently renamed domains, and "codes," renamed as components. The domain definitions are presented in **Table 1** (components within domains are in **Supplementary Material**).

Next, separately, each consortium site member generated a large initial pool of scale items that tapped content consistent with the definitions of each component within domains. The non-overlapping items were culled and edited for clarity and simplicity of language, resulting in a set of approximately 300 items. The individuals in each site that had content knowledge or clinical experience pertaining to MI then rated each item from the 300-item pool with respect to whether the item was a "Core" or "Not Core" fit with the operational definition of the respective domains. The 49 items retained were primarily "I statements" to assess personal constructions about behavioral repertoires, ways of thinking (beliefs), ways of feeling, and ways of relating to others that were altered by exposure to PMIEs.

We then created an online card sorting task that included the operational definitions of each domain at the top of the page. A separate group of 19 support staff and research assistants across the consortium, unfamiliar with the MIOS project or MI, were asked to move each item into virtual domain bins. Twenty-seven items in which at least 50% of the raters agreed were retained (six of these were reworded to enhance clarity). The total interrater agreement for these 27 items was moderate [Kappa = 0.45, 95% CI, (0.17, 0.72)]. To ensure that the MIOS covered content that consortium members deemed important, upon reflection, an additional seven items were created (e.g., we determined that the existing content did not capture *the loss of* previously valued aspects of the self or constructions of others; an example item was "I have lost pride in myself"). The original list of items retained from the "core" "not core" process, the 27 items retained from the card sort (as well as the rewording), and the additional seven items are presented in **Supplementary Table 1**.

Finally, we generated a working instructional set and response framework for the initial 34-item MIOS to be tested in Stage II, incorporating feedback about item content and the form of the MIOS from subject matter and questionnaire design experts, respectively. The first page of the MIOS establishes whether a respondent experienced a PMIE, and if so, respondents are asked to categorize their worst and most currently distressing PMIE (respondents are asked to select "Yes" or "No" in response to the following questions: Did the event involve something you did or failed to do?; Did the event involve observing someone else acting [or failing to act]?; Did the event involve being directly impacted by someone else [or people] acting [or failing to act]?). We then asked respondents to report the year that the event happened, and we asked a question to determine if the event

meets the Criterion-A definition of a traumatic event; we used the primary care PTSD screener questions (21) to assess PTSD symptoms related to the PMIE. We did this because of research that has shown that Criterion-A events can entail moral injuries (3) and to explore possible PTSD as a comorbid problem among individuals exposed to PMIEs. The research version of the MIOS used in Stage II and III allowed those without a PMIE to answer the PTSD screener questions and to fill out the MIOS with a most currently distressing stressor in mind to test the linkage between PMIE exposure and MIOS scores.

On the second page of the MIOS, we asked respondents to write out the worst and most currently distressing PMIE if they were comfortable doing so. This was followed by the preliminary 34 MIOS items, listed in random order. The instruction was: "Keeping this worst event in mind, please read each of these statements and circle one of the numbers to the right to indicate how much you would agree with the statement in the past month." The response options were Likert-type, according to degree of agreement. We asked respondents to judge the global impact of the MIOS items on a Likert-type scale between 0 (*not at all*) to 6 (*extremely*) in terms of how much these experiences made it hard for respondents to take care of themselves (e.g., do pleasurable things, exercise, eat properly), and whether they were effective in their job, in school, seeking employment, or getting along with other people.

STAGE II: EXAMINING FACTOR STRUCTURE AND ITEM TRIMMING

The 34-item version of the MIOS was administered to Veterans and/or active-duty SMs in each participating country (Canada had two sites). All participants were different from the participants in Stage I. Analyses entailed an examination of the factor structure of the MIOS, using exploratory factor analyses (EFA). The Canada sample was used as the reference group because these were the first Stage II data collected. This was followed by confirmatory factor analysis (CFA) derived from the EFA model, also with the Canada sample, and cross-national multigroup invariance testing of the model. Finally, we report the interitem and item-total correlations, and internal consistency reliability of the trimmed scale.

Methods

Participants

Canada (non-clinical sample). Canadian Armed Forces (CAF) Veterans were recruited to participate in a 30-min online survey comprising the MIOS and a series of additional psychological, social, and physical well-being measures as part of a larger study exploring Veteran well-being. They were recruited *via* word of mouth, email distribution through professional and Veteran group networks, participant recruitment websites, and social media. Research Electronic Data Capture (REDCap) was used to collect data. This research was approved by the Western University Health Sciences Research Ethics Board. Participants included 533 Veterans (71% men, mean age = 51.87 years [SD = 9.77]). Three hundred and sixty-six participants (68.7%) endorsed a PMIE. Of those who endorsed a PMIE, 49.7% endorsed a MI-Self, 71.0% endorsed observing a MI-Other based on observation of a transgression, and 82.5% were directly impacted from an MI-Other. The most common single type was direct impact from MI-Other (10.4%).

United States (non-clinical sample). Three hundred sixty-three Veterans participated in an online survey study conducted by Qualtrics comprising the 34-item MIOS. Of the 360 Veterans who participated in the study, 73.6% were men; ages ranged from 20 to 79 (*M* range = 50–59). Seventy-eight percent endorsed a PMIE [39% endorsed each type of PMIE (MI-self, MI-Other, and MI-O being directly impacted by another's transgression)]. Of those that only endorsed a single type, the most common was MI-self (11%). The research was approved by the IRB at the VA Boston Healthcare System.

Canada (Ottawa; clinical sample). Two hundred thirty-nine individuals with a treatment history of operational stress injuries participated in an online survey study using the 34-item MIOS. Of the 239 Veterans who participated in the study, 74.8% were men; the age range was 20–79 years (*M* range = 50–59). 89.9% of participants endorsed a PMIE: 51% endorsed an MI-Self, 74.6% endorsed observing an MI-Other, and 79.6% endorsed being directly impacted by a MI-Other. The most common single type was direct impact from MI-Other (9%). The research was approved by the Royal Ottawa Research Ethics Board.

United Kingdom (non-clinical sample). Two hundred sixty-four Veterans from the United Kingdom (UK) participated in an online survey study of the 34-item MIOS. Of the 264 Veterans who completed the MIOS, 67% were men; the mean age range was 51–60 years. All participants reported a PMIE (65.9% MI-Self; 64.4% observing a MI-Other, and 70.1% directly impacted by a MI-Other). MI-S was the most common single type (11.7%). The research was approved by the Combat Stress Research Committee.

Australia (non clinical sample). One hundred eighteen Defense members and Veterans participated in a survey study using the 34-item MIOS. Mean age range was 40–49 years. The MIOS was administered to participants either online or in person; 65.9% of participants identified as male. Of those who endorsed a PMIE, 55% endorsed a MI-Self, 79% endorsed observing a MI-Other, and 87% endorsed being directly impacted by an MI-Other. The most common single PMIE was the latter (12%). The research was approved by the Departments of Defense and Veterans' Affairs Human Research Ethics Committee.

Data Analytic Strategy

To investigate the dimensionality of the preliminary 34-item MIOS, we conducted an EFA with the Canadian sample using SPSS Version 26.0 (22)?. All participants completed at least 80% of the MIOS; we used pairwise deletion to handle missing data. Adequacy of data for factor analysis was measured using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy, with values above 0.60 reflecting suitability for analysis (23), and Bartlett's test of sphericity (24), with statistically significant values indicating that item correlations are significantly different from zero. We used principal axis factoring (PAF) with direct oblimin rotation. Items were retained based on theory, consideration for

item redundancy, and a cut-off value of 0.30 (25). Parallel analysis (26), very simple structure (27), Scree plots, and theory were considered to determine the number of factors to extract.

Using the Canada (Ottawa), US, UK, and Australian samples we conducted CFAs, with MPlus Version 8.0 (28). Sample sizes of at least 200 are recommended for CFA (29). The maximum likelihood estimator was used, and missing data were estimated using the full-information maximum likelihood. We used root mean square error of approximation (RMSEA), comparative fit index (CFI), and the Tucker-Lewis index (TLI) to evaluate model fit. Values of 0.06 reflected good fit, 0.07–0.08 acceptable fit, 0.08–0.10 marginal fit, and >0.10 poor fit; also, CFI and TLI values of >0.95 reflected excellent model fit and 0.90–0.95 indexed acceptable fit (30).

To evaluate cross-national invariance of MIOS scores, a series of multi-group confirmatory factor analytic (MGCFA) models were tested; the US and UK samples were each compared to the Canadian (Ottawa) sample. Three levels of invariance were tested: configural (i.e., number of factors is equivalent across groups), metric invariance (i.e., factor loadings are equivalent across groups), and scalar invariance (i.e., intercepts are equivalent across groups). If scalar invariance is satisfied, latent means can be reliably compared across groups; otherwise, intercept constraints can be freed sequentially to examine partial scalar invariance (31). Nested MGCFA models were compared using χ^2, CFI, and RMSEA difference tests. CFI difference values less than or equal to 0.01, RMSEA difference values less than or equal to 0.01, and non-significant χ^2 difference tests indicate that invariance is satisfied (31, 32).

Due to the small sample size ($n = 118$), we evaluated the invariance of the Australian sample compared to the Canadian sample using multiple indicators, multiple causes [MIMIC; (33, 34)] modeling, which does not require large sample sizes (35). Using MIMIC modeling, we tested for invariance across item intercepts and factor means. The covariate, country, was regressed onto the MIOS factors. If these coefficients are non-significant, then cross-national invariance of the factors is satisfied. In addition, we regressed country onto each item and fixed the direct effects to zero; following this, we examined the modification indices to determine whether any of the item intercepts were noninvariant (35). Where no modification indices emerged, we concluded that cross-national invariance of the intercepts was satisfied.

Results

Exploratory Factor Analysis

We determined that the Canadian sample was suitable for an EFA because we found a KMO index of 0.96 and Bartlett's test of sphericity was significant, $\chi^2_{(561)} = 12{,}789.11$, $p < 0.001$. When all initial 34 items were included, initial Eigenvalues and parallel analysis suggested that five factors should be retained (see **Supplementary Figure 1**). However, only one item loaded onto Factor 5, three items loaded onto Factor 4, and four items loaded onto Factor 3 without cross-loadings. In addition, the Scree plot and very simple structure indicated that two factors should be retained. A two-factor solution was consistent with theory and how we approached content development, namely that MIOS items would describe the outcomes unique to a MI-Self experience (we called this Factor 1, *Shame-Related; SR*), and uniquely applicable to MI-Other experiences (we called this Factor 2, *Trust-Violation-Related; TVR)*. An EFA using the 34 items found that Factors 1 and 2 accounted for 44.64% and 6.02% of the variance across items, respectively. The two factors correlated at 0.47. The factor loadings for the Canadian Stage II study for the preliminary 34-item scale are presented in **Supplementary Material**.

TABLE 2 | Pattern matrix factor loadings for 14-item moral injury outcome scale.

Item	Shame-related outcomes	Trust violation-related outcomes
I am not the good person I thought I was	**0.91**	−0.13
I feel like I don't deserve a good life	**0.74**	0.02
I keep myself from having success	**0.73**	0.02
People would hate me if they really knew me	**0.71**	0.07
I have lost pride in myself	**0.67**	0.15
I blame myself	**0.60**	−0.01
I cannot be honest with other people	**0.55**	0.09
I have lost faith in humanity	−0.11	**0.87**
I lost trust in others	−0.05	**0.82**
I have trouble seeing goodness in others	−0.01	**0.77**
I am angry all the time	0.18	**0.62**
I am disgusted by what happened	0.02	**0.49**
People don't deserve second chances	0.09	**0.38**
I no longer believe there is a higher power	0.05	**0.30**

Bolded values represent loadings ≥0.30.

Next, we sought to reduce the scale to a parsimonious number of items while ensuring that content validity was maintained across the two factors. We sequentially removed items based on a combination of the following empirical and theoretical reasons: (1) factor loadings below 0.30; (2) cross-loadings exceeding 0.30; (3) maintaining coverage of all domains of impact; and (4) the redundancy of items. First, three items were removed due to low communalities. Next, five items were removed due to substantial content overlap (e.g., "I blame myself" was kept, "I feel guilty about what happened" was dropped). Next, three items were removed due to cross-loadings. Finally, nine items with some content overlap were removed from Factor 1 to maintain an approximately equal number of items across the factors (the items that comprise the SR and TVR subscales are presented in **Table 2**).

We then conducted an EFA using the final 14-item MIOS. The KMO index (0.93) and Bartlett's test of sphericity [$\chi^2_{(91)} = 3{,}302.71$, $p < 0.001$] indicated that the data were suitable for EFA. Factor 1 accounted for 42.15% of variance among items, while Factor 2 accounted for 5.75% of variance. The two factors were correlated at 0.74, indicating that they represent unique but associated elements of MI (with 55% shared variance). Item loadings were strong (see **Table 2**), ranging from 0.30 ("I no longer believe there is a higher power") to 0.91 ("I am not the good person I thought I was"). Although the loading for "I no

TABLE 3 | Descriptive statistics for 14-item moral injury outcome scale.

Variable	*M*	*SD*	α
Canada			
MIOS total score	25.31	11.38	0.90
Shame-related outcomes	11.28	6.64	0.88
Trust violation outcomes	14.03	5.85	0.81
Canada (Ottawa)			
MIOS total score	27.32	9.08	0.85
Shame-related outcomes	11.98	5.75	0.85
Trust violation outcomes	15.34	4.69	0.72
United States			
MIOS total score	25.14	11.36	0.90
Shame-related outcomes	11.36	6.82	0.90
Trust violation outcomes	13.78	5.58	0.78
United Kingdom			
MIOS total score	32.87	10.54	0.89
Shame-related outcomes	16.29	6.20	0.86
Trust violation outcomes	16.58	5.35	0.79
Australia			
MIOS total score	27.74	10.42	0.88
Shame-related outcomes	12.17	6.35	0.86
Trust violation outcomes	15.56	5.52	0.81

longer believe there is a higher power" was weaker than the remaining loadings, it was important to include this item to preserve the content domain reflecting beliefs about life meaning and purpose.

Descriptive Results

Table 3 shows the means, standard deviations, and Cronbach's alphas for the 14-item MIOS for each sample. Internal consistency values were acceptable, ranging from 0.85 (Ottawa) to 0.90 (US and Canada) for the 14-item MIOS. The Stage II bivariate correlations between SR and TVR subscale scores were 0.66, 0.51, 0.68, 0.67, and 0.50 in the Canada, Ottawa, US, UK, and Australian study groups, respectively.

Item-level descriptive statistics, inter-item, and item-total correlations for the 14-item MIOS for the Canadian sample are shown in **Table 4** (other Stage II consortia results are presented in **Supplementary Material**). Although there is no consensus regarding optimal inter-item correlation range, Clark and Watson (15) suggested that the average item-total correlation should range between 0.15 to 0.50. The average inter-item correlation for the MIOS was 0.40, which provides evidence that the items represent the same underlying construct, but they are not redundant. Additionally, all item-total correlations reached a recommended cutoff of 0.30 (15, 36), but were not so high as to suggest that the measure lacks breadth of content [(37); uncorrected r range = 0.42–78, corrected r range = 0.30–73].

Confirmatory Factor Analyses

Using the Ottawa sample, the 14-item two-factor model fit the data well, $\chi^2_{(76)} = 154.56$, $p < 0.001$, CFI = 0.923, TLI = 0.907, RMSEA = 0.066 (90% CI = 0.051, 0.081). Factor loadings were

TABLE 4 | Moral injury outcome scale descriptive statistics and inter-item/item-total correlations—Canada.

Item	*M (SD)*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. I blame myself	1.94 (1.29)	1													
2. People would hate me if they really knew me	1.54 (1.27)	0.45	1												
3. I feel like I don't deserve a good life	1.33 (1.21)	0.47	0.60	1											
4. I keep myself from having success	1.71 (1.18)	0.47	0.52	0.58	1										
5. I am not the good person I thought I was	1.51 (1.16)	0.49	0.65	0.60	0.57	1									
6. I have lost pride in myself	1.89 (1.32)	0.45	0.55	0.58	0.64	0.65	1								
7. I cannot be honest with other people	1.41 (1.25)	0.33	0.53	0.42	0.43	0.50	0.49	1							
8. I am angry all the time	1.93 (1.25)	0.43	0.48	0.48	0.47	0.50	0.55	0.37	1						
9. I have lost faith in humanity	2.22 (1.26)	0.32	0.46	0.44	0.37	0.38	0.50	0.31	0.60	1					
10. I have trouble seeing goodness in others	1.91 (1.20)	0.27	0.49	0.44	0.43	0.40	0.49	0.41	0.57	0.61	1				
11. People don't deserve second chances	1.31 (1.02)	0.15	0.28	0.31	0.27	0.30	0.30	0.28	0.29	0.30	0.38	1			
12. I am disgusted by what happened	2.45 (1.21)	0.28	0.31	0.30	0.26	0.26	0.31	0.25	0.41	0.35	0.33	0.31	1		
13. I no longer believe there is a higher power	1.87 (1.32)	0.17	0.25	0.19	0.19	0.22	0.21	0.20	0.23	0.30	0.28	0.18	0.18	1	
14. I lost trust in others	2.40 (1.24)	0.36	0.41	0.40	0.47	0.40	0.50	0.39	0.58	0.63	0.59	0.33	0.43	0.23	1
Total MIOS	1.82 (0.82)	0.54	0.70	0.68	0.66	0.69	0.73	0.57	0.70	0.65	0.66	0.41	0.46	0.30	0.66
		(0.61)	(0.75)	(0.73)	(0.72)	(0.74)	(0.78)	(0.64)	(0.75)	(0.71)	(0.72)	(0.49)	(0.53)	(0.42)	(0.72)

All correlations significant at $p < 0.001$. Uncorrected item-total correlations in brackets (else are corrected item-total correlations).

TABLE 5 | Cross-national invariance fit indices.

Model	χ^2 (*df*)	CFI	TLI	RMSEA	RMSEA 90% CI
US and Canada (Ottawa)					
Configural model	331.72 (152)***	0.944	0.933	0.063*	0.053, 0.072
Metric model	344.11 (164)***	0.944	0.938	0.060*	0.051, 0.069
Scalar model	393.30 (176)***	0.932	0.930	0.064**	0.056, 0.073
Partial scalar model	378.25 (175)***	0.937	0.934	0.062*	0.054, 0.071
UK and Canada (Ottawa)					
Configural model	326.14 (152)***	0.925	0.910	0.068**	0.057, 0.078
Metric model	340.51 (164)***	0.924	0.916	0.065**	0.056, 0.075
Scalar model	406.54 (176)***	0.901	0.897	0.072***	0.063, 0.081
Partial scalar model	354.55 (175)***	0.915	0.911	0.066**	0.056, 0.075

****p* < 0.001.
***p* < 0.01.
**p* < 0.05.
CFI, comparative fit index; TLI, Tucker-Lewis Index; RMSEA, Root mean square error of approximation; CI, confidence interval.

strong, ranging from 0.30 ("I am disgusted by what happened") to 0.79 ("I feel like I don't deserve a good life"), and the factors were significantly correlated at 0.65. In the US sample, the two-factor model also fit the data well: $\chi^2_{(76)} = 179.01$, $p < 0.001$, CFI = 0.954, TLI = 0.944, RMSEA = 0.061 (90% CI = 0.050, 0.073; see **Supplementary Figure**). All items loaded significantly onto their respective factors, ranging from 0.32 ("I no longer believe there is a higher power") to 0.81 ("I feel like I don't deserve a good life"), and the factors were significantly correlated at 0.77. Finally, the UK model fit the data well: $\chi^2_{(76)} = 171.14$, CFI = 0.928, TLI = 0.913, RMSEA = 0.069 (90% CI = 0.055, 0.083). Loadings were strong for the UK sample, ranging from 0.46 ("People don't deserve second chances") to 0.77 ("I am not the good person I thought I was"), and the factors were significantly correlated at 0.78. Although the correlations were high, they do not exceed the cutoff values of 0.80 to 0.85 and are therefore not considered redundant (35).

Cross-National Invariance

The US—Ottawa configural model fit the data well, $\chi^2_{(152)} = 331.72$, $p < 0.001$, CFI = 0.944, TLI = 0.933, RMSEA = 0.063 (90% CI = 0.053–0.072) indicating that the number of factors was consistent across countries (see **Table 5**). Factor loadings were also equivalent between the US and Ottawa samples [Chi-square, CFI, and RMSEA difference tests demonstrated no significant differences in fit between the metric and configural models, $\Delta\chi^2_{(12)} = 12.39$, $p > 0.05$, ΔCFI = 0.000, ΔRMSEA = 0.003]. Next, the RMSEA difference test revealed that the scalar invariance model was not significantly different from the metric model, ΔRMSEA = 0.004. However, both the chi-square and CFI difference tests surpassed the cut-off values, $\Delta\chi^2_{(12)} = 49.20$, $p < 0.01$, ΔCFI = 0.012. When we freed the intercept for the item "I feel like I don't deserve a good life," we achieved partial scalar invariance according to CFI and RMSEA difference tests, $\Delta\chi^2_{(11)} = 34.14$, $p < 0.01$, ΔCFI = 0.007, ΔRMSEA = 0.002. We compared latent means and found no significant differences between the US and Ottawa in SR Outcomes ($\Delta m = 0.13$, $p = 0.097$), but Canada scored higher than the US on latent TVR Outcomes ($\Delta m = 0.20$, $p = 0.002$).

The UK—Ottawa configural model also showed strong fit to the data, $\chi^2_{(152)} = 326.14$, $p < 0.001$, CFI = 0.925, TLI = 0.910, RMSEA = 0.068 (90% CI = 0.057–0.078). According to the chi-square, CFI, and RMSEA difference tests, the metric model did not differ significantly from the configural model, $\Delta\chi^2_{(12)} = 14.37$, $p > 0.05$, ΔCFI = 0.001, ΔRMSEA = 0.003, indicating that factor loadings were equivalent across countries. Although the RMSEA difference test indicated that scalar invariance was satisfied, ΔRMSEA = 0.007, the chi-square and CFI difference tests revealed that scalar invariance was not met, $\Delta\chi^2_{(12)} = 66.03$, $p < 0.01$, ΔCFI = 0.023. After freeing the intercept for "People don't deserve second chances", partial scalar invariance was satisfied, $\Delta\chi^2_{(11)} = 14.04$, $p > 0.05$, ΔCFI = 0.009, ΔRMSEA = 0.001. Therefore, mean differences were calculated, and UK scored significantly higher than Canada on latent SR Outcomes ($\Delta m = 0.59$, $p < 0.001$), as well as latent TVR outcomes ($\Delta m = 0.16$, $p = 0.020$).

MIMIC Model

First, we regressed country (Australia and Canada) onto both MIOS factors. This model fit the data well, $\chi^2_{(88)} = 184.15$, $p < 0.001$, CFI = 0.940, TLI = 0.928, RMSEA = 0.055 (90% CI = 0.044–0.067). As expected, the covariate country did not have a significant effect on SR ($\beta = 0.03$, SE = 0.086, $p = 0.688$) or TVR outcomes ($\beta = 0.008$, SE = 0.079, $p = 0.919$). Next, we regressed country onto each item and fixed the direct effects to zero. Modification indices were <3.12, indicating cross-country fit (35).

Finalization of the MIOS

Based on feedback from clinicians and an evaluation of consortium members about the MIOS scale, we finalized the formatting. The final research version of the MIOS has two pages. The first page entails an assessment of exposure to three types of PMIEs, defined as events that went against the person's moral

code or values [doing something or failing to do something, observing someone else acting or failing to act, or being directly impacted by someone else (or people) acting or failing to act]. We retained the primary care PTSD screener items (21). The second page of the research version of the MIOS assesses the final set of 14 items determined from Stage II analyses, all indexed to the PMIE that is the worst and most currently distressing. The time frame for ratings is the last month. Scale scores are indexed by the sum of item scores. The final research version and the brief clinical versions of the MIOS are presented in the **Supplementary Material** (the MIOS is a public domain scale), along with scoring instructions. A brief version of the MIOS for clinical care and epidemiological studies is also presented in the **Supplementary Material**.

At the end of the MIOS, we decided to use the Brief Inventory of Psychosocial Functioning [B-IPF; (38)] to assess the functional impact of the MIOS symptoms endorsed across seven domains (romantic relationships, relationships with children, family relationships, friendships, work, training/education, and day to day activities). The B-IPF has high internal consistency and adequate test-retest reliability (38). The instructions embedded in the MIOS are: "Please write in a number for each item below that represents how much these experiences have made it hard for you to function in each of the following areas (if not applicable, use N/A)" The MIOS is designed to assess symptom burden (severity), but it is also designed to identify cases that have clinically significant functionally impairing symptoms. This will require future diagnostic utility studies, using signal detection analyses, with severe functional impairment as the criterion.

STAGE III: TEST-RETEST RELIABILITY AND CONVERGENT VALIDITY

Predictions

We predicted that MIOS total *and* subscale scores would be strongly associated with measures of constructs that have been hypothesized to be overlapping parts of the MI syndrome or that are similar to the domains of impact generated in Stage I. These are: (1) *depression*. Litz et al. (1) predicted that MI would be associated with dysphoria, hopelessness, and self-esteem deficits; (2) *PTSD*. Litz et al. (1) predicted that individuals suffering because of exposure to PMIEs would experience intrusive recall and avoidance, as well as disinterest and detachment; and (3) *functional impairments*. Several domains of impact entail functional deficits and we have posited that the dividing line between moral distress and injury is chiefly the degree of functional impact related to the PMIE.

We had two sets of predictions of variables that would distinguish the MIOS SR and TVR subscales, namely: (1) that relative to MIOS TVR subscale scores, SR subscale scores would be more strongly correlated with reports of the *moral emotions of guilt/shame and religious and spiritual beliefs and practices*. The latter hypothesis is that personal transgressive acts are more likely to be morally injurious because they entail questions about right and wrong and good and evil (39); and (2) that relative to MIOS SR subscale scores, TVR scores would be more highly correlated with reports of the moral emotion of *anger and anger-related problems*. The assumption is that TVR MI entails externalizing, relative to SR MI. We also examined the association between the MIOS and the EMIS-M (5).

Finally, to investigate the validity of the assumption that MI is a PMIE-linked problem and the validity of the event-linkage aspect of the MIOS (i.e., indexing symptoms to a putative worst and most currently distressing PMIE), we ensured that 70 US participants (see below) who did not endorse a PMIE would be allowed to participate in the survey (MIOS ratings were instead indexed to a worst and most currently distressing life stressor). We predicted that individuals who did not endorse a PMIE would have substantially lower MIOS total and subscale scores, relative to participants who endorsed a PMIE.

Methods

Procedure

We report studies conducted in the US, Australia, and Israel (all participants were different from the participants in Stage I and II and all samples were non-clinical). For the US study, the final 14-item MIOS was administered along with the measures described below (and a demographic and military service characteristics form) in an online 30-min survey study of US Veterans conducted by Qualtrics. Qualtrics recruited participants *via* various web-based sources, including website intercept recruitment, member referrals, targeted email lists, gaming sites, customer loyalty web portals, permission-based networks, and social media. Qualtrics then administered the survey to a nationally representative sample of 420 US military Veterans ($n = 317$) and active-duty SMs in the US military ($n = 103$), who had been deployed to a post-9/11 conflict. Participants were also required to have experienced a PMIE to complete the survey. However, Qualtrics was asked to accrue a subset of US participants ($n = 70$) who had not experienced a PMIE to conduct planned comparative analyses of MIOS scores between those who had experienced a PMIE vs. those who had not. For the Australia study, the measures were administered in an online survey of current and ex-serving members of the military aged 18 years or older who endorsed a PMIE during military service. Participants were recruited through advertising in social media and through Defense, the national veterans counseling service and ex-service organizations. There were 91 participants (34 current serving and 57 ex-serving members). For the Israel study ($n = 111$), the MIOS was translated to Hebrew by a coauthor and then back-translated into English by another author, both native English and Hebrew speakers; each agreed that the original version and the back translation were similar, and no additional modifications were required. Measures were administered in an online survey of current and ex-serving Israeli members of the military. Recruitment entailed advertisements in combat Veteran websites and academic centers. For the Israel study, inclusion criteria were at least 20 years of age, currently or formerly serving in a combat unit of the Israeli Defense Forces, and service in the last 20 years.

The order of survey scales was randomized in two unique iterations that participants were assigned to at random, but both iterations included the MIOS as the first scale that participants

were required to complete. All state-based measures were indexed to the past month. For the US study only, participants were required to answer all questions in a measure before moving on in the survey *via* the Qualtrics "Forced Response" option. This method prevented participants from continuing without answering a missed question, which has been shown not to affect the reliability of online surveys (40). Therefore, there were no missing responses in the final US dataset, except for one question that asked participants to write-out their PMIE if they felt comfortable. Only survey completers were included in the final dataset for each country.

After the other Stage III data were collected, our Israeli partners examined the test-retest reliability of the final MIOS. The Ruppin Academic Center IRB approved the study. The same inclusion criteria as the Israeli Stage III study were applied and the demographics of the study group were similar. Eighteen SMs and Veterans completed the MIOS twice, a week apart.

Measures

Tests of Convergent Validity

Mental and Behavioral Health. Depression symptom severity was measured with the nine-item Patient Health Questionnaire [PHQ-9; (41)]. Participants endorsed items on a 4-point frequency scale (0 = *not at all* to 3 = *nearly every day*) about their depressive symptoms in the last 14 days. Item responses were summed, with higher scores reflecting greater severity of depression symptoms. The PHQ-9 is the most used depression measure and has very strong internal consistency reliability and validity [$\alpha = 0.89$; (42)]. PTSD symptom severity over the past 30 days was assessed with the 20-item PTSD Checklist for the DSM-5 [PCL-5; (43)]. Items were endorsed on a 5-point scale (0 = *not at all* to 4 = *extremely*). Item responses were summed, with higher scores representing greater PTSD symptom severity. The PCL-5 has been shown to be highly reliable and valid [$\alpha = 0.94$; (43)]. Functional impairment was assessed with the B-IPF (38) at the end of the MIOS.

Moral Emotions. State guilt and shame were assessed with the 10-item version of the State Guilt and Shame Scale [SGSS; (44)]. Participants endorsed items on a 5-point scale (1 = *not feeling this way at all* to 5 = *feeling this way very strongly*). Item responses were summed to create a total score for state guilt and shame. The SGSS has been shown to be reliable and valid [$\alpha = 0.85$; (44)]. We also used a short 16-item version of the Trauma-related Guilt Inventory [TRGI; (45)]. The TRGI was developed to assess guilt feelings and attitudes about a specific traumatic event. The brief TRGI yields three averaged subscale scores: Hindsight-bias/responsibility, assessing self-blame and beliefs the event should have been prevented (seven items; Cronbach's $\alpha = 0.89$); Wrongdoing, assessing perceived transgression in behavior, thoughts, and emotions (five items; Cronbach's α =0.73); and Lack of Justification, assessing the inability to justify actions (four items; Cronbach's $\alpha = 0.83$). The TGRI scale has high internal consistency and test-retest reliability (45). Finally, we administered the 5-item Dimensions of Anger Reactions [DAR-5; (46)] as a brief measure of state anger. Participants endorsed items on a 5-point scale (1 = almost none of the time to 5 = all or almost all of the time). Item responses were summed to create a total anger score, with higher scores representing greater anger levels. The DAR-5 has been shown to have convergent validity and is highly reliable [$\alpha = 0.97$; (46)].

Religion and Spirituality. Religious and spiritual struggles were assessed with an eight-item version of the Religious and Spiritual Struggles Scale [RSS; (47)]. Participants endorsed items on a 5-point scale (1 = *not at all* to 5 = *a great deal*). Item responses were summed to create a total score for religious and spiritual struggles, with higher scores indicating greater struggles. The RSS has been found to be reliable and has good convergent, discriminant, and predictive validity [$\alpha = 0.87$; (47)].

Moral Injury. To assess MI as an outcome, we used the 17-item Expressions of Moral Injury Scale—Military Version [EMIS-M (5)]. Participants endorsed items on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*). Item responses were summed to create a total score.

Results

Descriptive Statistics

The sociodemographic and military service characteristics of the US, Australian, and Israeli groups are shown in a Table in the **Supplementary Material**. In the US study, the group was predominantly white men, with a modal age range of 30–39 (to enhance anonymity, we used age rages rather than age), and ∼24% were active-duty SMs. All US participants served in the Iraq or Afghanistan Wars (primarily deployed between 2001 and 2010) and the majority had combat arms duty while serving, which means that the majority participated in tactical ground combat and likely entailed multiple exposures to high magnitude warzone stressors and potentially traumatizing and morally injurious events. This is atypical for US Veteran survey studies that generally have majorities of service support personnel with substantially less combat exposure (4). By contrast, the Australia study group was substantially older [modal age range = 40–59 [17.3% were 60–79)]; 25% were never deployed to a warzone and, although 54.3% endorsed deploying to a "warlike" context, which unfortunately leaves unspecified the types of roles within that context, 79% reported being deployed in their careers in peacekeeping, humanitarian, and border protection missions, which are missions typically associated with bearing witness to others' transgressions and grotesque harm to others (48). Ninety-one percent of the Israeli participants were Veterans, the majority were male (75%), and 90% were in the 20–29 age range (substantially younger than both other cohorts).

Means and standard deviations for all scales for the PMIE-endorsers in all studies are reported in **Table 6**. Internal consistency values of the MIOS were strong across all samples, with Cronbach's alphas ranging from 0.88 (TVR) to 0.95 (total) in the US sample, 0.83 (TVR) to 0.89 (total) in the Australian sample, and 0.83 (TVR) and 0.90 (total) in the Israeli sample. Because the sample size was sufficient, we conducted a CFA to confirm the two-factor structure of the MIOS in the US Phase III sample (see **Supplementary Material**).

TABLE 6 | MIOS total and subscale descriptives and correlations across all phase III sample PMIE-endorsers.

Variable	US					Israel				Australia			
	N	*M* (SD)	1	2	3	*N*	*M* (SD)	1	2	3	*N*	*M* (SD)	1	2	3
1. MIOS Total Score	350	33.59 (13.37)	–			71	14.55 (9.28)	–			87	27.3 (9.98)	–		
2. MIOS Shame Subscale	350	16.51 (7.28)	0.966**	–		71	5.96 (5.2)	0.886**	–		87	11.8 (6.07)	0.864**	–	
3. MIOS Trust Subscale	350	17.08 (6.62)	0.958**	0.851**	–	71	8.59 (5.25)	0.889**	0.575**	–	87	15.49 (5.64)	0.840**	0.451**	–
PCL-5	349	50.05 (19.41)	0.729**	0.705**	0.698**	71	20.01 (16.48)	0.574**	0.587**	0.433**	84	58.95 (19.22)	0.631**	0.496**	0.567**
PHQ-9	350	15.35 (6.59)	0.619**	0.619**	0.569**	71	2.51 (3.84)	0.486**	0.475**	0.388**	79	11.76 (6.74)	0.520**	0.406**	0.458**
B-IPF	350	30.50 (9.06)	0.717**	0.690**	0.689**	69	22.96 (24.84)	0.441**	0.327**	0.455**	87	53.40 (26.69)	0.636**	0.569**	0.511**
TRGI	350	2.09 (0.68)	0.301**	0.363**	0.209**	71	1.36 (0.78)	0.403**	0.536**	0.181	77	1.39 (0.77)	0.379**	0.580**	0.026
SSGS	350	34.77 (10.24)	0.696**	0.732**	0.602**	71	19.44 (8.75)	0.687**	0.673**	0.546**	84	22.54 (9.22)	0.541**	0.660**	0.228*
RSS Scale	350	3.42 (0.98)	0.685**	0.707**	0.607**	71	2.20 (1.01)	0.667**	0.574**	0.610**	72	18.54 (8.26)	0.513**	0.457**	0.386**
DAR-5	350	16.28 (5.41)	0.711**	0.684**	0.685**	71	11.20 (4.62)	0.664**	0.573**	0.606**	82	12.40 (6.00)	0.634**	0.538**	0.525**
EMIS-M Self Subscale	350	30.91 (8.43)	0.744**	0.745**	0.684**	71	15.30 (5.97)	0.782**	0.755**	0.633**	70	23.17 (7.43)	0.686**	0.588**	0.547**
EMIS-M Other Subscale	350	29.13 (7.15)	0.643**	0.587**	0.654**	71	19.75 (8.63)	0.718**	0.587**	0.687**	70	28.19 (7.44)	0.479**	0.249*	0.558**

B-IPF, Brief Inventory of Psychosocial Functioning; DAR-5, Dimensions of Anger Reactions-5; EMIS-M, Expressions of Moral Injury Scale—Military Version; MIOS, Moral Injury Outcome Scale; PCL-5, PTSD Checklist for DSM-5; PMIE, Potentially Morally Injurious Event; PHQ-9, Patient Health Questionnaire-9; RSS, Religious and Spiritual Struggles; SSGS, State Shame and Guilt Scale; TRGI, Trauma-Related Guilt Inventory.

*$p < 0.05$.

**$p < 0.01$.

The types of PMIEs endorsed and the PTSD screener results for the PMIE-endorsers for each study (and non-endorsers for the US and Israeli studies) are presented in a **Supplementary Table**. In the US study, 73.1% of PMIE endorsers reported at least one PMIE related to the self, 80% endorsed at least one PMIE related to another, and 84.3% endorsed at least one betrayal event. When asked to endorse the worst and most currently distressing PMIE (using a forced choice), 45.7% endorsed a self-transgression (32.9 and 21.4% endorsed PMIE-other and PMIE-betrayal, respectively). In addition, 82.2% of the US participants' worst and most currently distressing PMIEs met Criterion-A (the PMIE was reported to involve actual or threatened death, serious injury, or sexual violence), and 52.1% of PMIE-endorsers that met Criterion-A endorsed 4 or 5 PTSD screener items (26.4% and 25.7%, respectively), and thus likely had clinically significant PTSD symptoms as a putative result of the PMIE or the context in which the PMIE occurred; 4/5 screener items endorsed is the most diagnostically efficient; 5/5 is the most specific (21) [in this group, the Mean PCL-5 score was 55.72 (SD = 17.7)]. Yet, in the US sample, there were no differences in the percentage of PMIE-endorsers whose event was not a Criterion-A trauma (which formally eliminates the possibility of PTSD caseness) who endorsed 4 or 5 PTSD screener items, relative to those who endorsed Criterion-A [the Mean PCL-5 score for this subgroup was 53.90 (SD = 19.45); mean difference (95% CI): 1.82 (−7.66, 11.30), $p <$ 0.695]. In the Australia study, 45.1% of participants endorsed a history of exposure to at least one PMIE-self event, 74.7% endorsed at least one MI-other event, and 79.1% endorsed at least one PMIE-betrayal event. When asked to endorse the worst and most currently distressing PMIE, 83.9% endorsed PMIE-other or PMIE-betrayal (non-self-PMIEs). In addition, 60% of the Australia participants' worst and most currently distressing PMIEs met Criterion-A, and 56.3% endorsed 4 or 5 PTSD screener items. In the Israeli study, 63.4% of participants endorsed a history of exposure to at least one PMIE-self event, 60.6% endorsed at least one MI-other event, and 21.1% endorsed at least one PMIE-betrayal event. When asked to endorse the worst and most currently distressing PMIE, 38% endorsed PMIE-self, 39.4% a PMIE-other event, and 22.5 endorsed a PMIE-betrayal event. In addition, 38% of the Israeli participants' worst and most currently distressing PMIEs met Criterion-A, and 11% endorsed 4 screener items (none endorsed 5).

Test-Retest Reliability

Bland-Altman Limits of Agreement [LOA; (49)] were calculated to assess test-retest reliability ($n = 17$). LOA use descriptive statistics for paired data to represent upper and lower boundaries of the middle 95% range of observed within-pair differences, centered around the mean within-pair difference. Confidence intervals (95%) are calculated around the upper and lower limits to improve inference beyond the sample. LOA are preferable to correlation analyses when determining test-retest reliability, as correlation analyses may conceal systematic bias (50). LOA uses an a priori determination of acceptable within-pair difference; for the MIOS we determined this to be ±14, which represents a within-pair difference of ±1 on all MIOS items. After removing

an outlier, the LOA's and the upper and lower 95% CIs were −8.62 (−12.83 to −4.41) to 9.12 (4.91 to 13.34), which were within acceptable limits to establish test-retest reliability and the bias estimate was small $\beta = 0.25$.

Convergent Validity: MIOS Total and Subscale Scores

Table 6 depicts the Pearson correlations for PMIE endorsers between MIOS total and subscale scores and Stage III measures in the US, Australian, and Israeli samples. The intercorrelations of all variables for PMIE-endorsers and non-endorsers (only for US and Israel studies which had sufficient Ns) are presented in **Supplementary Material**. We used procedures developed by Meng et al. (51) to examine contrasts between correlated associations to test hypotheses. In each sample, as predicted, MIOS total and subscale scores were strongly correlated with measures of mental and behavioral health (PTSD, depression, and functional impairments). Although, in the US study, these correlations were substantially higher, *they were no higher than the correlations between the PCL-5 and the PHQ-9 and B-IPF* (Z-scores for these three contrasts were NS).

Convergent Validity: MIOS Subscale Scores

As can be seen in **Table 7**, as predicted, in each sample, MIOS SR subscale scores were more strongly correlated with the TRGI and the SSGS, relative to the TVR subscale. In the US sample, MIOS SR subscales scores were more correlated with RSS scores, relative to TVR subscale scores. Contrary to our prediction, across all samples, the SR and TVR subscales were equally correlated with the DAR scores.

MIOS Score Differences Between PMIE Endorsers and Non-endorsers

As predicted, in the US study, the group that did not endorse a PMIE had significantly lower MIOS total and SR and TVR subscale scores ($M = 20.90$, SD=13.37; $M = 9.92$, SD = 6.86; $M = 10.97$, SD = 6.79, respectively) than the group who endorsed a PMIE [$M = 33.58$, SD = 13.37; $t_{(418)} = -7.25$, $p < 0.001$; $M = 16.50$, SD = 7.27; $t_{(418)} = -6.97$, $p < 0.001$; $M = 17.07$, SD = 6.62, $t_{(418)} = -7.01$, $p < 0.001$, respectively]. The magnitude of the differences in scores between these two groups was substantial, as indicated by very large Cohen's d effect sizes (0.91–0.95; the Australian study did not have enough non-PMIE endorsers to conduct this analysis). In the Israeli study, the group that did not endorse a PMIE had significantly lower MIOS total and SR and TVR subscale scores ($M = 5.95$, SD=6.80; $M = 2.45$, SD = 3.78; $M = 3.50$, SD = 3.78, respectively) than the group who endorsed a PMIE [$M = 14.55$, SD = 9.28; $t_{(109)} = 5.13$, $p < 0.001$; $M = 5.96$, SD = 5.20; $t_{(109)} = 3.74$, $p < 0.001$; $M = 8.59$, SD = 5.25, $t_{(109)} = 5.39$, $p < 0.001$, respectively]. These differences were also substantial (effect sizes 0.77 to 1.19). Moreover, there were substantial differences in B-IPF scores that were indexed to MIOS symptoms among PMIE-endorsers and non-endorsers in the US study [endorsers: 70.51, SD=25.36 vs. non-endorsers: 48.89 SD = 33.06; mean difference (95% CI): 21.63 (14.54, 28.71), $p < 0.001$] and the Israeli study [endorsers: 22.96, SD=24.84 vs. non-endorsers: 8.06 SD = 23.25; mean difference (95% CI): 14.91 (5.34, 24.28), $p < 0.003$]. This suggests that PMIE-endorsement

TABLE 7 | Convergent validity contrasts by MIOS shame-related and trust violation-related subscale scores.

Variable		US			Israel			Australia		
Measure	**Contrast type**	**Z-score***	**95% confidence interval for difference**	***p*-Value**	**Z-score**	**95% confidence interval for difference**	***p*-Value**	**Z-score**	**95% confidence interval for difference**	***p*-Value**
TRGI	MIOS SR vs. TVR	5.69	0.11 0.23	<0.001	3.47	0.18 0.65	<0.001	5.76	0.42 0.85	<0.001
SSGS	MIOS SR vs. TVR	6.15	0.16 0.31	<0.001	1.6	−0.5 0.47	0.055	4.98	0.42 0.85	<0.001
RSS	MIOS SR vs. TVR	4.97	0.11 0.26	<0.001	0.42	−0.20 0.31	0.34	0.72	−0.16 0.36	0.236
DAR	MIOS TVR vs. SR	All Z-scores were non-significant								

Z-scores and CIs are rounded to two decimals.
TRGI, Trauma-Related Guilt Inventory; SSGS, State Shame and Guilt Scale; RSS, Religious and Spiritual Struggles; DAR-5, Dimensions of Anger Reactions-5.
**Formula for Z-score is provided by Meng et al. (51).*

is associated with markedly greater impairments indexed to MIOS items, relative to impairments indexed to MIOS symptoms indexed to a non-PMIE stressor.

DISCUSSION

There has been an explosion of interest in MI in healthcare, mental health, the media, in and outside the military and organizations that address the behavioral health needs of Veterans, and various scholarly and applied disciplines. Unfortunately, acceptance of the idea of MI has outpaced scientific knowledge, yet, in many contexts, the concept of MI is reified. This is particularly problematic because there are widely varying uses of the MI term, which is not surprising given that there has been no agreement about the boundary conditions of the MI syndrome. Existing empirical studies have also used imprecise terminology and have been hampered by a lack of a gold standard of measurement. In addition, treatments have been developed to putatively target MI, which is cart before the horse without a definition of the MI syndrome, a case definition, and a way to assess efficacy.

We aimed to redress these problems by using theory and multinational bottom-up phenomenological evaluations of the impact of exposure to PMIEs to operationalize the syndrome of MI into constituent domains of impact of PMIEs. We then used the definitions of the domains of impact (and components with each domain) to create a psychometrically sound measure of MI (indexed by reports of exposure to a worst and most currently distressing PMIE), that could be used in clinical and research settings to identify functionally impairing MI, and to track change. We generated content for the MIOS from multinational interviews with SMs and Veterans who were asked to describe how exposure to their worst PMIE changed their beliefs, emotions, and behaviors, as well as with mental and spiritual health care-providers asked to describe the problems and struggles of individuals with MI, ensuring strong cross-country content validity (albeit in English-speaking countries). The final 14-item MIOS was found to be highly reliable and had a robust two-factor structure, entailing SR and TVR items (7-items each). The MIOS also had partial scalar invariance across nations.

In Stage II and III, the correlations between the MIOS subscales were moderate, suggesting that SR and TVR are separable but related subconstructs of MI. However, the correlation was high in the US Stage III sample, suggesting that the subscales may have substantially less discrimination. A possible explanation is that for the US sample, current MI-related problems are a gestalt blend of SR and TVR symptoms among SMs and Veterans with direct combat roles and high combat exposure, very high rates of at least one self- *and* other-related PMIE, and high rates of PMIEs that were associated with life-threat or the loss of life (unlike individuals evaluated in Stage I and II, and unlike the other Stage III study groups). This hypothesis would be equally germane to other contexts [e.g., refugees who suffer chronic political violence and traumatic trust violations in their home country and who do things or fail to do things that violate their deeply held moral beliefs to survive passage to a putatively safer country; (52)]. It should be noted that in population studies of US Veterans, PTSD subclusters are also very highly correlated [e.g., in one study, the reexperiencing subcluster was correlated 0.795 with the negative alterations in cognitions and mood subcluster; (53)]. If additional research also shows that MIOS subscales are highly correlated among individuals with multiple exposures to traumas and both self- and other-PMIEs, MIOS total scores may be the only valid index of MI in these contexts (clinically, the recommendation would be to interview the person further to determine whether there is a pressing and most currently distressing event and domains of impact applicable to that event).

The convergent validity findings for MIOS total and subscale scores were consistently strong. Across Stage III studies, there were consistently large associations between indicators of mental and behavioral health and functional impairments and MIOS total and subscale scores. This is consistent with the theory that posits that some PTSD (e.g., reexperiencing, avoidance, detachment) and depression symptoms (dysphoria, hopelessness, anhedonia) are associated with exposure to any type of PMIE and are de facto aspects of the MI syndrome (1). As stated above, we purposely generated content for the MIOS that was distinct from the overlapping features of PTSD and depression that were endorsed by Stage I participants, and we assume that the resulting domains of impact, reflected in MIOS content, are core drivers of MI and will prove to be beneficial targets of treatment for functionally impairing MI.

The differential convergent validity predictions for the MIOS subscales were partially confirmed. Relative to the TVR subscale, SR subscale scores were consistently more strongly correlated with constructs that measure guilt and shame. And, in the US Stage III sample, as predicted, religious and spirituality struggle scores were more strongly correlated with SR subscale than TVR subscale scores. However, in each Stage III study, there were no differences between the association of TVR and SR scores with DAR-5 scores. This suggests that either TVR symptoms do not have separable construct validity, or the moral emotion of anger (and associated aggressive behaviors) is a shared element of SR and TVR outcomes from exposure to any type of PMIE among SMs and Veterans. Future research is needed to examine each of these possibilities and examine other unique convergent indicators of TVR scores (e.g., distrust, alienation, embitterment, grievance).

We demonstrated that PMIE endorsement was associated with substantially higher scores on the MIOS and greater functional impact relative to another type of stressor. *This validates the foundational assumption that MI is a PMIE-linked problem*. Generally, most participants had low or moderate scores. The is consistent with the hypothesis that clinically significant MI is a low-baserate problem (8). For epidemiological and clinical studies, future research will need to empirically test the predictive and clinical validity of variations in case definitions for MI, potentially using a combination of type of PMIE and threshold MIOS and functional impact scores, particularly as a means of distinguishing non-clinical levels of moral distress from MI (13). It is an empirical question whether requiring a PMIE to be a Criterion-A event or to occur in a life-threat

context (or including positive endorsement of certain types of PTSD screener items) will improve the utility of a case definition. Perhaps more importantly, future research will need to test the incremental validity of MIOS scores, relative to PTSD symptoms indexed to a PMIE that meets or does not meet Criterion-A, as well as depression. In the US Stage III study, MIOS scores were particularly highly correlated with PTSD and depression, which suggests that when individuals are exposed to multiple types of PMIEs that occur in an enduring life-threat context the critical assessment task will be to determine if there is a worst and most currently distressing event that results in substantial impairment. Even when PTSD is the treatment focus, we predict that treatment will be impacted by impairing MI symptoms, which may require separate attention.

Although our study had unprecedented depth, it had limitations. First, although Stage I took 3 years to complete and entailed teams of clinical researchers in different countries, the qualitative results may have been different had an independent team of content experts examined the data and generated domain definitions. We also could have been more systematic about getting feedback about MIOS items and the MIOS from stakeholders. Second, although we used reputable survey firms who had established panels of SMs and Veterans, we cannot rule out the possibility that some responders may have provided different responses if interviews were conducted. Thankfully, research has shown that online responses do not substantively differ from paper and pencil and telephone-interview-based responses (54, 55). Also, for Stage III, we reduced the likelihood of fatigue and disengagement affecting test responses by randomly assigning test order. Finally, we found that participants had a sizable percentage of N/A entries for B-IPF scores, suggesting that, although there was a good deal of missing data in the Israeli and Australia studies, Stage III participants were not careless.

We anticipate that a wealth of research about the prevalence and predictors of MI will flourish using the MIOS and intervention studies will for the first time be able to track change using the MIOS. We also welcome clinicians using the MIOS to plan treatment and track clinical change over the course of treatment, which has been a missing link in any intervention approach that presumably targets MI. Yet, there are unaddressed empirical issues that arise from this study, some of which were described above. First, our results should be replicated with other samples, particularly among civilians and various occupational and non-English-speaking cultures. Second, research is needed to test the discriminant validity of the MIOS, which our group is planning to do. It will be important to examine the association between MIOS subscale scores and externalizing (including a cynical world view) and internalizing traits, given that it seems possible that externalizing would increase risk for exposure to TVR experiences and outcomes and internalizing would increase risk for exposure to SR experiences and outcomes. Finally, given that the studies described in this paper were all cross-sectional, future research should examine the causal direction between exposure to PMIEs and MIOS scores as well as the direction of the associations between converging indicators and MIOS scores.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, once approved by the respective internal review boards.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by VA Boston Healthcare System IRB, Australian Departments of Defense and Veterans' Affairs Human Research Ethics Committee, Western University HSREB, Royal Ottawa Research Ethics Board, Combat Stress Research Committee, and Ruppin Academic Center IRB. The patients/participants provided their written informed consent to participate in this study.

MORAL INJURY OUTCOME SCALE CONSORTIUM

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AUTHOR CONTRIBUTIONS

BL was the principal investigator, oversaw all aspects of data collection and analysis and principal writer of the manuscript. RP and AN analyzed data and co-wrote the manuscript. DM co-wrote the manuscript. AP helped secure funding and co-wrote the manuscript. AC analyzed the qualitative data and helped generate the MIOS and edited the manuscript. SH, LD, SF, GZ, and YL-B collected data, helped generate the scale, and

co-wrote the manuscript. All authors contributed to the article and approved the submitted version.

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REFERENCES

1. Litz BT, Stein N, Delaney E, Lebowitz L, Nash W, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
2. Jordan AH, Eisen E, Bolton E, Nash WP, Litz BT. Distinguishing war-related PTSD resulting from perpetration- and betrayal-based morally injurious events. *Psychol Trauma*. (2017) 9:627–34. doi: 10.1037/tra0000249
3. Litz BT, Contractor AA, Rhodes C, Dondanville KA, Jordan AH, Resick PA, et al. Distinct trauma types in military service members seeking treatment for posttraumatic stress disorder. *J Trauma Stress.* (2018) 31:286–95. doi: 10.1002/jts.22276
4. Wisco BE, Marx BP, May CL, Martini B, Krystal JH, Southwick SM, et al. Moral injury in U.S. combat veterans: results from the national health and resilience in veterans study. *Depress Anxiety*. (2017) 34:340–7. doi: 10.1002/da.22614
5. Currier JM, Farnsworth JK, Drescher KD, McDermott RC, Sims BM, Albright DL. Development and evaluation of the expressions of moral injury scale-military version. *Clin Psychol Psychother.* (2017) 25:474–88. doi: 10.1002/cpp.2170
6. Farnsworth JK, Drescher K, Evans WR, Walser R. A functional approach to understanding and treating military-related moral injury. *J Contextual Behav Sci.* (2017) 6:391–7. doi: 10.1016/j.jcbs.2017.07.003
7. Jinkerson JD. Defining and assessing moral injury: a syndrome perspective. *Traumatology.* (2016) 22:122–30. doi: 10.1037/trm0000069
8. Litz BT, Kerig PK. Introduction to the special issue on moral injury: conceptual challenges, methodological issues, and clinical applications. *J Trauma Stress.* (2019) 32:341–9. doi: 10.1002/jts.22405
9. Bryan AO, Bryan CJ, Morrow CE, Etienne N, Ray-Sannerud B. Moral injury, suicidal ideation, and suicide attempts in a military sample. *Traumatology.* (2014) 20:154–60. doi: 10.1037/h0099852
10. Dohrenwend BP, Yager TJ, Wall MM, Adams BG. The roles of combat exposure, personal vulnerability, and involvement in harm to civilians or prisoners in Vietnam-war-related posttraumatic stress disorder. *Clin Psychol Sci.* (2013) 1:223–38. doi: 10.1177/2167702612469355
11. Currier JM, Holland JM, Drescher K, Foy D. Initial psychometric evaluation of the Moral Injury Questionnaire—Military version. *Clin Psychol Psychother.* (2015) 22:54–63. doi: 10.1002/cpp.1866
12. Wortmann JH, Eisen E, Hundert C, Jordan AH, Smith MW, Nash WP, et al. Spiritual features of war-related moral injury: a primer for clinicians. *Spiritual Clin Pract.* (2017) 4:249. doi: 10.1037/scp0000140
13. Litz BT. Response to Zalta and Held's "Commentary on the special issue on moral injury: leveraging existing constructs to test the heuristic model of moral injury". *J Trauma Stress.* (2020) 33:600–2. doi: 10.1002/jts.22514
14. Koenig HG, Ames D, Youssef NA, Oliver JP, Volk F, Teng EJ, et al. The moral injury symptom scale-military version. *J Relig Health.* (2018) 57:249–65. doi: 10.1007/s10943-017-0531-9
15. Clark LA, Watson D. Constructing validity: basic issues in objective scale development. *Psychol Assess.* (1995) 7:309–19. doi: 10.1037/1040-3590.7.3.309
16. Haynes SN, Richard D, Kubany ES. Content validity in psychological assessment: a functional approach to concepts and methods. *Psychol Assess.* (1995) 7:238–47. doi: 10.1037/1040-3590.7.3.238
17. Yeterian JD, Berke DS, Carney JR, McIntyre-Smith A, St. Cyr K, King L, et al. Defining and measuring moral injury: rationale, design, and preliminary findings from the moral injury outcome scale consortium. *J Trauma Stress.* (2019) 32:363–72. doi: 10.1002/jts.22380
18. Vogt DS, King DW, King LA. Focus groups in psychological assessment: enhancing content validity by consulting members of the target population. *Psychol Assess.* (2004) 16:231–43. doi: 10.1037/1040-3590.16.3.231
19. Creswell JW, Hanson WE, Clark Plano VL, Morales A. Qualitative research designs: selection and implementation. *Couns Psychol.* (2007) 35:236–64. doi: 10.1177/0011000006287390
20. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* (2006) 3:77–101. doi: 10.1191/1478088706qp063oa
21. Prins A, Bovin MJ, Smolenski DJ, Marx BP, Kimerling R, Jenkins-Guarnieri MA, et al. The primary care PTSD screen for DSM-5 (PC-PTSD-5): development and evaluation within a veteran primary care sample. *J Gen Intern Med.* (2016) 31:1206–11. doi: 10.1007/s11606-016-3703-5
22. IBM Corp. *IBM SPSS Statistics, Version 26.0.* Armonk, NY: IBM Corp (2019).
23. Kaiser HF, Rice J. Little jiffy, mark IV. *Educ Psychol Meas.* (1974) 34:111–7. doi: 10.1177/001316447403400115
24. Bartlett MS. A note on the multiplying factors for various $\chi 2$ approximations. *J R Stat Soc Series B Stat Methodol.* (1954) 16:296–8. doi: 10.1111/j.2517-6161.1954.tb00174.x
25. Boateng GO, Neilands TB, Frongillo EA, Melgar-Quiñonez HR, Young SL. Best practices for developing and validating scales for health, social, and behavioral research: a primer. *Front Public Health.* (2018) 6:149. doi: 10.3389/fpubh.2018.00149
26. Horn JL. A rationale and test for the number of factors in factor analysis. *Psychometrika.* (1965) 30:179–85. doi: 10.1007/BF02289447
27. Revelle W, Rocklin T. Very simple structure-alternative procedure for estimating the optimal number of interpretable factors. *Multivariate Behav Res.* (1979) 14:403–14. doi: 10.1207/s15327906mbr1404_2
28. Muthén LK, Muthén BO. *Mplus User's Guide*. 8th ed. Los Angeles, CA: Muthén and Muthén (1998–2017).
29. Kline RB. *Principles and Practice of Structural Equation Modeling*. New York, NY: Guilford Publications (2011).
30. Hu LT, Bentler PM. Fit indices in covariance structure modeling: sensitivity to underparameterized model misspecification. *Psychol Methods.* (1998) 3:424–53. doi: 10.1037/1082-989X.3.4.424
31. Cheung GW, Rensvold RB. Evaluating goodness-of-fit indexes for testing measurement invariance. *Struct Equ Modeling.* (2002) 9:233–55. doi: 10.1207/S15328007SEM0902_5
32. Chen FF. Sensitivity of goodness of fit indexes to lack of measurement invariance. *Struct Equ Modeling.* (2007) 14:464–504. doi: 10.1080/10705510701301834
33. Jöreskog KG, Goldberger AS. Estimation of a model with multiple indicators and multiple causes of a single latent variable. *J Am Stat Assoc.* (1975) 70(351a):631–9. doi: 10.1080/01621459.1975.10482485
34. Muthén BO. Latent variable modeling in heterogeneous populations. *Psychometrika.* (1989) 54:557–85. doi: 10.1007/BF02296397
35. Brown TA. *Confirmatory Factor Analysis For Applied Research*. New York, NY: Guilford Publications. (2015).
36. De Vaus D. *Surveys in Social Research,* 5th ed. London: Routledge (2004).
37. Netemeyer RG, Bearden WO, Sughash S. *Scaling Procedures: Issues and Applications*. Thousand Oaks, CA: Sage (2003). doi: 10.4135/9781412985772

38. Kleiman SE, Bovin MJ, Black SK, Rodriguez P, Brown LG, Brown ME, et al. Psychometric properties of a brief measure of posttraumatic stress disorder-related impairment: the Brief Inventory of Psychosocial Functioning. *Psychol Serv*. (2020) 17:187–94. doi: 10.1037/ser0000306
39. Drescher KD, Foy DW, Kelly C, Leshner A, Schutz K, Litz B. An exploration of the viability and usefulness of the construct of moral injury in war veterans. *Traumatology*. (2011) 17:8–13. doi: 10.1177/1534765610395615
40. Faran Y, Zanbar L. Do required fields in online surveys in the social sciences impair reliability? *Int J Soc Res Methodol*. (2019) 22:637–49. doi: 10.1080/13645579.2019.1630899
41. Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. *JAMA*. (1999) 282:1737–44. doi: 10.1001/jama.282.18.1737
42. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. (2001) 16:606–13. doi: 10.1046/j.1525-1497.2001.016009606.x
43. Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL. The posttraumatic stress disorder checklist for DSM-5 (PCL-5): development and initial psychometric evaluation. *J Trauma Stress*. (2015) 28:489–98. doi: 10.1002/jts.22059
44. Marschall D, Sanftner J, Tangney JP. *The State Shame and Guilt Scale*. Fairfax, Virginia: George Mason University Press (1994).
45. Kubany ES, Haynes SN, Abueg F, Manke FP, Brennan JM, Stahura C. Development and validation of the trauma-related guilt inventory (TRGI). *Psychol Assess*. (1996) 8:428–44. doi: 10.1037/1040-3590.8.4.428
46. Forbes D, Hawthorne G, Elliott P, McHugh *T*, Biddle D, Creamer M, et al. A concise measure of anger in combat-related posttraumatic stress disorder. *J Trauma Stress*. (2004) 17:249–56. doi: 10.1023/B:JOTS.0000029268.22161.bd
47. Exline JJ, Pargament KI, Grubbs JB, Yali AM. The religious and spiritual struggles scale: development and initial validation. *Psychol Relig Spiritual*. (2014) 6:208–222. doi: 10.1037/a0036465
48. Litz BT, King LA, King DW, Orsillo SM, Friedman MJ. Warriors as peacekeepers: features of the Somalia experience and PTSD. *J Consult Clin Psychol*. (1997) 65:1001–10. doi: 10.1037/0022-006X.65.6.1001
49. Bland JM, Altman D. Statistical methods for assessing agreement between two methods of clinical measurement. *Lancet*. (1986) 327:307–10. doi: 10.1016/S0140-6736(86)90837-8
50. Aldridge VK, Dovey TM, Wade A. Assessing test-retest reliability of psychological measures. *Eur Psychol*. (2017) 22. doi: 10.1027/1016-9040/a000298
51. Meng XL, Rosenthal R, Rubin DB. Comparing correlated correlation coefficients. *Psychol Bull*. (1992) 111:172–5. doi: 10.1037/0033-2909.111.1.172
52. Nickerson A, Bryant RA, Rosebrock L, Litz BT. The mechanisms of psychosocial injury following human rights violations, mass trauma, and torture. *Clin Psychol: Sci Pract*. (2014) 21:172. doi: 10.1111/cpsp.12064
53. Tsai J, Mota NP, Southwick SM, Pietrzak RH. What doesn't kill you makes you stronger: a national study of U.S. military veterans. *J Affect Disord*. (2016) 189:269–71. doi: 10.1016/j.jad.2015.08.076
54. Braunsberger K, Wybenga H, Gates R. A comparison of reliability between telephone and web-based surveys. *J Bus Res*. (2007) 60:758–64. doi: 10.1016/j.jbusres.2007.02.015
55. Fortson BL, Scotti JR, Ben KD, Chen Y. Reliability and validity of an internet traumatic stress survey with a college student sample. *J Trauma Stress*. (2006) 19:709–20. doi: 10.1002/jts.20165

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Moral Injury in Trauma-Exposed, Treatment-Seeking Police Officers and Military Veterans: Latent Class Analysis

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Exposure to morally injurious events may have a severe, prolonged negative impact on psychosocial functioning, known as moral injury (MI). Research into the prevalence of MI has mostly focused on event exposure rather than on psychosocial impact. Also, the relationship between MI and post-traumatic stress disorder (PTSD) remains a matter of interest. The aim of this study was to identify MI and PTSD symptom profiles among trauma-exposed, treatment-seeking police officers and military veterans, and to explore demographic and clinical differences between symptom profiles. Latent class and multinomial regression analyses were conducted in a sample of 1,703 participants, using the Clinician-Administered PTSD Scale for DSM-5 and the Brief Symptom Inventory. Four classes of participants were identified, labeled as a *MI* class (n = 192; 11.27%), a *MI-PTSD* class (n = 565; 33.18%), a *PTSD* class (n = 644; 37.82%), and a *Neither MI-nor PTSD* class (n = 302; 17.73%), resulting in 44.45% (n = 757) of participants who met an MI symptom profile with or without PTSD. There were significant differences between the classes in terms of gender as well as PTSD and comorbid psychopathology symptom severity, the latter of which was highest in the MI-PTSD class. In conclusion, a substantial subgroup of trauma-exposed, treatment-seeking police officers and military veterans could be classified as suffering from MI. Routinely screening for MI in treatment-seeking police officers and military veterans is recommended, and interventions aimed at relieving MI in these populations may be indicated.

Keywords: moral injury, post-traumatic stress disorder, occupational trauma, uniformed personnel, police officers, military veterans

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INTRODUCTION

Exposure to events that take place in high stakes situations and in which deeply held moral beliefs and expectations are transgressed, may be morally injurious to those involved (1, 2). Such moral transgressions or *potentially morally injurious events* (PMIEs) include events in which a person harms another person (*commission*), a person could not prevent harm to another person (*omission*), or a person him- or herself is harmed by a person in power or authority (*betrayal trauma*). Exposure to such events may lead to severe and persistent emotional, psychological, biological, spiritual, behavioral, and social suffering, known as *moral injury* (MI) (1).

MI centers around negative moral emotions and cognitions such as guilt, shame, anger, self-blame, existential crisis, grief, sorrow, betrayal, and distrust (3–5).

Litz et al. (1) and Litz and Kerig (6) were the first to propose a working conceptual model of MI, consisting of the following elements: (1) transgression (PMIE), leading to (2) internal dissonance and conflict with one's fundamental beliefs and assumptions, resulting in (3) stable, negative, internal global attributions about the transgression, (4) enduring moral emotions such as shame, guilt, anxiety, and anger, (5) withdrawal, (6) failure to forgive or self-condemnation, (7) self-harming and selfhandicapping behaviors and demoralization, and (8) chronic intrusions, avoidance and numbing (1, 6, 7).

Research on MI continues to advance, but the definition of what constitutes a moral transgression or PMIE, and what constitutes MI, is still a matter of discussion (e.g., (7)). This complicates research into the prevalence of both PMIEs and MI. The prevalence of PMIE exposure has been studied predominantly in military populations in the United States (8–10) and Canada (11, 12), with prevalence rates ranging from 4.8% for perpetration (9) to 65% for exposure to any PMIE (11). Research into the prevalence of MI has mostly been conducted using different versions of the Moral Injury Symptoms Scale-Military Version (MISS-M) (13). In these studies prevalence was defined either as the percentage of respondents who reported high levels of at least one symptom, ranging from 80 to 90% in United States military populations (13, 14), or as the percentage of respondents whose MI symptoms caused at least moderate impairment, ranging from 24 to 41% in Chinese health professionals (15, 16). The prevalence of PMIE exposure, and consequently of functional impairment, has been found to differ between sexes, with female veterans being at higher risk of functional impairment due to betrayal-based events and male veterans suffering more from perpetration-based events (8). In addition, a lower age has been found to correlate with higher MI scores in healthcare professionals (15, 17) and veterans with non-epileptic seizures (18).

The discussion on what constitutes MI also pertains to the relations between MI and post–traumatic stress disorder (PTSD) (19), focusing on the distinction, association, and overlap between the two concepts. A study among National Guard personnel found MI to be uniquely characterized by guilt, shame, anhedonia, anger, and social alienation, while PTSD was characterized by startle reflex, memory loss, self-reported flashbacks, nightmares, and insomnia (20). A review of the evidence suggests that PMIE exposure may lead to PTSD as well as other symptoms (such as negative moral emotions and loss of meaning) that are distinct from, but associated with PTSD (21). This discussion is at least partly related to the definition of PTSD according to DSM-5 vs. to the 11th edition of the International Classification of Diseases (ICD-11) (22). The overlap between PTSD and MI increased with the publication of a more encompassing definition of PTSD in DSM-5, which includes exaggerated negative beliefs, distorted cognitions leading to blame, persistent negative emotional state, and reckless or self-destructive behavior (19). The overlap of MI with PTSD according to ICD-11 is likely to be smaller due to the ICD-11's narrower definition of PTSD, which is limited to re-experiencing, avoidance, and sense of current threat (22).

Both the prevalence of MI and its relation with PTSD are relevant to psychological treatment. Research on treatment for MI is still limited. Given the overlap between MI and PTSD, it has been suggested that classic trauma-focused treatment such as prolonged exposure (PE) may suffice for the treatment of MI (23). However, some researchers claim that trauma-focused treatment should be adapted or supplemented with interventions specifically designed for MI, focusing on aspects that are distinct from the fear-based aspects of PTSD (e.g., (1, 21, 24)). Determining the occurrence of MI in PMIE-exposed populations may help to decide what percentage of exposed populations is in need of treatment for MI. Meanwhile, determining the separate or comorbid occurrence of MI and PTSD may help to clarify whether treatment for PTSD may suffice for those who suffer from MI, or whether additional interventions may be necessary.

To determine the occurrence of MI in PMIE-exposed populations, as well as its relationship with PTSD, we conducted a latent class analysis of MI among treatment-seeking police officers and military veterans in the Netherlands. There are no previous studies on MI in Dutch police officers, but treatment-seeking Dutch police officers are known to have been exposed to 19.5 different types of potentially traumatic events on average (25), many of which may be considered morally injurious, e.g., having to make decisions that affect the survival of others, engaging in or witnessing acts of disproportionate violence, killing or harming others in line of duty. A quarter of Dutch military veterans have been shown to experience feelings of guilt and shame after participation in peace missions, and these feelings were related to higher levels of depression and anger (26). During missions they may experience value conflicts, moral detachment, and senselessness (27).

The aim of the current study was to identify MI and PTSD symptom profiles among trauma-exposed, treatment-seeking police officers and military veterans, and to explore demographic (gender, age, and professional background) and clinical (trauma exposure, clinician-rated PTSD and self-reported general psychopathology severity) differences between classes. Given that both police officers and military veterans are exposed to PMIEs, we hypothesized that we would find a MI class among these two populations. Given that MI and PTSD have been found to be both separate and distinct, we hypothesized that we would find classes of MI with and without PTSD. Finally, based on the literature we hypothesized that we would find differences in age, gender, PTSD severity and psychopathology severity between classes. This study is a first effort and part of a larger research program aimed at assessing the validity and clinical relevance of the MI concept in treatment-seeking police officers and military veterans.

MATERIALS AND METHODS

Design

A naturalistic, observational design was employed, utilizing routine outcome monitoring (ROM) data from pre-treatment diagnostic assessments. Data were collected at ARQ Centrum'45

and ARQ Diagnostic Centrum, two mental health partner organizations of ARQ Nationaal Psychotrauma Centrum in the Netherlands, from June 2015 to April 2021. Assessments included the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) (28, 29) and the Brief Symptom Inventory (BSI) (30, 31) to assess symptoms of PTSD and MI. Given that MI is a relatively new concept, no instruments for MI were part of the diagnostic assessment.

Setting

ARQ Centrum'45 is a highly specialized mental healthcare institute for patients with complex and severe psychotrauma. The institute offers treatment for, among other populations, trauma-exposed police officers and military veterans who either show complex psychopathology or have not benefited from previous treatment. Treatment predominantly takes place in an outpatient setting and consists of evidence-based, trauma-focused therapy (such as Prolonged Exposure, Eye Movement Desensitization and Reprocessing, Brief Eclectic Psychotherapy for PTSD, and Narrative Exposure Therapy), combined with other forms of psychotherapy, pharmacotherapy, arts therapies, family and couples therapy and social work when indicated.

ARQ Diagnostic Centrum is a national institute for diagnostics of trauma-exposed patients, especially police officers. The institute offers diagnostic assessments only, which takes one full day and includes clinician-rated interviews and self-report measures. Patients with a (partial) PTSD diagnosis are then referred to psychotrauma therapists or institutes for treatment, including, but not limited to, ARQ Centrum'45.

Procedure

The CAPS-5 and BSI were administered at both institutes at the initial diagnostic assessment. The CAPS-5 was administered by psychologists or psychological workers who had received a 1-day training in administering the CAPS-5 as well as regular supervision by a licensed psychologist. CAPS-5 administration took about 45–60 mins. Responses were entered into a secure digital platform for psychological assessment called QuestManager, which is linked to the patient's file. The BSI was administered through the same platform. For those patients who had a diagnostic assessment at ARQ Diagnostic Centrum and were then referred to ARQ Centrum'45, only the data of the first assessment was included in the database for this study.

Data were primarily collected for diagnostic and treatment purposes and secondarily used for research purposes. During the assessment procedure at both institutes, participants were informed about the use of anonymized ROM data for research and asked if they wished to have their data removed from the database. Upon consultation, the medical ethics committee of Leiden University stated that no review of the ethical merits of the study was needed because assessments were conducted primarily for diagnostic purposes within the institution and only secondarily for data analysis.

Participants

The participants in this study were patients with occupational trauma related to their professional background in the police or the military, who sought treatment and were referred to either ARQ Diagnostic Centrum (for diagnostic assessment) or ARQ Centrum'45 (for treatment). Only those patients who met the A-criterion for PTSD according to the CAPS-5, and whose initial pre-treatment assessment included the CAPS-5 and the BSI, were included. Patient characteristics are described in **Table 1**.

The sample consisted mainly of on average middle-aged men with a professional background in the police forces, who had an assessment at ARQ Diagnostic Centrum. Exposure to actual or threatened death was the most prevalent trauma type. The majority of patients (71.6%) met the classification of PTSD according to the CAPS-5. Mean psychopathology severity as measured by the BSI fell within the above average range compared to a norm group of Dutch psychiatric outpatients.

MEASURES

The Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) (28) Dutch version (29) is a 30-item structured interview matching the DSM-5 classification for PTSD. Items are rated on a 5-point severity scale ranging from 0 (*absent*) to 4 (*incapacitating*). By summing the 20 symptom severity scores (Criteria B-E) a total PTSD symptom severity score is computed ranging between 0 and 80, with higher scores indicating higher severity. Psychometric evaluation has demonstrated good psychometric properties (32, 33). In the current sample Cronbach's α was 90.

The Brief Symptom Inventory (BSI) (30) Dutch version (31) is a 53-item self-report rating scale that assesses the severity of general psychopathology during the past week. Items are rated on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). A mean severity score is calculated for the total scale (range 0–4). In comparison with a norm group of Dutch psychiatric outpatients, cut-off scores for the total scale may be interpreted as follows: 0.00–0.23 very low; 0.24–0.55 low; 0.56–0.89 below average; 0.90–1.26 average; 1.27–1.75 above average; 1.75–2.53 high; 2.54–4.00 very high (31). Good psychometric properties have been reported for the BSI (31). In the present sample Cronbach's α was 0.97.

In line with item selection methods in previous research (34, 35), items from the CAPS-5 and the BSI were used to investigate the presence of MI and PTSD symptoms. Items for MI were selected based on the working conceptual framework of Litz et al. (1), which includes the following eight elements: (1) transgression; (2) dissonance/conflict; (3) stable, internal, global attributions; (4) shame, guilt, anxiety; (5) withdrawal; (6) failure to forgive or self-condemnation; (7) self-harming, self-handicapping, demoralization; (8) chronic intrusions, avoidance, numbing. Using all the BSI items and the CAPS items D1–7 and E1–2, these elements of MI were operationalized with a set of 13 items from the BSI and eight from the CAPS-5, selected by the authors independently and compared and discussed until agreement was reached. PTSD was operationalized with a set of nine items from the CAPS-5 based on the ICD-11 diagnosis of PTSD, which includes the PTSD-symptom clusters of intrusions (items B1–5), avoidance (items C1–2), and arousal (items E3 and

TABLE 1 | Demographic and clinical characteristics (n = 1,703).

Characteristics	*n*	%	Mean	Minimum	Maximum	*SD*
Age			45.48	19.71	81.80	10.75
Gender						
Male	1,264	74.30				
Female	437	25.69				
Professional background						
Police forces	1,531	89.90				
Military veterans	172	10.09				
Trauma history						
Actual or threatened death	1,634	95.50				
Serious injury	1,207	70.90				
Sexual violence	134	7.90				
Setting						
ARQ Diagnostic Centrum	1,399	82.15				
ARQ Centrum'45	404	17.85				
PTSD classification	1,220	71.60				
PTSD severity (CAPS-5)			29.80	0.00	71.00	14.11
Psychopathology severity (BSI)			1.49	0.00	3.75	14.23

PTSD, post-traumatic stress disorder; CAPS-5, Clinician-Administered PTSD Scale for DSM-5; BSI, Brief Symptom Inventory.

E4), to avoid duplication of CAPS-5 items in the MI and the PTSD subsets. Descriptions of the indicators for MI and PTSD and the matching items from the BSI and CAPS-5 used in the latent class analysis can be found in **Table 2**.

Statistical Analyses

The selected CAPS-5 and BSI items were recoded into dichotomous scores based on symptom endorsement, i.e., a cut-off value that discriminates between the presence or absence of a symptom. According to the basic CAPS-5 symptom scoring rule, a symptom is considered present if its severity is rated 2 or higher (33). A similar dichotomization rule for the BSI symptoms is not present in the literature, hence we dichotomized the BSI symptoms in a similar way as the CAPS-5 symptoms. With regard to the CAPS-5, a symptom was considered absent when it was rated as absent (severity score = 0) or mild/ subthreshold (severity score = 1) and present when it was rated as moderate/ threshold (severity score = 2), severe/ markedly elevated (severity score = 3) or extreme/ incapacitating (severity score = 4). Likewise, a BSI symptom was considered absent when the distress level was rated as not at all (0) or a little bit (1) and present when it was rated as moderate (2), quite a bit (3) or extremely (4). Latent class analysis (LCA) in Mplus version 8 (36) was used to classify participants into homogeneous latent subgroups (classes), based on similar response patterns on dichotomous symptom endorsement scores of MI and PTSD. In line with earlier LCA studies on PTSD (34, 35), a probability > 0.5 was considered as a cut-off value for symptom endorsement within the latent classes. Robust full information maximum likelihood estimation (FIMLR) was used to include participants with missing data. To avoid local likelihood maxima, 1,000 random sets of starting values in the first and 100 in the second step of optimization were requested, and 50 initial stage iterations were used. Using LCA, the minimum number of classes that can account for associations between symptoms can be identified.

We began with a one-class model and increased the number of latent classes until we achieved a model which no longer gave an acceptable fit or substantive meaning (37, 38). The most parsimonious model with acceptable model fit and classification quality, as well as theoretical meaning, was selected as the optimal solution. The following indices were used to find the optimal number of classes: Bayesian information criterion (BIC), bootstrap likelihood ratio test (BLRT), Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-A), and entropy. Lower BIC and higher entropy indicate a better fit (39). For the BLRT and LMR-A, a significant p-value indicates that the estimated model fits the data better than the model with one less class (40). To avoid local likelihood maxima in BLRT, 500 bootstrap samples were requested with 50 sets of starting values in the first and 20 in each bootstrap sample. The entropy statistic was used to evaluate the overall quality of classification, which is considered adequate when entropy values are >0.80 (41). The most likely class membership for the participants was derived from the optimal latent class model.

Whether the covariates of age, gender, pre-treatment assessment of PTSD severity (CAPS-5), and comorbid psychopathology severity (BSI) differentiated between the latent class representing MI and the other classes, was tested by conducting a series of multinomial logistic regression models using the three-step procedure in Mplus (42). Because data on the covariates were available for subsamples of different sizes and because Mplus handles missing values in the covariates with listwise deletion, separate multinomial regression models were estimated. Age and gender were tested in one model. PTSD severity and severity of comorbid psychopathology were each tested in a separate multinomial regression model. The latter was

TABLE 2 | Description of the elements of MI and PTSD and the matching items from the BSI and the CAPS-5.

	Variable (items in latent class analysis)	*n*	Symptom endorsement (score ≥ 2)	%
Dimensions moral injury				
MI-1: Stable, internal global attributions	BSI 10: Feeling that most people cannot be trusted	1,701	822	48.3
	BSI 22: Feeling inferior to others	1,701	660	38.8
	BSI 50: Feelings of worthlessness	1,701	627	36.9
	CAPS D2: Exaggerated negative beliefs or expectations	1,688	831	49.2
MI-2: Enduring moral emotions such as shame, guilt, anxiety and anger				
Guilt	BSI 52: Feeling of guilt	1,701	828	48.7
Shame	CAPS D3: Distorted cognitions leading to blame	1,689	426	25.2
Anxiety	BSI 19: Feeling fearful	1,701	697	41.0
Anger	BSI 13: Temper outbursts that you could not control	1,701	707	41.6
	BSI 46: Getting into frequent arguments	1,701	688	40.4
	CAPS E1: Irritable behavior and angry outbursts	1,689	1,200	71.0
MI-3: Withdrawal	BSI 14: Feeling lonely even if you are with people	1,701	921	54.1
	BSI 44: Never feeling close to another person	1,701	531	31.2
	CAPS D5: Diminished interest or participation in activities	1,688	1,177	69.7
	CAPS D6: Detachment or estrangement from others	1,688	939	55.6
MI-4: Failure to forgive or self-condemnation	BSI 34: The idea that you should be punished for your sins	1,701	155	9.1
MI-5: Numbing	CAPS D4: Persistent negative emotional state	1,689	1,305	77.3
	CAPS D7: Persistent inability to experience positive emotions	1,687	933	55.3
	BSI 18: Feeling no interest in things	1701	1110	65.3
MI-6: Self-harming and self-handicapping behaviors and demoralization	BSI 9: Thoughts of ending your life	1,701	198	11.6
	BSI 35: Feeling hopeless about the future	1,701	784	46.1
	CAPS E2: Reckless or self-destructive behavior	1,687	199	11.8
Core symptoms of PTSD (ICD-11 definition)				
PTSD-1: Intrusions	CAPS B1: Intrusive memories	1,698	1,314	77.4
	CAPS B2: Distressing dreams	1,696	959	56.5
	CAPS B3: Dissociative reactions	1,697	300	17.7
	CAPS B4: Cued psychological distress	1,695	1,216	71.7
	CAPS B5: Cued physiological reactions	1,692	1,220	72.1
PTSD-2: Avoidance	CAPS C1: Avoidance of memories, thoughts, feelings	1,693	1,260	74.4
	CAPS C2: Avoidance of external reminders	1,692	1,055	62.4
PTSD-3: Arousal	CAPS E3: Hypervigilance	1,689	1,124	66.5
	CAPS E4: Exaggerated startle response	1,688	672	39.8

MI, moral injury; PTSD, post-traumatic stress disorder; CAPS-5, Clinician-Administered PTSD Scale for DSM-5; BSI, Brief Symptom Inventory; ICD-11, International Classification of Diseases-11th revision.

also done to check for possible interference by CAPS-5 and BSI items included as an indicator in the LCA, as well as being part of the PTSD severity score and comorbid psychopathology score in the multinomial logistic regression part of the model.

RESULTS

Latent Class Analysis

Model fitting results of the seven models with one- to seven-class solutions are presented in **Table 3**.

According to the model fit indices, all solutions up to six classes were possible optimal solutions. The LMR-A yielded a non-significant *p*-value (12) for the seven-class solution. Therefore, solutions with seven classes or more were not considered. All BLRT *p*-values were significant. Log-likelihood values increased and BIC values decreased substantially when moving from one- to two- and then to three-class solutions before flattening out, indicating diminishing gain in log-likelihood and BIC between the three-, four-, five-, and six-class solutions. Entropy remained quite similar over the various models with values >0.84, with the four-class solution showing the best entropy value (89). In the three-class solution there was a clear distinction between a severe class with high symptom endorsement on almost all items and a moderate class with

TABLE 3 | Model fitting results of the seven models with one- to seven-class solutions.

Model	Log-likelihood	BIC	BLRT		LMR-A		Entropy
			-2LL difference	*p*-value	Value	*p*-value	
1 class	−30,875.614	61,974.432	–	–	–	–	1.000
2 classes	−27,387.325	55,228.499	6,976.577	0.000	6,946.460	0.000	0.876
3 classes	−26,339.465	53,363.424	2,095.719	0.000	2,086.672	0.000	0.875
4 classes	**−25,795.780**	**52,506.698**	**1,087.370**	**0.000**	**1,082.676**	**0.000**	**0.887**
5 classes	−25,522.575	52,190.932	546.411	0.000	544.052	0.000	0.853
6 classes	−25,379.389	52,135.206	286.370	0.000	285.134	0.0402	0.862
7 classes	−25,235.762	52,078.597	287.254	0.000	286.014	0.1153	0.840

Most meaningful model is printed in boldface. BIC, Bayesian Information criterion; −2LL difference, −2 times Log-Likelihood difference between a N class solution and N-1 class solution; BLRT, Bootstrapped Likelihood Ratio Test; LMR-A, Lo-Mendell- Rubin Adjusted likelihood ratio test.

overall low scores, and there was also a class with low scores on PTSD and varying scores for MI in which not all of the six MI components were met. The five-class solution did not result in clearly defined classes because two classes were interpretatively similar to one another (for graphs of the three- and five-class solutions, please see **Supplementary Figures S1, S2**). The four-class solution appeared to be the most meaningful, parsimonious, and best-fitting model. Most decisive was that this solution had the best interpretability. **Figure 1** shows the symptom endorsement probability for the four-class solution, with the items operationalizing the elements of MI first, followed by those for PTSD.

Using a probability >0.5 as a cut-off value for symptom endorsement, we identified the following classes: (1) a *MI* class, with high symptom endorsement on most items representing MI components and low scores on the core items representing PTSD ($n = 192$; 11.27%); (2) a *MI-PTSD* class with high symptom endorsement on most items ($n = 565$; 33.18%); (3) a *PTSD* class, with low symptom endorsement on MI items and high symptom endorsement on the PTSD items ($n = 644$; 37.82%); and (4) a *Neither MI-nor PTSD* class with low symptom endorsement on all items ($n = 302$; 17.73%).The total occurrence of participants who met a MI symptom profile either with or without PTSD was 44.45% ($n = 757$).

Notably, four items had low (<0.5) symptom endorsement in all four classes: CAPS item B3 *Dissociative reactions*, one of the five items for the PTSD dimension Intrusions (0.33); BSI item 34 *The idea that you should be punished for your sins,* which was the only item representing the MI-4 dimension Failure to forgive or experience of self-condemnation (0.23); and BSI item 9 *Thoughts of ending your life* (0.27) and CAPS item E2 *Reckless or self-destructive behavior* (0.22), two of the three items representing the MI-6 dimension Self-harming and self-handicapping behaviors and demoralization. As can be seen in **Table 2**, these symptoms showed low endorsement rates in the total sample compared to all other symptoms: 17.7% for CAPS item B3 ($n = 300$); 9.1% for BSI item 34 ($n = 155$); 11.6% for BSI item 9 ($n = 198$) and 11.8% for CAPS item E2 ($n = 199$).

Characterization of Class Membership

Table 4 presents the descriptive statistics of the variables age, gender, professional background, PTSD severity (CAPS-5), and psychopathology severity (BSI) for each of the four classes separately.

The PTSD class was the largest class. Most police officers endorsed the PTSD class, whereas most military veterans endorsed the combined PTSD-MI class. Participants in the combined PTSD-MI class reported the most severe symptoms of PTSD and comorbid psychopathology.

Results of the multinomial logistic regression analyses are shown in **Table 5**.

The B coefficients (log odds) indicate how much more or less likely it becomes to be in the MI class (reference group) relative to the other classes with every unit increase in the covariate.

Age did not differ significantly between the classes. *Gender* differentiated significantly between the classes: women were more likely to endorse the MI-PTSD class and the PTSD class compared to the MI class. Gender did not differentiate between the other classes. *PTSD severity* also differentiated significantly between the classes: participants with higher levels of PTSD severity were more likely to endorse the MI-PTSD class ($M = 41.80$) and the PTSD class ($M = 31.97$) compared to the Neither MI-nor PTSD class ($M = 11.16$) or the MI class ($M = 16.06$). Finally, self-reported comorbid *psychopathology severity* differentiated significantly between the classes: participants reporting more severe comorbid psychopathology were more likely to endorse the MI-PTSD class ($M = 2.22$) and the MI class ($M = 1.67$) compared to the PTSD class ($M = 1.19$) and the Neither MI-nor PTSD class ($M = 0.63$).

In summary, the MI class was associated with male gender and lower PTSD severity. The combined MI-PTSD class consisted of patients with the highest PTSD and highest psychopathology severity. Military veterans were mostly represented in the combined MI-PTSD class and police officers were mostly represented in the PTSD class.

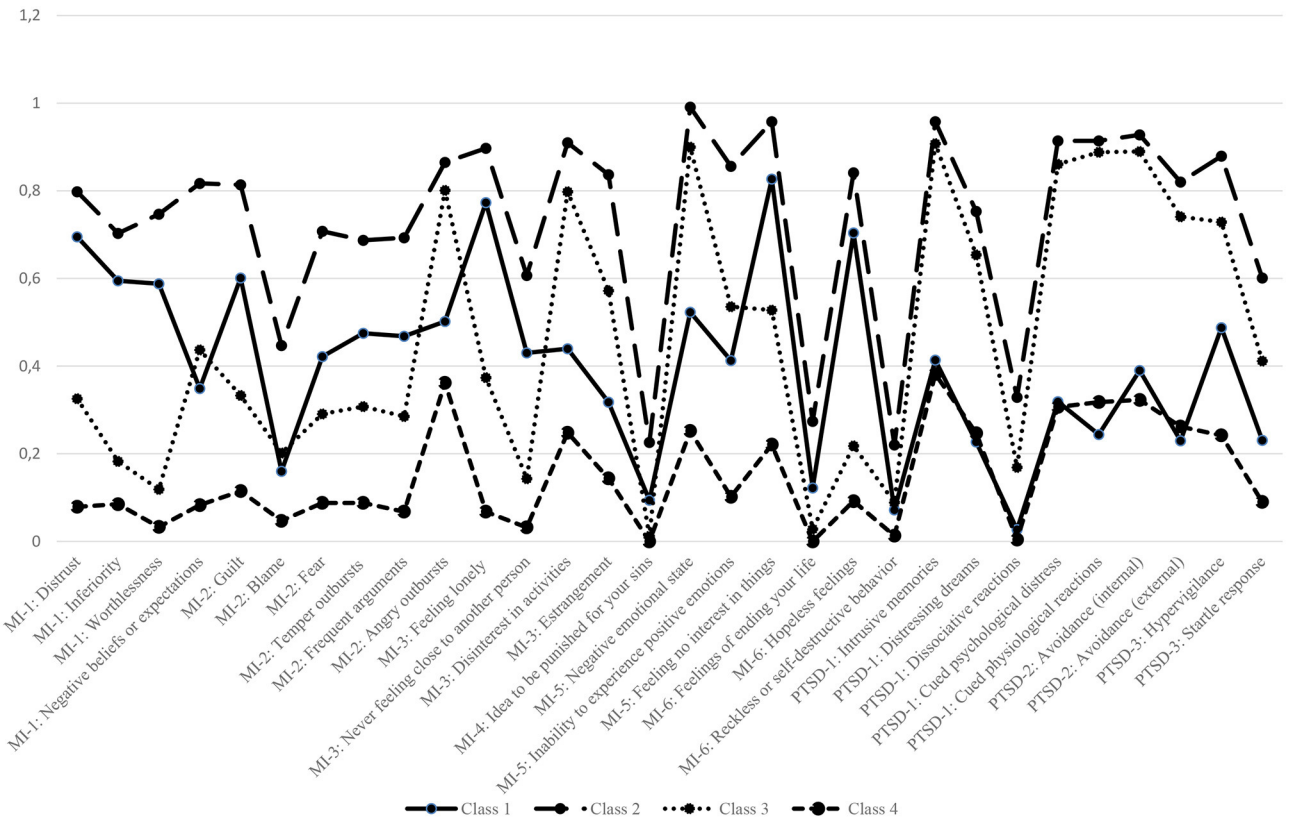

FIGURE 1 | Symptom endorsement probability for the four-class solution. MI, moral injury; PTSD, post–traumatic stress disorder. *For full description of the items; see **Table 2**.

DISCUSSION

We conducted a latent class analysis of MI and PTSD in a sample of 1,703 trauma-exposed, treatment-seeking police officers and military veterans. We identified four classes of patients: a MI class ($n = 192$; 11.27%), a MI-PTSD class ($n = 565$; 33.18%), a PTSD class ($n = 644$; 37.82%), and a Neither MI-nor PTSD class ($n = 302$; 17.73%). The identification of classes characterized by high MI reflects findings of three latent profile analyses (LPA) of MI in military veterans (43–45). These previous studies identified two groups that were, respectively, high and low in MI plus complex PTSD (43), two MI groups characterized by psychological distress and spiritual distress, respectively, as well as a non-distressed group (44), and a high symptoms group, lower symptoms group, and potential MI group (45). Altogether these results confirm that MI is a prominent form of symptomatology amongst police officers and veterans exposed to profession-related trauma.

In our study, the group with a symptom profile of MI with or without PTSD is substantial (44.45%), in line with an earlier study of United States active duty military personnel that found a rate of 52% with high scores on at least four MI symptoms (14). Research of the prevalence of MI has focused primarily on exposure to PMIEs rather than on MI symptomatology. In the previously mentioned LPA's of MI in military veterans, the high MI distress group was 80.3% (43), the psychological MI group around 74% (44), and the potential MI group 22.2% (45). Most likely the definition of MI and the consequent selection of items influenced the prevalence of MI in different groups. In a previous study of Dutch military veterans, a quarter were found to experience feelings of shame, guilt, depression and anger (25). However, participants in this study were non-treatment-seeking, which may explain differences in prevalence.

Our finding of a separate MI class is also in line with other research in which PTSD and MI are defined as distinct constructs that often occur together (e.g., (21, 46, 47)), but that can also occur separately (24). The type of traumatic experience leads to a fear-based response during the event (e.g., "I will get hurt," "I am going to die") and/or a self-referential response after the event (e.g., "It is my fault," "I am a failure"). The first is considered the "classic PTSD" with hyperarousal as one of its main symptoms and anxiety being mainly physiological. The latter response is associated with MI and is more related to existential fears (1) and perceived moral conflict (24, 46, 48). Farnsworth et al. (24) and Barnes et al. (48) advocate for clarifying the index trauma type that has evoked the most symptoms, as a potential indicator to distinguish between PTSD and MI.

TABLE 4 | Descriptive statistics of the variables within the four-class solution.

	MI class (*n* = 192; 11.27%)			MI-PTSD class (*n* = 565; 33.18%)			PTSD class (*n* = 644; 37.82%)			Neither MI-nor PTSD class (*n* = 302; 17.73%)		
	***n* (%)**	**M**	**SD**	***n* (%)**	**M**	**SD**	***n* (%)**	**M**	**SD**	***n* (%)**	**M**	**SD**
Variables												
Age	191	45.43	10.39	564	45.43	10.36	644	45.78	10.57	302	44.95	12.04
Gender												
Male	151 (79.1)			415 (73.6)			460 (71.4)			238 (78.8)		
Female	40 (20.9)			149 (26.4)			184 (28.6)			64 (21.2)		
Professional background												
Police force	179 (93.2)			476 (84.2)			585 (90.8)			291 (96.4)		
Military veterans	13 (6.8)			89 (15.8)			59 (9.2)			11 (3.6)		
PTSD severity (CAPS-5)	185	16.06	8.15	562	41.80	9.17	638	31.97	7.82	300	11.16	6.76
Psychopathology severity (BSI)	192	1.67	0.50	563	2.22	0.54	644	1.19	0.43	302	0.63	0.33

MI, moral injury; PTSD, post-traumatic stress disorder; CAPS-5, Clinician-Administered PTSD Scale for DSM-5; BSI, Brief Symptom Inventory.

TABLE 5 | Results of the multinomial regression analysis of the four classes and the variables age, gender, PTSD severity, and psychopathology severity.

Reference: MI class	**PTSD class**				**MI-PTSD class**				**Neither MI-nor PTSD class**			
Variables	**B**	**SE**	**CI**	**Two-tailed *p*-value**	**B**	**SE**	**CI**	**Two-tailed *p*-value**	**B**	**SE**	**CI**	**Two-tailed *p*-value**
Age	0.090	0.094	−0.094 to 0.274	0.339	0.052	0.094	−0.132 to 0.236	0.580	−0.058	0.108	−0.270 to 0.154	0.591
Gender	0.552*	0.238	0.086 to 1.018	0.020	0.503*	0.240	0.033 to 0.973	0.036	−0.026	0.263	−0.541 to 0.489	0.923
PTSD severity (CAPS-5)	5.540*	0.480	4.599 to 6.481	0.000	7.971*	0.514	6.964 to 8.978	0.000	−1.268*	0.216	−1.691 to −0.845	0.000
Psychopathology severity (BSI)	−2.072*	0.195	−2.454 to −1.690	0.000	1.895*	0.207	1.489 to 2.301	0.000	−5.378*	0.319	−6.003 to 4.753	0.000

MI, moral injury; PTSD, post-traumatic stress disorder; CAPS-5, Clinician-administered PTSD Scale for DSM-5; BSI, Brief Symptom Inventory.
**p < 0.05; B, log odd; SE, standard error; CI, 95% confidence Interval of regression coefficient B.*

We found demographic and clinical differences between the subgroups. The MI-PTSD class consisted mostly of veterans and the PTSD class was mostly made up of police officers. This unequal distribution across different classes reflects the fact that these two groups were not equally matched regarding symptom severity. The police officers showed a much wider variation in symptom severity, ranging from low to severe, compared to the veterans who mainly reported severe symptoms. This variation might be explained by different factors. First, all data of military veterans in this study were from ARQ Centrum'45, a highly specialized institute for psychotrauma, while the data from ARQ Diagnostic Centrum were limited to police officers, some of whom would not be referred for further treatment. Second, actual differences may exist between police officers and military veterans concerning PMIE exposure and subsequent MI, with military veterans potentially being exposed at a younger age (see (15, 17)) as well as potentially more frequently to traumatic events in childhood (49, 50). Further research is needed to examine if such differences between these populations indeed exist.

In contrast to the findings of Mantri et al. (15, 17) and LaFrance et al. (18), age did not differentiate between the four classes. However, there were significant differences between the classes in terms of gender distribution, with the MI classes consisting mostly of men. This echoes previous research in which PMIE exposure and functional impairment were found to differ between men and women (8). Last, significant differences were found between the classes in PTSD severity and comorbid psychopathology severity. In the MI class PTSD severity was low. In the MI-PTSD class participants showed the highest PTSD severity and psychopathology severity, reflecting a high level of suffering in general in this group of participants. These findings may partly be explained by item overlap in different steps of the analysis, given that some CAPS-5-items and BSI-items were used both as items in the LCA and as predictors. We therefore checked for possible interference and used separate models in the multinomial regression models. Findings are in line with another study that found MI scores to correlate with higher symptom severity of comorbid PTSD and major depressive disorder (44).

Four items had low symptom endorsement in all four classes: *Dissociative reactions*, *the idea that you should be punished for your sins*, *Thoughts of ending your life*, and *Reckless or self-destructive behavior*. Three of these items (except for dissociative reactions) were intended to measure MI. The low symptom endorsement suggests that in our sample, these items appeared less relevant to the MI construct. Given that The Netherlands are relatively secularized compared to the United States, "the idea that you should be punished for your sins" might be an item that appeals less to a Dutch sample. In a systematic review, transgressive acts were shown to be associated with a small but significantly increased risk of suicidality, but the overall incidence of suicidality was low (7). In another review, attempted suicide was associated with spiritual factors, including violation of own beliefs, rejected previously held religious beliefs, spiritual distress, and feeling unforgivable (21). Thoughts of ending your life might be relatively low in our sample either because of issues of secularization or because the sample consisted mainly of patients referred for outpatient treatment, i.e., who did not need hospitalization for suicidal levels.

Strengths and Limitations

This is the first study of MI symptom profiles in a Dutch sample of trauma-exposed, treatment-seeking police officers and military veterans. Although there is a significant body of research on the concept of MI, prevalence studies are sparse and use different conceptualizations and measurements. Our study is the first LCA to build on the original conceptual framework for MI (1). The prevalence of MI symptoms has received relatively less attention than that of PMIEs. Studies of MI in police officers are especially rare (21, 51), and studies of MI in Dutch military veterans have been limited to non-treatment-seeking participants (5). Our study shows that the MI construct is relevant to Dutch police officers and military veterans seeking help for their trauma-related mental health problems. Sample size was high, involving a heterogeneous group of participants with a wide variety of symptoms and symptom severity.

A primary limitation of our study is that no data were available about specific transgressions and moral stressors. We used the A-criterion of PTSD as defined in the DSM-5 (19) as an inclusion criterion. Description of the A-criterion is limited to experiencing, witnessing, learning about or being exposed to aversive details of actual or threatened death, serious injury and sexual violence. Consequently, it is insufficiently indicative of whether these are events "in which a person perpetrates, fails to prevent, bears witness to, or learns about acts that transgress deeply held moral beliefs and expectations" ((1), p. 700). While we considered including the A-criterion in our analyses, we decided against this as the literature provided insufficient guidance for hypotheses.

Another limitation was that we used an existing dataset that did not contain instruments specifically designed for assessing MI. At the time of data inclusion, no reliably translated and validated Dutch-language MI measurement was available. We are now in the process of validating two reliably translated instruments in a sample of military veterans. In the current study, MI items were carefully selected from the CAPS-5 and BSI by independent assessors to match the MI framework. However, not all items may have exactly fit. Unlike the CAPS-5, the BSI does not inquire about trauma-relatedness of the symptoms, which is another limitation of using this instrument.

Conclusion and Recommendations

This study indicates that trauma-exposed, treatment seeking police officers and military veterans can suffer from symptoms that could be labeled as MI. Given the relevance of MI to those groups, we recommend routinely screening for MI using instruments such as the Moral Injury Events Scale (MIES) (52), which assesses both exposure and distress, and/or the Expressions of Moral Injury Scale-Military Version (EMIS-M) (53) and Moral Injury Symptom Scale-Military Version (MISS-M) (13), which both measure distress. In addition, instruments assessing MI outcomes in police officers or, more generally, in first responders, are needed.

As MI and PTSD may occur separately as well as together among treatment-seeking police officers and military veterans, it may be concluded that trauma-focused interventions may be insufficient in some individuals and that in those cases, adding interventions that focus on MI may be warranted. While PTSD and depression related to moral injurious events may be effectively treated with trauma-focused treatment (23), other symptoms may remain that may respond to interventions designed especially for MI, such as Adaptive Disclosure (54), Trauma-Acceptance and Commitment Therapy for Moral Injury (ACT-MI) (55) and Trauma-Informed Guilt Reduction Therapy (56).

In order to further the study of the prevalence of MI in PMIE-exposed individuals, several factors are of importance. First, a consensus definition of MI is needed. Currently, definitions and consequently, assessments differ, resulting in differences in prevalence that may be unrelated to population and exposure. Second, most studies of MI have been conducted in military personnel. Studies of MI in police officers and other first responders are needed given their likely high exposure to PMIEs. Third, in order to do so, diagnostic instruments need to be developed and tested in those specific populations.

In conclusion, MI appears to be prevalent in treatment-seeking police officers and military veterans, which may need to be taken into account when tailoring treatment.

DATA AVAILABILITY STATEMENT

Data were collected primarily for clinical purposes and are not deposited in a community-recognized repository because participants have not provided informed consent for sharing data outside of the institute. Requests to access these datasets should be directed to b.mensink@arq.org.

AUTHOR CONTRIBUTIONS

BM, AS, and FH: contributions to the conception or design of the work. BM and NA: acquisition and analysis. BM, AS, FH, and NA: interpretation of data for the work and drafting the work or revising it critically for important intellectual content. All authors have approved for publication of the content and have agreed to be accountable for all aspects of the work.

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REFERENCES

1. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
2. Shay J. *Achilles in Vietnam: Combat Trauma and the Undoing of Character*. New York, NY: Simon & Schuster (1994). p. 246
3. Farnsworth JK, Drescher KD, Evans W, Walser RD, A. functional approach to understanding and treating military-related moral injury. *J Context Behav Sci.* (2017) 6:391–7. doi: 10.1016/j.jcbs.2017.07.003
4. Jamieson N, Maple M, Ratnarajah D, Usher K. Military moral injury: a concept analysis. *Int J Ment Health Nurs.* (2020) 29:1049–66. doi: 10.1111/inm.12792
5. Molendijk T. *Soldiers in conflict: Moral Injury, Political Practices and Public Perceptions*. Nijmegen, GE: Radboud University (2020).
6. Litz BT, Kerig PK. Introduction to the special issue on moral injury: conceptual challenges, methodological issues, and clinical applications. *J Traum Stress.* (2019) 32:341–9. doi: 10.1002/jts.22405
7. Frankfurt S, Frazier P, A. review of research on moral injury in combat veterans. *Mil Psychol.* (2016) 28:318–30. doi: 10.1037/mil0000132
8. Maguen S, Griffin BJ, Copeland LA, Perkins DF, Finley EP, Vogt D. Gender differences in prevalence and outcomes of exposure to potentially morally injurious events among post-9/11 veterans. *J Psych Res.* (2020) 130:97–103. doi: 10.1016/j.jpsychires.2020.06.020
9. Presseau C, Litz BT, Kline NK, Elsayed NM, Maurer D, Kelly K, et al. An epidemiological evaluation of trauma types in a cohort of deployed service members. *Psychol Trauma.* (2019) 11:877–85. doi: 10.1037/tra0000465
10. Wisco BE, Marx BP, May CL, Martini B, Krystal JH, Southwick SM. et al. Moral injury in US combat veterans: results from the national health and resilience in veterans study. *Depress Anxiety.* (2017) 34:340–7. doi: 10.1002/da.22614
11. Hansen KT, Nelson CG, Kirkwood K. Prevalence of potentially morally injurious events in operationally deployed Canadian armed forces members. *J Traum Stress.* (2021) 34:764–72. doi: 10.1002/jts.22710
12. Nazarov A, Fikretoglu D, Liu A, Thompson M, Zamorski MA. Greater prevalence of post-traumatic stress disorder and depression in deployed Canadian Armed forces personnel at risk for moral injury. *Acta Psych Scand.* (2018) 137:342–54. doi: 10.1111/acps.12866
13. Koenig HG, Ames D, Youssef NA, Oliver JP, Volk F, Teng EJ, et al. The moral injury symptom scale-military version. *J Religion Health.* (2018) 57:249–65. doi: 10.1007/s10943-017-0531-9
14. Volk F, Koenig HG. Moral injury and religiosity in active duty US Military with PTSD symptoms. *Mil Behav Health.* (2019) 7:64–72. doi: 10.1080/21635781.2018.1436102
15. Mantri S, Lawson JM, Wang Z, Koenig HG. Prevalence and predictors of moral injury symptoms in health care professionals. *J Nerv Ment Dis.* (2021) 209:174–80. doi: 10.1097/NMD.0000000000001277
16. Wang Z, Harold KG, Tong Y, Wen J, Sui M, Liu H, et al. Moral injury in Chinese health professionals during the COVID-19 pandemic. *Psychol Trauma.* (2022) 14:250–7. doi: 10.1037/tra0001026
17. Mantri S, Song YK, Lawson JM, Berger EJ, Koenig HG. Moral injury and burnout in health care professionals during the COVID-19 pandemic. *J Nerv Ment Dis.* (2021) 209:720–6. doi: 10.1097/NMD.0000000000001367
18. LaFrance WC, Vo P, Baird G, East R, Stein NR. Moral injury in Veterans with nonepileptic seizures. *Epilepsy Behav.* (2020) 102:106681. doi: 10.1016/j.yebeh.2019.106681
19. American Psychiatric Association (APA). *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: American Psychiatric Press (2013)
20. Bryan CJ, Bryan AO, Roberge E, Leifker FR, Rozek DC. Moral injury, post-traumatic stress disorder, and suicidal behavior among National Guard personnel. *Psychol Trauma.* (2018) 10:36–45. doi: 10.1037/tra0000290
21. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral Injury: an Integrative Review. *J Traum Stress.* (2019) 32:350–62. doi: 10.1002/jts.22362

22. World Health Organization (WHO). *International Classification of Diseases and Related Health Problems (ICD). 11th ed*. Geneva: World Health Organization (2020).
23. Held P, Klassen BJ, Steigerwald VL, Smith DL, Bravo K, Rozek DC, et al. Do morally injurious experiences and index events negatively impact intensive PTSD treatment outcomes among combat veterans? *Eur J Psychotraumatol.* (2021) 12:1877026. doi: 10.1080/20008198.2021.1877026
24. Farnsworth JK, Drescher KD, Nieuwsma JA, Walser RB, Currier JM. The role of moral emotions in military trauma: implications for the study and treatment of moral injury. *Rev Gen Psychol.* (2014) 18:249–62. doi: 10.1037/gpr0000018
25. van der Meer CAI, Bakker A, Smit AS, van Buschbach S, den Dekker M, Westerveld GJ, et al. Gender and age differences in trauma and PTSD among dutch treatment-seeking police officers. *J Nerv Ment Dis.* (2017) 205:87–92. doi: 10.1097/NMD.0000000000000562
26. Rietveld N. *De Gewetensvolle Veteraan. Schuld- En Schaamtebeleving Bij Veteranen Van Vredesmissies.* Oisterwijk: BOXPress BV: Tilburg University (2009).
27. Molendijk T. Moral injury in relation to public debates: the role of societal misrecognition in moral conflict-colored trauma among soldiers. *Soc Sci Med.* (2018) 211:314–20. doi: 10.1016/j.socscimed.2018.06.042
28. Weathers FW, Blake DD, Schnurr PP, Kaloupek DG, Marx BP, Keane TM. *The Clinician-Administered PTSD Scale for DSM-5 (CAPS-5)* (Clinical interview) (2013). Available online at: https://www.ptsd.va.gov/professional/assessment/adult-int/caps.asp
29. Boeschoten MA, Bakker A, Jongedijk RA, Van Minnen A, Elzinga BM, Rademaker AR, et al. *Clinician-Administered PTSD Scale for DSM-5 Nederlandstalige versie* (Dutch version) (2014). Available online at: https://www.psychotraumadiagnostics.centrum45.nl/nl/ptss
30. Derogatis LR. *Brief Symptom Inventory BSI. Administration Scoring And Procedures Manual.* 4th ed London: Pearson (1993).
31. de Beurs E, BSI. *Brief Symptom Inventory, revised, handleiding*. Amsterdam: Pearson Clinical Assessment. (2011).
32. Boeschoten MA, Van der Aa N, Bakker A, Ter Heide FJJ, Hoofwijk MC, Jongedijk RA, et al. Development and evaluation of the dutch clinician-administered PTSD scale for DSM-5 (CAPS-5). *Eur J Psychotraumatol.* (2018) 9:1546085. doi: 10.1080/20008198.2018.1546085
33. Weathers FW, Bovin MJ, Lee DJ, Sloan DM, Schnurr PP, Kaloupek DG, et al. The clinician-administered PTSD scale for DSM-5 (CAPS-5): development and initial psychometric evaluation in military veterans. *Psychol Assess*. (2018) 30:383–95. doi: 10.1037/pas0000486
34. Cloitre M, Garvert DW, Brewin CR, Bryant RA, Maercker A. Evidence for proposed ICD-11 PTSD and complex PTSD: a latent profile analysis. *Eur J Psychotraumatol.* (2013) 4:20706. doi: 10.3402/ejpt.v4i0.20706
35. Eidhof MB, Djelantik AAAMJ, Klaassens ER, Kantor V, Rittmansberger D, Sleijpen M, et al. Complex post-traumatic stress disorder in patients exposed to emotional neglect and traumatic events: latent class analysis. *J Traum Stress.* (2019) 32:23–31. doi: 10.1002/jts.22363
36. Muthén LK, Muthén BO. *Mplus User's Guide: Statistical Analysis with Latent Variables*. 6th ed. Los Angeles, CA: Muthén & Muthén (1998–2011).
37. DiStefano C, Kamphaus RW. Investigating subtypes of child development: a comparison of cluster analysis and latent class cluster analysis in typology creation. *Educat Psychol Meas.* (2006) 66:778–94. doi: 10.1177/0013164405284033
38. Masyn KE. *Latent Class Analysis and Finite Mixture Modeling. The Oxford Handbook of Quantitative Methods: Statistical Analysis, Vol. 2. Oxford Library of Psychology*. New York, NY: Oxford University Press (2013). p. 551–611.
39. Lukočiene O, Varriale R, Vermunt JK. The simultaneous decision(s) about the number of lower- and higher-level classes in multilevel latent class analysis. *Sociol Methodol.* (2010) 40:247–83. doi: 10.1111/j.1467-9531.2010.01231.x
40. Nylund KL, Asparouhov T, Muthén BO. Deciding on the number of classes in latent class analysis and growth mixture modeling: a monte carlo simulation study. *Struct Equ Modeling.* (2007) 14:535–69. doi: 10.1080/10705510701575396
41. Geiser C. *Data Analysis With Mplus*. In: Little TD, editor. New York NY: Guilford Press (2012). p. 305
42. Asparouhov T, Muthén B. Auxiliary variables in mixture modeling: three-step approaches using Mplus. *Struct Equ Modeling.* (2014) 21:329–41. doi: 10.1080/10705511.2014.915181
43. Currier JM, Foster JD, Karatzias T, Murphy D. Moral injury and ICD-11 complex PTSD (CPTSD) symptoms among treatment-seeking veterans in the United Kingdom. *Psychol Trauma.* (2021) 13:417–21. doi: 10.1037/tra0000921
44. Currier JM, McDermott RC, Farnsworth JK, Borges LM. Temporal associations between moral injury and post–traumatic stress disorder symptom clusters in military veterans. *J Traum Stress.* (2019) 32:382–92. doi: 10.1002/jts.22367
45. Smigelsky MA, Malott JD, Veazey Morris K, Berlin KS, Neimeyer RA. Latent profile analysis exploring potential moral injury and post–traumatic stress disorder among military veterans. *J Clin Psychol.* (2019) 75:499–519. doi: 10.1002/jclp.22714
46. Buechner B, Jinkerson J. *Are Moral Injury and PTSD Distinct Syndromes? Conceptual Differences and Clinical Implications*. In: Buechner B, Guilarte M, editors. *Veteran and Family Reintegration: Identity, Healing, and Reconciliation. Fielding Monograph Series, vol.* 8. Santa Barbara CA: Fielding Graduate University (2016). p. 47–79.
47. Koenig HG, Youssef NA, Pearce M. Assessment of moral injury in veterans and active duty military personnel with PTSD: a review. *Front Psych.* (2019) 10:443. doi: 10.3389/fpsyt.2019.00443
48. Barnes HA, Hurley RA, Taber KH. Moral injury and PTSD: often co-occurring yet mechanistically different. *J Neuropsych Clin Neurosci.* (2019) 31:A4–103. doi: 10.1176/appi.neuropsych.19020036
49. Fani N, Currier JM, Turner MD, Guelfo A, Kloess M, Jain J, et al. Moral injury in civilians: associations with trauma exposure, PTSD, and suicide behavior. *Eur J Psychotraumatol.* (2021) 12:1965464. doi: 10.1080/20008198.2021.1965464
50. Scoglio AAJ, Molnar BE, Lincoln AK, Griffith J, Park C, Kraus SW. Sexual and physical revictimization in U.S. military veterans. *J Trauma Stress*. (2022) 1–13. doi: 10.1002/jts.22816
51. Blumberg DM. What Should Clinicians Who Care for Police Officers Know About Moral Injury? *AMA J Ethics.* (2022) 24:126–32.
52. Nash WP, Marino Carper TL, Mills MA, Au T, Goldsmith A, Litz BT. Psychometric evaluation of the Moral Injury Events Scale. *Mil Med.* (2013) 178:646–52. doi: 10.7205/MILMED-D-13-00017
53. Currier JM, Farnsworth JK, Drescher KD, McDermott RC, Sims BM, Albright DL. Development and evaluation of the Expressions of Moral Injury Scale-Military Version. *Clin Psychol Psychother.* (2018) 25:474–88. doi: 10.1002/cpp.2170
54. Litz BT, Lebowitz L, Gray MJ, Nash WP. *Adaptive Disclosure: A New Treatment for Military trauma, Loss, and Moral Injury*. New York, NY: Guilford Press (2017). p. 205
55. Evans WR, Walser RD, Drescher KD, Farnsworth JK. *The Moral Injury Workbook: Acceptance and Commitment Therapy Skills for Moving Beyond Shame, Anger, and Trauma to Reclaim Your Values*. Oakland, CA: New Harbinger Publications (2020). 200 p.
56. Norman S, Allard C, Browne K, Capone C, Davis B, Kubany E. *Trauma Informed Guilt Reduction Therapy: Treating Guilt and Shame Resulting From Trauma and Moral Injury*. London: Academic Press (2019). p. 204

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Forgiveness: A Key Component of Healing From Moral Injury?

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Service members and veterans can be exposed to potentially traumatic and morally injurious experiences (PMIEs) including participating in, witnessing, or failing to prevent an act(s) that transgresses their core beliefs. Violation of one's deeply held morals and values can be profoundly distressing and shatter one's sense of self at the deepest level. Relationships with self, others, the world, and for some, the Sacred, can also be fractured. Post-Traumatic Stress Disorder (PTSD) and/or Moral Injury (MI) can result. Left unresolved, MI can leave individuals struggling with guilt, shame, cognitive dissonance, and negative self-attributions. A holistic approach that addresses the psychological and spiritual harm associated with MI is warranted. We wonder if forgiveness can help individuals struggling with MI to address the harm caused by actions or inactions, release negative emotions, and mend relationships. Commonly used by Spiritual/Religious (S/R) Leaders, forgiveness practices are increasingly being explored by Mental Health Professionals as a complement to evidence-based treatment approaches. This article provides case examples that illustrate the use of forgiveness practices that promote recovery and identifies programs used in clinical practice that incorporate forgiveness. Research is yet needed to better understand the importance of forgiveness in the treatment and healing of PTSD and/or MI. This requires an interdisciplinary discourse between Mental Health Professionals and S/R Leaders working in the field of MI. Such engagement and integrated use of forgiveness practices may yield improved outcomes not only for service members and veterans, but for all those struggling as a result of PTSD and/or MI.

Keywords: Moral Injury, forgiveness, relationships, intervention, PTSD—posttraumatic stress disorder, healing

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INTRODUCTION

Deep moral woundedness, more recently termed "Moral Injury" (MI), can be a key aspect of post-traumatic stress injuries (1, 2). Moral Injury has been defined as a "particular trauma syndrome including psychological, existential, behavioral, and interpersonal issues that emerge following perceived violations of deep moral beliefs by oneself or trusted individuals" (3). MI is preceded by exposure to potentially morally injurious experiences (PMIEs) such as participating in, witnessing, or failing to prevent an act that transgresses one's beliefs and values (4). Feelings of guilt, shame, and betrayal; emotional dysregulation and negative self-attributions are associated with MI, as are a shattering of one's sense of self, meaning, and purpose; corrosion of one's soul; and erosion of

one's sense of values, beliefs, and a benevolent orderly world (1–18). Relationships can also be fractured with self, others, and for some, the Sacred—where the Sacred is understood as what is most meaningful and significant to a person, which would include concepts of the transcendent, holy, divine, ultimate being, and mystery (19–24).

We wonder whether individuals experiencing MI may benefit from an integrated psychological and spiritual approach, and propose consideration of forgiveness as a means of facilitating recovery from MI. During psychotherapy, Mental Health Professionals may see clients struggling with MI-related unforgiveness but without skills to address it (25). Spiritual/Religious (S/R) Leaders on interdisciplinary teams may support healing given their attunement to the S/R needs of service members and veterans and familiarity with forgiveness. S/R Leaders can establish trusting, non-judgmental relationships; convey that no topic is off-limits for thoughtful and compassionate discussion; and support reintegration into a moral community (be it religious, secular, familial, or other) (26–28).

The purpose of this article is to examine ways in which giving and receiving forgiveness may help restore one's sense of self and relationships. Additionally, it explores forgiveness in the context of MI from an interdisciplinary perspective that integrates mental and S/R domains and forgiveness practices as interventions.

FORGIVENESS PRACTICES AS INTERVENTIONS

Forgiveness is a complex neurocognitive, affective, and spiritual process (29). A literature search yielded growing attention to forgiveness as a process and practice and increasing interest in it across disciplines (30). While no universally-accepted definition of forgiveness has been found, numerous understandings of forgiveness have emerged and critical ingredients of the process have been identified. Hartz isolated letting go of anger and reducing negative thoughts and feelings about self and others as being central to forgiveness (31), with forgiveness fundamentally calling for a shift in motivation away from retaliation and avoidance (unforgiveness) and toward undeserved goodwill for the perceived wrongdoer (forgiveness). Importantly, forgiveness occurs along a continuum from no forgiveness through complete forgiveness and potential relational restoration (31). This process can positively impact personal wellbeing and play a vital role in restoring social relationships (32). Seeking and receiving forgiveness has helped people find wholeness, offer unconditional forgiveness to others and themselves, and move them forward in their recovery (33–36).

Various approaches to forgiveness may be effective when dealing with MI. One comprehensive understanding of forgiveness is Enright's triadic forgiveness approach (37) which encompasses (i) forgiveness of the self, (ii) giving and receiving forgiveness from others, and (iii) forgiveness of the Sacred (38). Understanding the forgiveness triad and associated practices and processes can help Mental Health Professionals and S/R Leaders support recovery from shame and guilt (39, 40) that can compromise a person's relationships horizontally (with self and others) and vertically (with the Sacred) (20, 33, 41, 42).

Giving and receiving horizontal and vertical forgiveness is reflected in Canadian General (retired) Dallaire's PTSD journey following the 1994 Rwandan Massacre (43). Dallaire recognized that MI-related guilt and anger impeded his healing. His relationships with self and others were fractured and his faith destroyed. He noted: *"(faith) was something that I... fought against in the post-Rwanda genocide period. God had abandoned 800,000 Rwandans, my force, myself, and did absolutely nothing to stop it"* (44). His anger and guilt recently began to dissolve when he received letters from senior UN figures who acknowledged and took responsibility for failing to heed his warnings, *"I wasn't feeling the guilt of having carried the whole catastrophe… and that started to reopen the door to going back to church"* (44). Giving and receiving forgiveness facilitated healing of his horizontal and vertical relationships (45).

Forgiveness practices and interventions have been shown to be helpful in addressing mental and emotional health. Meta-analyses indicate that people receiving forgiveness interventions report more forgiveness than those with no intervention. Forgiveness has been shown to provide psychological, mental, and spiritual health benefits; afford freedom from guilt and shame; decrease anxiety, depression, and anger; and increase self-esteem, hope, and a positive disposition for oneself, others, and the Sacred (46–48). Further, a process-based intervention has been found to be more effective than a shorter cognitive decision-based model (46–49). Components of effective practices and interventions include recalling the offense, empathizing with the offender, making a choice, committing to forgive (38), taking responsibility for one's actions, and making amendments where appropriate. These components are found in MI interventions such as Spiritually-Oriented Cognitive Processing Therapy (which includes forgiveness), and the Impact of Killing program [which requires development of a personalized forgiveness plan that serves as a springboard to self-forgiveness (26)].

Forgiveness practices in the spiritual domain are rooted in S/R and cultural narratives/rituals. In addition to a reduction of negative emotions, greater peace of mind, and improved quality of life that self-forgiveness might offer, forgiveness practices found in traditional cultures and S/R traditions can also enable repentance, realignment, cleansing (29) and reconnecting with the Sacred and community. Where individuals have lost meaning and purpose, reconnection to the Sacred offers a sense of hope in the present or afterlife (50). To that end, Native American traditions offer the purification lodge, Catholicism offers confession, Judaism offers the 10 Days of Repentance, Shamanic traditions offer journeys to the spirit world, and Buddhism offers the wheel of karma (51). In the Catholic tradition's confessional model, steps to forgiveness include examination of conscience, expressing regret, naming a mistake, having a change of heart, seeking forgiveness from God, and making amends with self and others (51). Processes drawn from these traditions can support recovery, and when combined with a person-centered, biopsychosocial-spiritual approach, may help service members and veterans make sense of MI; give and receive

forgiveness; and reconnect with themselves, their families, larger communities, and the Sacred (52–57).

REPAIRING RELATIONSHIPS

Forgiveness results when relationships are made right (4, 15, 34, 35, 58–61). In the following paragraphs, we discuss three relational aspects of forgiveness: of self, to and from the other, and with the Sacred.

Forgiveness of Self

Self-forgiveness concerns how one views oneself and aims to free the self from guilt or shame by accepting responsibility for having violated socio-cultural and S/R values and beliefs. Self-forgiveness enhances wellbeing by promoting relational repair and replacing negative condemning emotions with positive, affirming ones (62). Within the military environment, self-forgiveness can enable service members to thrive despite encountering ethical challenges (34, 63). Self-forgiveness has also been identified as a potentially important component of MI healing, with Griffin et al. theorizing that self-forgiveness may "provide a framework by which to satisfy fundamental needs for belonging and esteem that moral pain often obstructs" [(64), p. 78].

Forgiveness to and From the Other

Interpersonally, forgiveness aims to mend relationships. Central factors of forgiveness are cultivating an empathic perspective toward the offender; genuinely wishing the offender well while releasing hurt and angry emotions; and reframing the transgression through a more cognitive and less emotionally reactive interpretation (38). Further, seeking forgiveness has been positively correlated with mental health (65, 66). Those who receive forgiveness report experiencing a sense of relief, a desire not to hurt the other again, and an improved relationship with the other (67, 68).

Forgiveness With the Sacred

Forgiveness may also involve forgiving and/or being forgiven by that which is beyond oneself (69, 70). When exposed to PMIEs, people often express anger at the Sacred who they believe has let them down or abandoned them in their time of need. For some individuals, forgiving and receiving forgiveness from the Sacred is necessary before it is possible to heal from MI. Forgiveness by the Sacred is associated with increased self-forgiveness (67), suggesting that when a person feels forgiven, they are more able to extend compassion to themselves and others (71).

CASE ILLUSTRATIONS

The impact of forgiveness is best exemplified using case illustrations. These demonstrate the effect of forgiveness as it applies individually and collectively when facilitated jointly by Mental Health Professionals and S/R Leaders. In the following paragraphs, we describe two cases that offer a window into ways in which forgiveness can occur. Each case describes forgiveness practices and interventions used to facilitate a process of recovery and relational repair. While our case examples are drawn from military service members and their deployment experiences, the application of forgiveness as an intervention can extend more broadly to all affected by MI.

Case 1

After serving 16 years, completing a final tour in Afghanistan, and being involuntarily released, a service member began experiencing night terrors, insomnia, depression, and anxiety. Relentless images associated with having taken the life of another person tormented him. At the urging of his family, he reluctantly entered therapy. During a course of cognitive processing therapy, it became clear that the primary trauma event involved the act of killing. Identifying MI and his strong feelings of anger and unforgiveness, his therapist encouraged him to meet with a S/R Leader as a complement to his therapy.

Forgiveness Practices

While meeting with a S/R Leader and engaging in an intensive narration of the PMIE, he disclosed that he resented his Chain-of-Command, was unable to forgive God for letting the event happen and hated himself. He expressed that he was repulsed by what he had done and struggled to reconcile his actions with who he was and his beliefs and values. His existential pain was palpable, as were his feelings of unworthiness to be in relationships with his wife, children, others, and God. He indicated that he had considered ending his life to stop the suffering. Honest and non-judgemental discourse with a S/R Leader enabled him to gradually forgive his Chain-of-Command and himself and ask for and offer forgiveness to God. He eventually engaged in a practice of reconciliation that aligned with his S/R beliefs and practices.

Repairing Relationship

Forgiveness allowed him to face the PMIE, reflect on its impact, extend and receive forgiveness, and find resolution and closure. This increased his ability to engage in and further benefit from mental health interventions with his therapist.

Case 2

Veterans from a military unit, embarking on a "Return with a Mission" trip, journeyed to memorable places of their deployment. At one point, they began making their way to a location high on a steep mountain trail where one of their comrades had tragically died 25 years earlier. Arriving at the site, they affixed a commemorative plaque to a tree inscribed with their colleague's name, rank and the date of her passing. Each silently reflected on the mission, their colleague, the role they played in her life and death, as well as the moments that transpired that fateful day.

Forgiveness Practice

The veterans, with a MHP and chaplain among them, gathered together in a circle and engaged in a ritual at the place of her passing. Emotions ran high and tears were shed. Each person was invited to light a candle at the base of the tree, and silently contemplate the following sentiments: "I remember you and my lack of doing something that could have protected you. I

ask your forgiveness and forgive myself and others for my/our omission. I release you and accept your forgiveness. I choose now to move from darkness to light." Each then resumed their place in the circle. Testimonials were read and a prayer was offered by the group.

Repairing Relationship

The veterans were able to release the guilt, unforgiveness, and shame they had carried, and experienced mending of relationships with their colleague, self, others and the Sacred—re-uniting, re-membering, and becoming "one" once again. Engaging in this journey enabled the veterans to make meaning of the event, reconcile and heal in a way that they had not been able to experience before, and pursue further growth and therapeutic opportunities.

DISCUSSION

MI may necessitate that Mental Health Professionals adopt a different approach to trauma than is commonly used with PTSD (72). This article examined forgiveness and forgiveness practices for service members and veterans struggling with MI. By way of two vignettes, it showcased how forgiveness practices can facilitate restoration of one's sense of self, relationships with others, and for some, the Sacred. We questioned whether conventional models of evidence-based interventions for MI are lacking reference to forgiveness or forgiveness practices and may benefit from integrating these into clinical care (17, 59, 72).

Forgiveness can help individuals recognize the weight of MI and their (in)actions, release negative emotions, and mend relationships. As a discourse, however, forgiveness is commonly reserved for S/R Leaders and is not well incorporated into mental health contexts. Forgiveness practices long-employed by S/R traditions, or those that draw on S/R principles, may yield a more holistic approach to MI service-provision. Such practices may enable service members and veterans to face shame and guilt associated with actions or inactions, let go of negative emotions, and mend crucial relationships (62, 63, 71, 73, 74). Integrating forgiveness practices may facilitate healing of MI and associated conditions such as PTSD, anxiety, and depression. When incorporating forgiveness, collaboration between S/R Leaders and Mental Health Professionals would be valuable (18, 24, 53).

While some clinicians associate PTSD and MI symptoms with maladaptive cognitions (75), there is a paucity of research on cognitions associated with MI. MI may in fact signal that something one has experienced is fundamentally "wrong." Therefore, rather than reflecting a maladaptive cognition, MI may critically reflect adaptive cognitions, with the resulting struggle arising when things are not "as they ought to be" (76). As a result, recovery can require an alternative approach to evidence-based trauma therapies.

As the literature suggests, spiritual strength programs that incorporate forgiveness concepts and practices may facilitate reconciliation and healing (77). Several examples of programs used in clinical treatment are of note. The Forgiveness Interview Protocol (FIP) is a narrative therapy writing process that utilizes distinct theoretical and clinical disciplines for mental health counseling and S/R care (78). Acceptance and Forgiveness Therapy (AFT) has recently been introduced by Pernicano et al. (79). As a psychospiritual group intervention, AFT experientially guides veterans with MI from a trauma-focused to restorative view of self. S/R Leaders and Mental Health Professionals jointly deliver psychoeducation, facilitate therapeutic interaction, and encourage home practice. The curriculum includes evidence-driven psychological interventions, spiritually-oriented practices, metaphors, stories, and art to illustrate concepts and facilitate self-expression. Another example is Forgiveness Bibliotherapy (80). The efficacy of an 8-week Forgiveness Bibliotherapy intervention with undergraduate nursing students was tested using Enrich's *8 keys to forgiveness* (81). After reading and providing a weekly reflection on each chapter, forgiveness and forgiveness-related outcome measures pre/post and one-month follow-up showed that the experimental group had significantly greater improvements in forgiveness, anxiety, depression, and fatigue. Such promising practices merit further study and implementation.

There are also limitations and cautions to the concept of forgiveness. First, forgiveness is a process. It may take time for individuals to face events at the root of unforgiveness and acknowledge actions, inactions and harms done to themselves or others. The timing of and pace at which forgiveness occurs is unique to each person, with people needing to be ready to forgive and choosing to do so. Further, for those who have experienced abuse, forgiveness necessitates particular care and an understanding that it is not necessary to engage in a relationship with an offender to forgive them, particularly if it would put them in harm's way.

It is vital to have an understanding of forgiveness from an interdisciplinary perspective. The study of the role of forgiveness in the treatment and healing of MI and complementarity of approaches to forgiveness that can be used by Mental Health Professionals and S/R Leaders is of critical importance. With mental health practices having a different discourse than S/R approaches, ways in which S/R forgiveness practices complement evidence-based interventions may be needed. For example, Mental Health Professionals tend to speak about "treatment" and "interventions," while S/R Leaders speak about "practices" and "healing." Such approaches can be complementary and benefit not only service members and veterans, but all those experiencing MI as a result of exposure to PMIEs.

Further research into MI is warranted and would benefit from an interdisciplinary approach. This includes study of: (i) the relationship between MI and forgiveness, (ii) S/R-informed prevention strategies, (iii) S/R components of forgiveness, (iv) types of modalities most conducive to forgiveness, and (v) the importance of healing relationships through forgiveness. While self-forgiveness as a concept is increasingly recognized, greater consideration is needed regarding additional topics such as the relationship between

forgiveness and MI from victim and offender perspectives, triadic forgiveness, and relational repair with the Sacred. Moreover, to yet be distilled are the stages and elements of forgiveness (e.g., examination of conscience, penance, absolution, and recompense or restitution, and hope) specific to MI. These topics require further exploration for proper integration into practice. These considerations would deepen our understanding of forgiveness as a means of facilitating healing from MI.

CONCLUSION

Various practices and interventions explore forgiveness in relation to MI. This article examined ways in which giving and receiving forgiveness can help restore one's sense of self by reconciling relationships with oneself, others, and the Sacred. We feel it is crucial to consider integrating forgiveness practices into clinical practice. Recovery from MI may require a novel and intentional interdisciplinary discourse between S/R Leaders and Mental Health Professionals. Recognition of the expertise offered by each discipline will be vital to this engagement. Advancement of the field of MI would benefit from further collaborative research by these disciplines regarding the role of forgiveness in the treatment and healing of PTSD and MI.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article. Further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

SB-P, TC, LS-M, JH, and EV participated in the concept and writing of this manuscript and approved the final version of the manuscript.

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REFERENCES

1. Shay, J. *Achilles in Vietnam*. New York, NY: Atheneum (1994).
2. Shay J. Moral injury. *Psychoanal Psychol.* (2014) 31:182. doi: 10.1037/a0036090
3. Jinkerson JD. Defining and assessing moral injury: a syndrome perspective. *Traumatology*. (2016) 22:122–130. doi: 10.1037/trm0000069
4. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clin Psychol Rev*. (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003
5. Lentz LM, Smith-MacDonald L, Malloy D, Carleton RN, Brémault-Phillips S. Compromised conscience: a scoping review of moral injury among firefighters, paramedics, and police officers. *Front Psychol.* (2021) 12:681. doi: 10.3389/fpsyg.2021.639781
6. Bryan AO, Bryan CJ, Morrow CE, Etienne N, Ray-Sannerud B. Moral injury, suicidal ideation, and suicide attempts in a military sample. *Traumatology*. (2014) 20:154. doi: 10.1037/h0099852
7. Currier JM, Holland JM, Malott J. Moral injury, meaning making, and mental health in returning veterans. *J Clin Psychol.* (2015) 71:229–40. doi: 10.1002/jclp.22134
8. Farnsworth JK, Drescher KD, Nieuwsma JA, Walser RB, Currier JM. The role of moral emotions in military trauma: implications for the study and treatment of moral injury. *Rev Gen Psychol.* (2014) 18:249. doi: 10.1037/gpr0000018
9. Fontana A, Rosenheck R. Trauma, change in strength of religious faith, and mental health service use among veterans treated for PTSD. *J Nerv Ment Dis.* (2004) 192:579–84. doi: 10.1097/01.nmd.0000138224.17375.55
10. Haight W, Sugrue E, Calhoun M, Black J, A. scoping study of moral injury: Identifying directions for social work research. *Child Youth Serv Rev.* (2016) 70:190–200. doi: 10.1016/j.childyouth.2016.09.026
11. Nash WP, Litz BT. Moral injury: A mechanism for war-related psychological trauma in military family members. *Clin Child Fam Psychol Rev*. (2013) 16:365–75. doi: 10.1007/s10567-013-0146-y
12. Smith-MacDonald LA, Norris JM, Raffin-Bouchal S, Sinclair S. Spirituality and mental wellbeing in combat veterans: a systematic review. *Mil Med.* (2017) 182:e1940. doi: 10.7205/MILMED-D-17-00099
13. Koenig HG, Ames D, Youssef NA, Oliver JP, Volk F, Teng EJ, et al. The moral injury symptom scale-military version. *J Rel Health.* (2018) 57:249–65. doi: 10.1007/s10943-017-0531-9
14. Currier JM, Drescher KD, Harris JI. Spiritual functioning among veterans seeking residential treatment for PTSD: a matched control group study. *Spirituality in Clinical Practice.* (2014) 1:3. doi: 10.1037/scp0000004
15. Drescher KD, Foy DW. When they come home: posttraumatic stress, moral injury, and spiritual consequences for veterans. *Reflect Pract Format Supervis Ministr.* (2008) 28:8. doi: 10.2307/3416570
16. Hodgson TJ, Carey LB. Moral injury and definitional clarity: betrayal, spirituality and the role of chaplains. *J Rel Health.* (2017) 56:1212–28. doi: 10.1007/s10943-017-0407-z
17. Tick E. *War and the Soul: Healing Our Nation's Veterans and Their Families* (2005).
18. Wortmann JH, Eisen E, Hundert C, Jordan AH, Smith MW, Nash WP, et al. Spiritual features of war-related moral injury: a primer for clinicians. *Spirituality in Clinical Practice.* (2017) 4:249. doi: 10.1037/scp0000140
19. Pargament KI. *The Psychology of Religion and Coping: Theory, Research, Practice*. Guilford: Guilford Press (2001).
20. Plante TG. What do the spiritual and religious traditions offer the practicing psychologist? *Pastoral Psychol.* (2008) 56:429–44. doi: 10.1007/s11089-008-0119-0
21. Pargament KI. *Spiritually Integrated Psychotherapy: Understanding and Addressing the Sacred*. Guilford: Guilford Press (2007).
22. Plante TG, Thoresen CE. *Spirit, Science and Health—How the Spiritual Mind Fuels Physical Wellness*. Westport CT: Praeger Publisher (2007).
23. Pargament KI, Raiya HA. A decade of research on the psychology of religion and coping: Things we assumed and lessons we learned. *Psyke & logos.* (2007) 28:25. https://tidsskrift.dk/psyke/article/view/8398/6958
24. Stallinga BA. What spills blood wounds spirit: chaplains, spiritual care, and operational stress injury. *Reflect Pract Format Supervis Ministr.* (2013) 1:2. https://journals.sfu.ca/rpfs/index.php/rpfs/article/download/258/257/0
25. Vermetten E, Jetly R, A. critical outlook on combat-related PTSD: review and case reports of guilt and shame as drivers for moral injury. *Milit Behav Health.* (2018) 6:156–64. doi: 10.1080/21635781.2018.1459973

26. Purcell N. Opening a door to a new life": the role of forgiveness in healing from moral injury. *Front Psychiatr.* (2018) 9:498. doi: 10.3389/fpsyt.2018.00498
27. Smith-MacDonald LA, Morin JS, Brémault-Phillips S. Spiritual dimensions of moral injury: contributions of mental health chaplains in the Canadian armed forces. *Front Psychiatr*. (2018) 592:18. doi: 10.3389/fpsyt.2018.00592
28. Brémault-Phillips S. Spirituality and moral injury among military personnel: a mini-review. *Front Psychiatr*. (2019) 10: 276. doi: 10.3389/fpsyt.2019.00276
29. McCullough M, Pargament K, Thoresen C. *Forgiveness: Theory, Research. Practice.* (2000).
30. Worthington EL, Wade NG. *The Handbook of Forgiveness*, Second Edition. New York, NY: Routledge (2020). 3341
31. Hartz GW. *Spirituality and mental health: Clinical Applications*. London: Psychology Press (2005).
32. Fourie MM. Parsing the components of forgiveness: psychological and neural mechanisms. *Neurosci Biobehav Rev.* (2020) 112:437–51. doi: 10.1016/j.neubiorev.2020.02.020
33. Davis DE, Hook JN, Worthington EL. Relational spirituality and forgiveness: the roles of attachment to god, religious coping, and viewing the transgression as a desecration. *J Psychol Christian*. (2008) 27:4. doi: 10.1037/a0033638
34. Worthington EL, Langberg D. Religious considerations and self-forgiveness in treating complex trauma and moral injury in present and former soldiers. *J Psychol Theol.* (2012) 40:274–88. doi: 10.1177/009164711204000403
35. Riek BM. Transgressions, guilt, and forgiveness: a model of seeking forgiveness. *J Psychol Theol.* (2010) 38:246–54. doi: 10.1177/009164711003800402
36. Worthington EL, Sharp CB, Lerner AJ, Sharp JR. Interpersonal forgiveness as an example of loving one's enemies. *J Psychol Theol.* (2006) 34:32–42. doi: 10.1177/009164710603400104
37. Enright RD. Counseling within the forgiveness triad: On forgiving, receiving forgiveness, and self-forgiveness. *Couns Values.* (1996) 40:107–26. doi: 10.1002/j.2161-007X.1996.tb00844.x
38. Enright RD, Freedman S, Rique J. Exploring forgiveness. *Psychology*. (1998) 35:5.
39. Lee DA, Scragg P, Turner S. The role of shame and guilt in traumatic events: A clinical model of shame-based and guilt-based PTSD. *Br J Med Psychol.* (2001) 74:451–66. doi: 10.1348/000711201161109
40. Wilson JP, DroŽdek B, Turkovic S. Posttraumatic shame and guilt. *Trauma Viol Abuse.* (2006) 7:122–41. doi: 10.1177/1524838005285914
41. Bray RM, Hourani LL, Rae Olmsted KL, Witt M, Brown JM, Pemberton MR, et al. *Department of Defense survey of health related behaviors among active duty military personnel*. Research Triangle Park, NC: Research Triangle Institute. (2006). https://apps.dtic.mil/sti/pdfs/ADA465678.pdf
42. Jakupcak M, Tull MT, McDermott MJ, Kaysen D, Hunt S, Simpson T, et al. symptom clusters in relationship to alcohol misuse among Iraq and Afghanistan war veterans seeking post-deployment VA health care. *Addict Behav*. (2010) 35:840–3. doi: 10.1016/j.addbeh.2010.03.023
43. Dallaire R. *Waiting for First Light: My Ongoing Battle with PTSD*. Canada: Random House Canada (2016).
44. Berthelot C. *Faith on front lines*: *Catholic Register*. (2018). Available online at: https://www.catholicregister.org/item/27848-faith-on-front-lines-a-desperate-world-needs-god-more-than-ever-says-lt-gen-romeo-dallaire?platform=hootsuite (accessed August 18, 2018).
45. Jin, J, Weiman, K, Brémault-Phillips, S, Vermetten, E. Moral injury and recovery in uniformed professionals: lessons from conversations among international students and experts. *Front Psychiatr*. (2022) 13:1256–1266. doi: 10.3389/fpsyt.2022.880442
46. Worthington EL, Witvliet CVO, Pietrini P, Miller AJ. Forgiveness, health, and wellbeing: a review of evidence for emotional vs. decisional forgiveness, dispositional forgivingness, and reduced unforgiveness. *J Behav Med.* (2007) 30:291–302. doi: 10.1007/s10865-007-9105-8
47. Baskin TW, Enright RD. Intervention studies on forgiveness: a meta-analysis. *J Counsel Develop.* (2004) 82:79–90. doi: 10.1002/j.1556-6678.2004.tb00288.x
48. Toussaint LL, Williams DR, Musick MA, Everson SA. Forgiveness and health: age differences in a US probability sample. *J Adult Dev.* (2001) 8:249–57. doi: 10.1023/A:1011394629736
49. Recine AC. Designing forgiveness interventions: guidance from five meta-analyses. *J Holist Nurs*. (2015) 33:161–7. doi: 10.1177/0898010114560571
50. Koenig HG, Youssef NA, Smothers Z, Oliver JP, Boucher NA, Ames D, et al. Hope, religiosity, and mental health in US veterans and active duty military with PTSD symptoms. *Milit Med*. (2020) 185:97–104. doi: 10.1093/milmed/usz146
51. Murray-Swank AB, McConnell KM, Pargament KI. Understanding spiritual confession: a review and theoretical synthesis. *Mental Health Relig Cult*. (2007) 10:275–91. doi: 10.1080/13694670600665628
52. Harris JI, Park CL, Currier JM, Usset TJ, Voecks CD. Moral injury and psycho-spiritual development: considering the developmental context. *Spiritual Clinic Pract.* (2015) 2:256. doi: 10.1037/scp0000045
53. Carey LB, Hodgson TJ, Krikheli L, Soh RY, Armour A-R, Singh TK, et al. Moral injury, spiritual care and the role of chaplains: an exploratory scoping review of literature and resources. *J Rel Health.* (2016) 55:1218–45. doi: 10.1007/s10943-016-0231-x
54. Park CL. The meaning making model: A framework for understanding meaning, spirituality, and stress-related growth in health psychology. *Euro Health Psychol.* (2013) 15:40–7. https://www.ehps.net/ehp/index.php/contents/article/download/ehp.v15.i2.p40/1041
55. Silberman I. Religion as a meaning system: implications for the new millennium. *J Soc Iss.* (2005) 61:641–63. doi: 10.1111/j.1540-4560.2005.00425.x
56. Brémault-Phillips S, Koenig HG, Pargament KI, Plante TG, Chirovsky A, Olson J, et al. *Spiritual Dimensions of WellBeing, Health, and Moral Injury: A Review*. Canada: Veterans Affairs Canada (2017).
57. Sulmasy DP. Ethical principles for spiritual care. *Oxford Textbook Spiritual Healthcare.* (2012) 2012:465–70. doi: 10.1093/med/9780199571390.003.0062
58. Currier JM, Holland JM, Drescher KD. Spirituality factors in the prediction of outcomes of PTSD treatment for US military veterans. *J Traum Stress.* (2015) 28:57–64. doi: 10.1002/jts.21978
59. Litz BT, Lebowitz L, Gray MJ, Nash WP. *Adaptive Disclosure: A New Treatment for Military Trauma, Loss, and Moral Injury*: Guilford: Guilford Publications (2017).
60. Bryan CJ, Morrow CE, Etienne N, Ray-Sannerud B. Guilt, shame, and suicidal ideation in a military outpatient clinical sample. *Depress Anxiety.* (2013) 30:55–60. doi: 10.1002/da.22002
61. Bryan CJ, Roberge E, Bryan AO, Ray-Sannerud B, Morrow CE, Etienne N. Guilt as a mediator of the relationship between depression and posttraumatic stress with suicide ideation in two samples of military personnel and veterans. *Int J Cogn Ther.* (2015) 8:143–55. doi: 10.1521/ijct.2015.8.2.143
62. Griffin BJ, Worthington EL, Danish SJ, Donovan J, Lavelock CR, Shaler L, et al. Self-forgiveness and military service: Equipping warriors to combat moral injury. *Handbook Psychol Self-Forgiv*. (2017) 14:221–33. doi: 10.1007/978-3-319-60573-9_16
63. Bryan AO, Theriault JL, Bryan CJ. Self-forgiveness, posttraumatic stress, and suicide attempts among military personnel and veterans. *Traumatology.* (2015) 21:40. doi: 10.1037/trm0000017
64. Griffin BJ, Cornish MA, Maguen S, Worthington, EL. Forgiveness as a mechanism of repair following military-related moral injury. In: Currier JM, Drescher K, Nieuwsma J. editors *Addressing Moral Injury in Clinical Practice.* London: American Psychological Association (2021). pp. 71–86. doi: 10.1037/0000204-005
65. Friesen MD, Fletcher GJ, Overall NC, A. dyadic assessment of forgiveness in intimate relationships. *Pers Relatsh.* (2005) 12:61–77. doi: 10.1111/j.1350-4126.2005.00102.x
66. Bassett RL, Edgerton M, Johnson J, Lill C, Russo G, Ardella L, et al. Seeking forgiveness: The view from an experimental paradigm. *J Psych Chr.* (2008) 27:140. https://www.proquest.com/openview/b361372ba3d46ab96af676ca41bcdf58/1?pq-origsite=gscholar&cbl=38088
67. Martin AM. *Exploring Forgiveness: The Relationship Between Feeling Forgiven by God and Self-Forgiveness for an Interpersonal Offence*. Cleveland, OH: Case Western Reserve University (2008).
68. Exline JJ, Baumeister RF. Expressing forgiveness and repentance. *Forgiv Theor Res Pract.* (2000) 13:3155. https://psycnet.apa.org/record/2000-07041-007
69. Exline JJ, Martin A. Anger toward God: a new frontier in forgiveness research. In: *Handbook of forgiveness*. London: Routledge (2007). p. 97-112.

70. Webb M. "Forgiving" God: reflections on psychological research describing spiritual struggle. *Theology Today.* (2014) 71:337–46. doi: 10.1177/0040573614542310
71. McConnell JM, Dixon DN. Perceived forgiveness from god and self-forgiveness. *J Psychol Christian.* (2012) 31:1. doi: 10.1037/e702292007-001
72. Finlay LD. Evidence-based trauma treatment: Problems with a cognitive reappraisal of guilt. *J Theor Phil Psych.* (2015) 35:220–9. doi: 10.1037/teo0000021
73. Worthington EL, Wade NG. The psychology of unforgiveness and forgiveness and implications for clinical practice. *J Soc Clin Psychol.* (1999) 18:385–418. doi: 10.1521/jscp.1999.18.4.385
74. Worthington EL, Davis DE, Hook JN, Van Tongeren DR, Gartner AL, Jennings DJ. Religion, spirituality, and forgiveness. *Handbook Psychol Relig Spiritual.* (2013) 2013:476–97. https://psycnet.apa.org/record/2013-26878-024
75. Boska RL, Capron DW. Exploring the maladaptive cognitions of moral injury within a primarily combat-trauma military sample. *Psychol Trauma.* (2021) 13:861–8. doi: 10.1037/tra0001071
76. Farnsworth JK. Is and ought: Descriptive and prescriptive cognitions in military-related moral injury. *J Trauma Stress.* (2019) 32:373–81. doi: 10.1002/jts.22356
77. Usset T, Butler M, Harris JI. Building spiritual strength: a group treatment for posttraumatic stress disorder, moral injury, and spiritual distress. In: Currier JM, Drescher KD, Nieuwsma J editors. *Addressing Moral Injury in Clinical Practice.* London: American Psychological Association (2021). pp 223–241. doi: 10.1037/0000204-013
78. Buhagar DC. The forgiveness interview protocol: a narrative therapy writing-process model for the treatment of moral injury. *J Relig Health.* (2021) 60:3100–29. doi: 10.1007/s10943-021-01395-3
79. Pernicano PU, Wortmann J, Haynes K. Acceptance and forgiveness therapy for veterans with moral injury: spiritual and psychological collaboration in group treatment. *J Health Care Chaplain.* (2022) 2:1–22. doi: 10.1080/08854726.2022.2032982
80. Kim JJ, Mullen L, Akers SW, Joseph RA, Bishop LB, Bistany BR, et al. The efficacy of a forgiveness bibliotherapy: a randomized controlled trial with nursing students. *J Holistic Nurs.* (2022) 8:2288. doi: 10.1177/08980101211072288
81. Enright R. *8 Keys to Forgiveness (8 keys to mental health).* New York, NY: WW Norton & Company (2015).

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Initial development of perpetrator confrontation using deepfake technology in victims with sexual violence-related PTSD and moral injury

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Background: Interventions aimed at easing negative moral (social) emotions and restoring social bonds – such as amend-making and forgiving—have a prominent role in the treatment of moral injury. As real-life contact between persons involved in prior morally injurious situations is not always possible or desirable, virtual reality may offer opportunities for such interventions in a safe and focused way.

Objective: To explore the effects of the use of deepfake technology in the treatment of patients suffering from PTSD and moral injury as a result of being forced by persons in authority to undergo and commit sexual violence (so-called *betrayal trauma*).

Methods: Two women who had experienced sexual violence underwent one session of confrontation with the perpetrator using deepfake technology. The women could talk *via* ZOOM with the perpetrator, whose picture was converted in moving images using deepfake technology. A therapist answered the questions of the women in the role of the perpetrator. Outcome measures were positive and negative emotions, dominance in relation to perpetrator, self-blame, self-forgiveness, and PTSD-symptom severity.

Results: Both participants were positive about the intervention. Although they knew it was fake, the deepfaked perpetrator seemed very real to them. They both reported more positive and less negative emotions, dominance in relation to the perpetrator and self-forgiveness, and less self-blame and PTSD-symptoms after the intervention.

Conclusion: Victim-perpetrator confrontation using deepfake technology is a promising intervention to influence moral injury-related symptoms in victims of sexual violence. Deepfake technology may also show promise in simulating other interactions between persons involved in morally injurious events.

KEYWORDS

PTSD, moral injury, deepfake, virtual reality, therapy, prolonged exposure, EMDR therapy

Introduction

Moral injury is as a psychosocial condition that may develop after committing, failing to prevent, or witnessing acts that transgress deeply held moral beliefs and expectations and that take place in high stakes situations in which a person is harmed by another (1, 2). Such transgressions, also known as potentially morally injurious experiences (PMIE's), can be divided into perpetration-based and betrayal-based experiences, with betrayal referring to being subjected to another's transgressive behavior, especially that of a person in power, a leader or a trusted authority (3). PMIE exposure may lead to the development of a range of symptoms including negative attributions, negative moral emotions such as guilt and shame, social withdrawal, failure to forgive oneself and others, self-handicapping behaviors and PTSD (1). Moral injury is perceived as being distinct from, but associated with PTSD. Overlap between moral injury and PTSD may be stronger where a PMIE is both morally injurious as well as meets the A-criterion for PTSD (3).

Given that PMIE's involve a morally transgressive interaction between different people - in the roles of perpetrator, victim, helper, bystander and authority - moral injury can be perceived as a form of interpersonal trauma e.g., (4). The suffering caused by moral injury is interpersonal, centering around negative moral emotions and social withdrawal (1). Consequently, the interventions administered to alleviate or heal moral injury are often interpersonally-focused. Making amends, seeking or offering forgiveness, and acting on important social values are among the interventions recommended for treating moral injury e.g., (5). It is believed that through these interventions, interpersonal connections can be restored, negative moral emotions alleviated, and negative attributions considering self or others, corrected.

Interpersonally-focused interventions to alleviate moral injury can be conducted face-to-face or imaginarily. Previous studies found that face to face victim-perpetrator confrontations generally lead to positive outcomes for both victims and perpetrators (6). However, face-to-face contact between persons involved in PMIE's may not always be possible nor desirable. People involved in PMIE's may have died, access to remaining family members may be prohibited, the PMIE's may have taken place in far-away places that are no longer accessible, or disclosing PMIE's may be restricted. Furthermore, it is conceivable that specifically with regard to betrayal trauma, the victim is too fearful to confront the perpetrator, the perpetrator is unemphatic, or contact with the perpetrator is considered unsafe. In such cases, imaginary conversations, such as an imaginal dialogue with a benevolent moral authority, may be used (1). During such a dialogue, the patient may share their morally injurious experiences and consequent suffering with the moral authority, followed by an imaginary, supportive response by the moral authority.

Participation in an imaginary dialogue requires imaginary skills which some patients may not master. To solve this issue, in recent years virtual reality environments are being developed that may simulate interpersonal interactions and thus promote interpersonal healing or closure. Recently, virtual reality applications have been suggested to be a good and safe alternative for a live interaction in a therapeutical setting, for example in relation to prolonged grief (7).

Recently, AI models (deepfakes) have been developed to generate and manipulate fake faces that look almost identical to real people. Due to the photorealistic content, deepfake technology (e.g., face or lip synching) can be a suitable alternative for live interventions. Deepfake therapy (https://deepfake-therapy.com/) is an online communication platform to enter into conversation with people through self-controlled video animations using deepfake technology *via* Zoom.

This paper describes the use of newly developed deepfake therapy technology with two patients who had been morally injured through sexual violence. Sexual violence has been conceptualized as a form of betrayal trauma, both within a military context e.g., (8, 9) and a civilian context (10). Like other forms of betrayal trauma, it often involves a betrayal of trust by persons of power or authority and may lead to strong negative moral emotions and cognitions of shame, guilt and anger. In the cases discussed in this paper, patients were abused by a boss and a group of older boys, respectively; one patient was also forced into perpetration with other children. Both patients were treated using the innovative deepfake therapy platform, after evidence-based trauma-focused therapy had been of limited effect on their negative moral emotions and cognitions. Because moral injury involves different domains including negative attributions

(such as self-blame), negative moral emotions (such as guilt), social withdrawal, inability to forgive, and PTSD symptoms, we measured self-blame and self-forgiveness, PTSD symptoms, empowerment and negative and positive emotions before and after the intervention. Given that currently, most instruments of moral injury focus on the experiences of military veterans, no integral moral injury questionnaire was used.

Methods

Procedure

Both patients had repeatedly been exposed to childhood sexual violence, and were diagnosed with PTSD as measured with the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5; Dutch version (11). They received a brief intensive trauma-focused treatment program lasting 8 days. This treatment program contains two first line trauma-focused treatments for PTSD (eight sessions prolonged exposure and eight sessions EMDR therapy), in combination with physical activity and psycho-education. For more detailed information about this treatment program, we refer to (12). After this trauma-focused treatment program, the patients did not fulfill the diagnostic criteria for PTSD (CAPS-5) anymore. However, it appeared that at 6-month follow-up they still struggled with negative moral emotions and cognitions about themselves in relation to the perpetrator (such as anger and self-blame), and therefore, we invited them to undergo a novel intervention using artificial intelligence ("deepfake") technology. They signed an informed consent form, and both 1 week before the intervention and 1 week after the intervention they filled in the outcome measures at home; that is, the Posttraumatic Cognitions Inventory (PTCI), the Heartland Forgiveness Scale, and the PTSD Checklist (PCL-5). In addition, directly before and after the deepfake intervention, the patients filled in two state measures: the Positive and Negative Affect Schedule (PANAS) and the Social Comparison Scale. The deepfake intervention was situated in a lab at 3DUniversum (spin-off of the University of Amsterdam).

Instruments

Outcome measures (one week before and after the intervention)

Self-blame

The Posttraumatic Cognitions Inventory PTCI; (13, 14) is a self-report measure with 33 items assessing trauma-related negative cognitions. We only report the data of the subscale self-blame (five items). No cutoff scores are available, but participants with trauma and no PTSD have a median score of 1.00, and with PTSD 3.20. The PTCI has good internal consistency and validity.

Self-forgiveness

The Heartland Forgiveness Scale (15) is a self-report measure with 18 items assessing forgiveness. We report the self-forgiveness scale data which contains six items. The range of scores is 6–42, and scores above 29 are considered an indication that one is usually forgiving of oneself. The scale has good reliability and validity.

PTSD symptoms

The PTSD Checklist PCL-5; (16) was used as a self-report measure to measure the severity of the PTSD symptoms. It consists of 20 items (range total score 0–80). Generally, a cutoff score of >33 is used as an indication of PTSD. The PCL-5 has high internal consistency and good validity (17).

State measures (immediately before and after the intervention)

Empowerment

We used (an adapted version of) the Social Comparison Scale (18) to measure how the patient relates to the perpetrator in terms of power and strength. This measure contains 11 items (range 1–10). Examples of items are: *"In relationship to the perpetrator I feel…"* with bipolar response categories between "weak" (1) and "strong" (10), and between "without self-confidence" (1) and "full of self-confidence" (10). The scale has been found to be reliable. No cutoff-scores are available, but a clinical group scored 38.90, while a control group scored 64.67 on the total scale (ranging from 11 to 110).

Positive and negative emotions

The Positive and Negative Affect Schedule (PANAS) is a self-report questionnaire containing 10 items about positive and 10 items about negative emotions at a specific moment (19). The range for both scales is 10–50. No cutoff scores are available, but in the original study mean scores for the Positive Affect Score was 33.3 and for the Negative Affect Score 17.4.

Intervention

The women received one session of 90 min, and could talk *via* ZOOM with the deepfaked perpetrator (see Figure 1). Before the intervention the women sent a picture of the perpetrator to the deepfake therapy platform that converted this picture in a video of the perpetrator using deepfake technology. The patient was in one room sitting behind a laptop, and was connected *via* ZOOM with the deepfaked perpetrator who was sitting behind a laptop in another room. The role of the perpetrator was fulfilled by a clinical psychologist who was trained in working with traumatized patients. The therapist answered the

questions of the women in the role of the perpetrator. During the Zoom session, the deepfaked face of the perpetrator was controlled by the voice of the therapist. The voice of the therapist causes the deepfaked face of the perpetrator to make mouth movements that mimic the therapists' voice. In this way, the therapist controls the deepfaked face directly and live, enabling an interactive conversation. The voice of the therapist was not deepfaked, i.e., the voice of the deepfaked perpetrator was the voice of the therapist.

Some weeks before the intervention, the patients could prepare themselves at home, and they were instructed that they could say and do anything they wanted, and could interrupt or stop the intervention at any time they wished. The preparation was facilitated with a standard list of questions and themes that was specifically developed for use with the deepfake technology, and was loosely based on questions that are used within the setting of real-life victim-perpetrator confrontations.

Examples of the questions that were included are; What do you want to say to the perpetrator about your feelings, or about the (emotional) consequences of the traumatic event(s) on your daily functioning? What do you want to ask the perpetrator about choosing you as a victim? During the intervention another clinical psychologist was present whom the patients could consult at any time.

The therapist in the role of the perpetrator was instructed to act as an empathic person, and to reduce self-blame and enhance self-forgiveness of the victim. The therapist did not know what the victim wanted to say or ask, and his reactions were facilitated with a manual containing standard messages. Examples of the theme of these messages were; I did not realize what I did and how much impact this would have for you and I am to blame, you are not to blame.

Results

Case 1 Jill

The first patient was a 36-years-old woman, who was sexually and physically abused during her teenage years. When she was 15 years old, she took an after-school job in a local shop. She confided in her boss about her emotions regarding a friend who was terminally ill. Her boss, who was older, sexually assaulted her repeatedly when she was at work, humiliated her, and was physically abusive. She felt betrayed that he assaulted her during that vulnerable time in her life while she trusted him. At that time, she never told anyone about the abuse, and she pretended that everything was okay. She was diagnosed with PTSD, avoided the shop the perpetrator worked in, was hypervigilant, and had negative self-related cognitions and emotions. Prior to this intensive treatment program, she received EMDR therapy twice, without any result. She did not use any medication. During the intensive trauma-focused treatment, including prolonged exposure and EMDR therapy, she was confronted with the memories of the sexual violence and a picture of the perpetrator. Also, negative moral cognitions and emotions, such as guilt, shame and self-blame were successfully targeted during these sessions, for instance with cognitive processing and cognitive interweaves. Her PTSD-symptoms decreased and at posttreatment the PTSD diagnosis was in remission. However, she still could not forgive herself for not telling anyone about the sexual violence, and blamed herself for not having done the "right" things at that time, for instance tell anyone or leave the job. She also felt anger, because she felt betrayed by the perpetrator. Her motivation to confront herself with the perpetrator using deepfake, was that the perpetrator was still working in her neighborhood, and she still avoided the shop where she was abused, being fearful to be confronted with him. It felt like he still had power over her.

During the deepfake confrontation, Jill was emotional and cried. She was nervous and fearful to be confronted with the perpetrator. In the beginning of the confrontation, she was trembling and seemed confused, had trouble finding the right words, and avoided eye-contact with the perpetrator. As the conversation progressed, she expressed more anger and was able to clearly state her opinion of him.

Jill: "Uhm…When I was driving to this appointment…I was thinking.…This is difficult for me…I wanted to say some things to you…uhm…how you…uhm…I don't know, how this could have happened, I don't know, uhm.… I think my question is: why did you do this? You knew that my friend was going to die and that I was vulnerable, and despite that, you assaulted me".

Perpetrator: "Yes, looking back I realize that I took advantage of that situation, and I was selfish by doing that. It had nothing to do with you, it was not your fault".

Jill: "Indeed, I have learned in therapy that it is your fault, and only yours ……You don't have a clue about how this affected my life".

Perpetrator: "You are right about that, I never realized what I did to you, I was only focused on myself. I am alarmed to hear how much impact this had on you and your life, this should never had happened".

Jill: "I will never forgive you for what you did to me. I don't want revenge or something, but I really hope you stay away from me (is crying). That would give me peace. When my burden is symbolized in a brick, I would like to give this brick to you, so that you feel this burden every day from now on, and that I can get rid of it (emotional)".

Perpetrator: "Yes, if someone has to suffer from this, it should be me, you're right".

Jill: "I want to feel strong when I am confronted with you, I want to feel bigger than you, I see you as the loser in this situation. You are weak".

Perpetrator: "I feel weak, indeed, and you are strong and brave. I admire you, how you coped with it and rebuilt your life".

Jill: "I want to let it go. I am happy now".

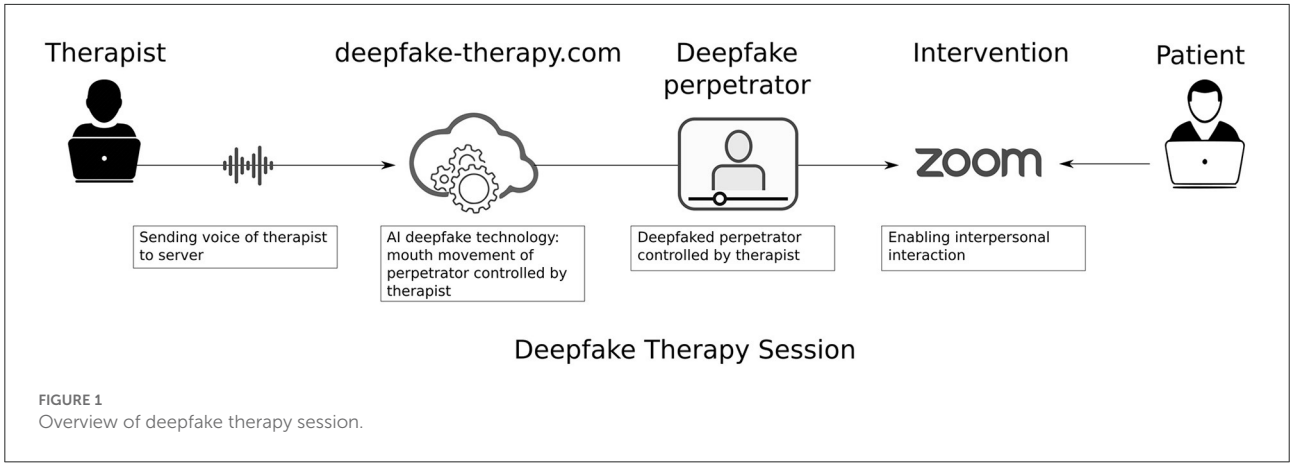

FIGURE 1
Overview of deepfake therapy session.

Perpetrator: "You deserve that".

Patient perspective

This deepfake experience was emotional for me, and it helped me a lot to be confronted with him, and to experience that he was no longer a man to be afraid of. It felt different than imaginal exposure, looking at his picture, or writing a letter to him, as I did in my previous therapies. His image was "alive" now, and he felt real to me. It was scary to speak with him in the beginning, but when I got used to it, I felt in control. I am much stronger now, and I pity him. I realized that he's the loser, not me. And even though I already knew that I did not have to blame myself, I now really felt it deep inside of me. After this session I visited the shop where he worked and where it all happened, and I no longer was afraid to do so.

Outcome and state measures Jill

See Table 1 for an overview. Immediately after the deepfake session, Jill showed more positive and less negative emotions, and an increase in self-empowerment. 1 week after the deepfake session she showed less self-blame, more self-forgiveness, and a further decrease in PTSD symptoms.

TABLE 1 Outcome and state measures during and after the deepfake session.

		Pre	Post	(indications of) normal range of score
Jill				
	Outcome measures			
	Self-blame	4.50	2.00	<1.00
	Self-forgiveness	23	29	>29
	PTSD symptoms	11	4	<33
	State measures			
	Empowerment	59	95	>65
	Positive emotions	27	41	>33
	Negative emotions	21	8	<17
Meg				
	Outcome measures			
	Self-blame	3.20	1.20	<1.00
	Self-forgiveness	23	32	>29
	PTSD symptoms	47	16	<33
	State measures			
	Empowerment	52	94	>65
	Positive emotions	33	40	>33
	Negative emotions	27	18	<17

Case 2 Meg

Meg was a 48-years-old woman. As a child and teenager, she was repeatedly sexually abused by a group of older boys who also forced her to sexually abuse other children. Consequently, Meg felt that this group made her a perpetrator as well as a victim. She was diagnosed with PTSD, avoided to think and talk about the sexual abuse, had severe negative cognitions about herself, showed angry outbursts and had sleep problems. Prior to this intensive treatment program, she received several EMDR therapy sessions and she is using sertraline 100 mg/day, with no effect. During the prolonged exposure and EMDR therapy sessions of the intensive treatment program, she was repeatedly confronted with her memories of the abuse and pictures of the abusers. Negative moral emotions such as shame and guilt were successfully targeted, for instance by imaginably expressing anger to the perpetrator. After the trauma-focused treatment program, her PTSD symptoms were in remission. However, at 6 months follow-up she relapsed, and was again diagnosed with PTSD. She explained her relapse by the fact that she could not

get over the feeling that she failed to stand up for herself and felt guilty about abusing other children.

During the deepfake intervention, she wanted to confront the main perpetrator, the leader of the group. Her main question was why he had chosen her, and whether he realized what he had done. Meg was really angry at the perpetrator, and the more he answered her questions and explained the situation, the angrier she got.

Meg: "What in the world were you thinking as a 15-year-old boy when you assaulted me, a 4-year-old little innocent girl?".

Perpetrator: "I did not realize at that time what I did to you. I was only involved with myself. It alarms me to hear how much impact it had on your life".

Meg: "Do you realize what you did to a 4-year-old child?".

Perpetrator: "At that time? No. I now realize that it was disgusting what I did".

Meg: "Did you carefully plan this and choose me?".

Perpetrator: "No, it could have been any child".

Meg: "I was only 8 years old when you forced me to have sex with another child. You were an adult at that time. Why did you do this? I still feel guilty about it".

Perpetrator: "Yes, you are right, I should never have done this, I am sorry. And I forced you to do this, it was not your fault".

Meg: "Do you know what you caused? I struggled with this my whole life, for 40 years now".

Perpetrator: "I am sorry to hear that. I want you to know that it was not your fault, it was my fault, I am the guilty one. It was disgusting what I did. I feel very bad about it, every day".

Meg: "Well, you should feel bad. But it pisses me off that you feel self-pity now. I suffered more than you did, I always feel scared, I feel dirty every day".

Perpetrator: "I understand that. I believe that you are really strong that you've survived this. I feel like a loser, but I've learned from it".

Meg: "You are an asshole, you destroyed so many lives, you ruined my life. You caused so much damage. I hope you have a miserable life, and I hope that I never have to see you again. I don't want to feel bad about myself anymore because of what *you* and *only you* did. I hope you'll drop dead" (Meg closes the laptop with a smash).

Patient perspective

"This deepfake experience really had an impact on me, because for the first time I was able to stand up for myself, and express my anger toward him. Although I already expressed my anger in imagination during previous trauma-focused treatment sessions, this deepfake setting made it more real to me, and therefore, it's a very powerful tool. Although I knew it was fake, I really had the feeling that I was talking to him. I felt scared, and afterwards I felt my sweaty back, but nevertheless, for the first time I felt the power to overrule him. This intervention made me realize that it had nothing to do with me, and I was just a random victim, it could have been anyone else. I did nothing wrong. They did. If I could choose, I would have had more deepfake sessions with all the perpetrators to tell them how wrong they were, and that they could not hurt me anymore".

Outcome and state measures Meg

See Table 1 for an overview. Immediately after the deepfake session, Meg showed more positive and less negative emotions, and an increase in empowerment. 1 week after the deepfake session she showed less self-blame, more self-forgiveness, and her PTSD-symptoms were in remission.

Discussion

In this article two cases were presented using deepfake technology in the treatment of sexual violence-related moral injury and PTSD. The deepfake intervention aimed at overcoming negative moral emotions and cognitions, and resulted in less self-blame and more self-forgiveness. Also, PTSD symptoms decreased, especially negative cognitions and avoidance behavior. What is more, self-empowerment increased, which is important, given that due to a perceived power imbalance, many victims of sexual violence have a lack of empowerment when confronted with (reminders of) the perpetrator.

Both patients were satisfied with this intervention, were able to tolerate this 90-min session, and would highly recommend it to others. Although they were aware that they did not actually talk with the perpetrator, they both experienced the deepfake intervention as a real-life confrontation with the perpetrator, with real-time interaction.

Therefore, they experienced it as a double valuable add-on intervention to techniques that are often used in other therapies, such as confrontation with static stimuli like photos of the perpetrator, (during exposure therapy), or imaginal confrontations (during EMDR-therapy sessions). One advantage of deepfake confrontation between a victim and a perpetrator as opposed to real life confrontation, is that with deepfake, the perpetrator (the therapist) is always responding with empathy toward the victim, and therefore negative reactions, such as revictimization, can be avoided and safety of the victim is guaranteed. It is however important to also guide the patient after this intervention, especially when the patient is planning to have a real-life confrontation with the perpetrator, to prevent possible adverse effects.

Trauma-focused treatments such as prolonged exposure have been shown to be effective in reducing PTSD symptoms in patients with moral injury [e.g., (20, 21)]. However, in some

cases, like the cases presented here, additional interventions may be needed to specifically target negative moral emotions and cognitions. Other treatments that specifically focus on relieving moral injury are promising [e.g., Adaptive Disclosure; (22)]. However, in the above-mentioned studies, the outcome measure was limited to PTSD-symptoms including trauma-related guilt, while these cases are one of the first that specifically address changes in negative moral cognitions and emotions such as self-forgiveness, empowerment, and self-blame.

Other strengths are that the deepfake intervention was brief (one session), is a safe intervention, and had strong effects. The intervention may be adapted to the different positions that patients may have had during the PMIE as someone who committed a transgressive act, witnessed or failed to prevent such an act, or fell victim to such an act. Therefore, it is a promising new treatment technique for moral injury. However, it may not be suitable for every patient, and case by case careful considerations have to be made. Also, long term effects are unknown, and we do not know whether our results are generalizable to participants suffering from other trauma types. In addition, ethical issues have to be considered, for instance sharing private information with private companies. In the technology we used, all materials including photos could be included or deleted by the therapist.

More studies are needed, especially controlled studies [see also (23)] that include moral injury questionnaires. We conclude that confrontation with perpetrators using deepfake technology is a promising (add-on) treatment tool for patients with moral injury.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

AM and TK designed the study and wrote the protocol. AM and FH wrote the first draft of the manuscript. All authors discussed the results, critically revised this manuscript, and approved the submitted version of this manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2022.882957/full#supplementary-material

References

1. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003

2. Shay J. Moral injury. *Psychoanal Psychol.* (2014) 31:182. doi: 10.1037/a0036090

3. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral injury: an integrative review. *J Trauma Stress.* (2019) 32:350–62. doi: 10.1002/jts.22362

4. Ter Heide FJJ. Empathy is key in the development of moral injury. *Eur J Psychotraumatol.* (2020) 11:1843261. doi: 10.1080/20008198.2020.1843261

5. Currier JM, Drescher KD, Nieuwsma J. Future directions for addressing moral injury in clinical practice: concluding comments: In: Carrier JM, Drescher KD, Nieuwsma J, editors. Adressing Moral Injury in Clinical Practice. Washington, DC: American Psychological Association (2021). p. 261–271.

6. Hansen T, Umbreit M. State of knowledge: four decades of victim-offender mediation research and practice: the evidence. *Conflict Resolut Q.* (2018) 36:99–113. doi: 10.1002/crq.21234

7. Pizzoli SFM, Monzani D, Vergani L, Sanchini V, Mazzocco K. From virtual to real healing: a critical overview of the therapeutic use of virtual reality to cope with mourning. *Curr Psychol.* (2021) 4:1–8. doi: 10.1007/s12144-021-02158-9

8. Frankfurt SB, DeBeer BB, Morissette SB, Kimbrel NA, La Bash H, Meyer EC. Mechanisms of moral injury following military sexual trauma and combat in post-9/11 US war veterans. *Front Psychiatr.* (2018) 9:520. doi: 10.3389/fpsyt.2018.00520

9. Maguen S, Griffin BJ, Copeland LA, Perkins DF, Richardson CB, Finley EP, et al. Trajectories of functioning in a population-based sample of veterans: contributions of moral injury, PTSD, and depression. *Psychol Med.* (2020) 50:1–10. doi: 10.1017/S0033291720004249

10. Evans WR, Walser RD, Drescher KD, Farnsworth JK. *The Moral Injury Workbook: Acceptance and Commitment Therapy Skills for Moving Beyond Shame, Anger, and Trauma to Reclaim Your Values*. Oakland, CA: New Harbinger Publications. (2020).

11. Boeschoten MA, Van der Aa N, Bakker A, Ter Heide FJJ, Hoofwijk MC, Jongedijk RA, et al. Development and evaluation of the Dutch clinician-administered PTSD scale for DSM-5 (CAPS-5). *Eur J Psychotraumatol.* (2018) 9:1546085. doi: 10.1080/20008198.2018.1546085

12. Van Woudenberg C, Voorendonk E, Bongaerts H, Zoet H, Verhagen M, Lee C, et al. Effectiveness of an intensive treatment programme combining prolonged exposure and eye movement desensitization and reprocessing for severe post-traumatic stress disorder. *Eur J Psychotraumatol.* (2018) 9:1487225. doi: 10.1080/20008198.2018.1487225

13. Foa EB, Ehlers A, Clark DM, Tolin DF, Orsillo SM. The posttraumatic cognitions inventory (PTCI): Development and validation. *Psychol Assess.* (1999) 11:303. doi: 10.1037/1040-3590.11.3.303

14. Van Emmerik A, Schoorl M, Emmelkamp P, Kamphuis J. Psychometric evaluation of the Dutch version of the posttraumatic cognitions inventory (PTCI). *Behav Res Ther.* (2006) 44:1053–65. doi: 10.1016/j.brat.2005.07.002

15. Thompson LY, Snyder CR, Hoffman L, Michael ST, Rasmussen HN, Billings LS, et al. Dispositional forgiveness of self, others, and situations. *J Pers.* (2005) 73:313–60. doi: 10.1111/j.1467-6494.2005.00311.x

16. Boeschoten M, Bakker A, Jongedijk R, Olff M. *PTSD Checklist for the DSM-5 (PCL-5)–Nederlandstalige Versie*. Diemen: Arq Psychotrauma Expert Groep. (2014).

17. Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL. The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *J Traumatic Stress.* (2015) 28:489–98. doi: 10.1002/jts.22059

18. Allan S, Gilbert P, A. social comparison scale: psychometric properties and relationship to psychopathology. *Pers Individ Dif.* (1995) 19:293–9. doi: 10.1016/0191-8869(95)00086-L

19. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol.* (1988) 54:1063. doi: 10.1037/0022-3514.54.6.1063

20. Held P, Klassen BJ, Brennan MB, Zalta AK. Using prolonged exposure and cognitive processing therapy to treat veterans with moral injury-based PTSD: two case examples. *Cogn Behav Pract.* (2018) 25:377–90. doi: 10.1016/j.cbpra.2017.09.003

21. Evans WR, Russell LH, Hall-Clark BN, Fina BA, Brown LA, Foa EB, et al. Moral injury and moral healing in prolonged exposure for combat-related PTSD: a case study. *Cogn Behav Pract.* (2021) 28:210–23. doi: 10.1016/j.cbpra.2020.12.006

22. Litz BT, Rusowicz-Orazem L, Doros G, Grunthal B, Gray M, Nash W, et al. Adaptive disclosure, a combat-specific PTSD treatment, versus cognitive-processing therapy, in deployed marines and sailors: a randomized controlled non-inferiority trial. *Psychiatry Res.* (2021) 297:113761. doi: 10.1016/j.psychres.2021.113761

23. Birckhead B, Khalil C, Liu X, Conovitz S, Rizzo A, Danovitch I, et al. Recommendations for methodology of virtual reality clinical trials in health care by an international working group: iterative study. *JMIR Ment health.* (2019) 6:e11973. doi: 10.2196/11973

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Toward a dual process model of moral injury and traumatic illness

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Moral injury has emerged as a topic of significant research and clinical interest over the last decade. However, much work remains to be done to comprehensively define the moral injury construct, with implications for understanding the etiology and maintenance of moral injury, its symptoms, associations with and distinctions from traumatic illness, and treatment approaches. We provide a brief overview of the existing moral injury literature and introduce a novel dual process model (DPM) of moral injury and traumatic illness. The DPM posits an event exposure which may satisfy DSM-5 posttraumatic stress disorder (PTSD) criterion A, potential morally injurious event (PMIE) criteria, or both, followed by individual role appraisal as a perpetrator through action or inaction, a witness, a victim, or a combination of the these. Role appraisal influences symptoms and processes across biological, psychological, behavioral, social, spiritual/religious, as well as values, character, and identity domains to support a label of traumatic illness, moral injury, or both. The DPM provides a flexible analytical framework for evaluating symptoms associated with moral injury and traumatic stress and has important implications for treatment. The most thoroughly reviewed evidence-based interventions for traumatic stress hinge on exposure and habituation mechanisms to manage dysregulation of fear and memory systems, but these mechanisms often do not address core domains of moral injury identified in the DPM, including spiritual, religious, values, character, and identity domains as these exist largely outside of the putative fear network. We provide brief vignettes to illustrate the practical application of the DPM and argue that adjunct and stand-alone approaches which address values and character domains, leveraging principles of Stoicism, non-judgment of experience, acceptance, and values-oriented action, are more likely than traditional trauma treatment approaches to positively affect moral injury symptoms.

KEYWORDS

posttraumatic stress disorder (PTSD), veterans, trauma, stress, moral injury

Introduction

The dual process model of moral injury and traumatic illness traces a four-stage evaluative framework by which event-exposures lead to traumatic illness, moral injury, or both. A final, fifth stage sketches intervention and healing approaches targeted toward, in the case of traumatic illness, classical exposure-habituation models to regulate disruptions in fear and memory processing and, in the case of moral injury, novel approaches to enhance acceptance, facilitate cognitive and emotional flexibility, and develop meaning to heal disruptions in religious/spiritual and identity, values, and character domains. Here and throughout the text, we use the term "traumatic illness" to refer to the family of trauma and stressor related psychological disorders associated with trauma experiences, the most well-known of which is posttraumatic stress disorder [PTSD; (1)].

Defining moral injury

Military service members and veterans can suffer an exacting physical and psychological toll from combat (2). Particularly well established are the negative health effects of traumatic combat stressors, which involve the experience or threat of serious injury or death and can result in PTSD (1, 3). Several rich psychological theories have been developed in recent decades to elucidate the pathways through which traumatic stressors can lead to the development of traumatic illness, particularly PTSD (4). The most prominent of these theories, such as the Emotional Processing Theory and the Cognitive Theory of PTSD (5, 6), investigate the effects of traumatic stressors on an individual's memory and fear processing systems as well as beliefs about safety and personal agency in the world. Importantly, as these theoretical models of PTSD inform prominent interventions targeting psychologically distressed veterans (7, 8), the efficacy of these interventions may be limited if models do not accurately reflect the range of combat-related stressors and their heterogeneous impacts.

In relatively recent years, practitioners and researchers working with military and veteran populations have investigated not only psychological but *moral* distress that can result from profoundly disturbing experiences, and they have dubbed such distress *moral injury* (9). The earliest descriptions of moral injury are typically attributed to United States Department of Veterans Affairs (VA) psychiatrist and researcher Shay (10), who first conceptualized moral injury while studying Homer's *Iliad*. Shay's early conceptions of moral injury focused on the impact of moral failures by those in authority in the context of the Vietnam War; he drew parallels between experiences of betrayal and their consequences depicted in the *Iliad* and the effects of failures of United States leadership on service members in Vietnam. Subsequently, Litz et al. (11) broadened the study of moral injury to focus more deeply not just on the individual moral consequences of the failures of trusted others but also on moral transgressions committed by individuals themselves (e.g., killing a non-combatant) and moral failures by inaction (e.g., failing to prevent disproportionate violence). While studies of moral injury have since proliferated and the field has expanded to incorporate the work of scholars from a wide range of medical, behavioral, and social science disciplines, the field is still relatively nascent and fundamental conceptual questions require investigation and clarification (9).

Specifically, as researchers have sought to develop a nuanced understanding of moral injury, there is a need to further clarify both the types of events (i.e., moral stressors) that can lead to moral injury and the effects that those experiences can have on an individual [i.e., the resulting distress, or moral injury outcomes; (9, 12)]. There is a parallel to be drawn here with the study of traumatic stress and the distinction between traumatic events (i.e., fearing for one's life during combat) and the potential effects of such events (i.e., PTSD). With respect to moral injury, precipitating events have been called *potentially morally injurious experiences* [PMIEs; (13)]. Conceptions of what constitutes PMIEs are still developing. Shay, for example, came to define a PMIE as a betrayal of justice by a person in authority in a high-stakes situation (14). Litz's et al. (15) definition, which has gained prominence, defines PMIEs as experiences that involve "perpetuating, failing to prevent, bearing witness, or learning about acts that transgress deeply held moral beliefs and expectations" (p. 697). While contemporary empirical studies of PMIEs tend to incorporate elements of both Shay's (i.e., betrayal) and Litz et al.'s conceptions (i.e., perpetuating or witnessing transgressions), efforts to determine the validity of PMIE constructs are still ongoing (9, 13). Notably, as is implied by the phrase "*potentially* morally injurious experiences," not everyone who experiences a PMIE goes on to develop moral injury.

Additionally, efforts to characterize the effects of PMIEs on individuals who *do* go on to develop moral injury (i.e., moral injury outcomes) are also ongoing. Shay [(16); p. 26] regarded the *Iliad* as "the story of the undoing of Achilles' character" and likewise believed the veterans with moral injury whom he treated had developed a character wound as a result of their experiences (14). However, most prominent conceptions of moral injury have been developed by clinician-researchers who have tended to narrow the scope and focus on sequelae that typically fall within the clinical purview (17). For example, Litz and colleagues (15) cite PTSD symptoms, difficult emotions (e.g., shame, anxiety, and hopelessness), and self-harming and self-handicapping behaviors (e.g., suicidality and substance use) as several defining features of moral injury. Researchers have since linked PMIE exposure to various physical (18), behavioral health (19), sociocultural (20, 21), and spiritual (22) outcomes. However, there remains a fundamental lack of theoretical and empirical work investigating the role of values,

character, and identity in the development of moral injury and its consequences despite the central importance of character in Shay's original conceptualization. Such an investigation is critically important for two key reasons: first, to delineate the contours of the moral injury construct and identify areas of overlap and distinction from traumatic illness, and second, to identify potential symptom and process domains which must be targeted to facilitate moral healing. If what is harmed in moral injury is, at least in part, character and moral identity derived from moral values, the role of these domains in the experience of moral injury must be understood so they may be addressed in a healing process.

A dual process model of moral injury and traumatic illness

To better understand pathways leading from (1) adverse experiences, including PMIEs and traumatic stressors, to (2) role appraisals and (3) associated symptoms and processes, to (4) useful diagnostic or descriptive labels, and (5) approaches to intervention and healing, we propose a dual process conceptual model of moral injury and traumatic illness. Under the dual process model (DPM) framework, we explore the pathways through which moral failures can result in a pattern of experience best characterized by moral injury, both alongside and in contrast to the pathways through which traumatic events can lead to traumatic injury and traumatic illness. We argue that while both moral injury and traumatic illness can follow from discrete events or the same single event and can exist either alone or simultaneously (e.g., in a comorbid fashion), their developmental pathways are best characterized by different symptom and process domains, resulting in a continuum of subjective experience characterized by varying intensity of moral injury and traumatic illness. Finally, we explore implications of the DPM for intervention and healing in the context of moral injury. **Figure 1** provides an overview of the DPM.

Event-exposure

The event-exposure stage of the dual process model refers to a consequential initial event (or accumulation of experiences) consistent with the PTSD criterion A of the *Diagnostic and Statistical Manual of Mental Disorders* [5th ed.; DSM–5; (1)], or the definition of a PMIE (9, 13), or both. Examples of traumatic experiences abound in the literature, from physical and sexual violence to combat in wartime to natural disaster. Our goal at this stage is not to provide an exhaustive list of traumatic experiences but to signal a broad set of events generally understood in the clinical literature to provoke intense and overwhelming emotion that disrupts normative emotion regulation and memory encoding processes (5, 6). Classically, experiences which satisfy DSM criterion A are characterized by the emotions like fear and shame (DSM-5), but this need not be the case in order for the classical PTSD processes to develop. Consistent with previous accounts of moral injury (11, 12), we argue that an event-exposure may be a PMIE if it involves a meaningful moral transgression, defined as a violation of closely held moral values or beliefs, with salient consequences (11). As is the case with PTSD, expression of specific symptoms and processes due to the event-exposure is required in order to make a determination about whether a PMIE is in fact a morally injurious event (12). In other words, moral injury is identified by exploring domains of human experience over time and not by discrete events. Understanding the interaction between an event-exposure, the individual's appraisal of their role in the event, and the nature of the biological, psychological, social, spiritual/religious, and values, character and identity symptoms and processes that follow is required in order to appropriately determine whether an individual is experiencing traumatic illness, moral injury, or both.

Role appraisal

Researchers concerned with moral injury have developed a taxonomy of individual role appraisals following exposure to adverse experiences (i.e., traumatic events or PMIEs) corresponding to perpetrator, witness, and victim, though these appraisals are dynamic and may overlap and change with time (11, 17). In the context of a PMIE, the perpetrator role is often characterized by acting or failing to act in the context of a morally transgressive event. The perpetrator appraisal, whether through an act of commission or omission (23) burdens the individual with a sense of personal responsibility for moral failure. The individual's character, identity, and narrative of their own morality and values is called into question (17). The witness role is defined by the individual's direct experience of another's moral transgression, but one in which they do not view themselves as having had the power to intervene. The witness appraisal, in distinction to the perpetrator appraisal, locates the moral transgression at the heart of a PMIE externally — rather than destabilizing internal moral architecture, the witnesses' external moral framework, characterized by faith in important others (e.g., leaders, colleagues), rules and institutions, even society more broadly, is destabilized. The victim appraisal, like the witness appraisal, locates the responsibility for moral transgression at the heart of a PMIE externally. The victim appraisal may confer a more acute sense of personal violation and betrayal, destabilizing externally located moral frameworks and, potentially, confidence in moral judgment about trusted others.

Role appraisal influences symptoms and processes across biological, psychological, behavioral, social, spiritual/religious, and, consistent with Shay's (24) account, values, identity, and

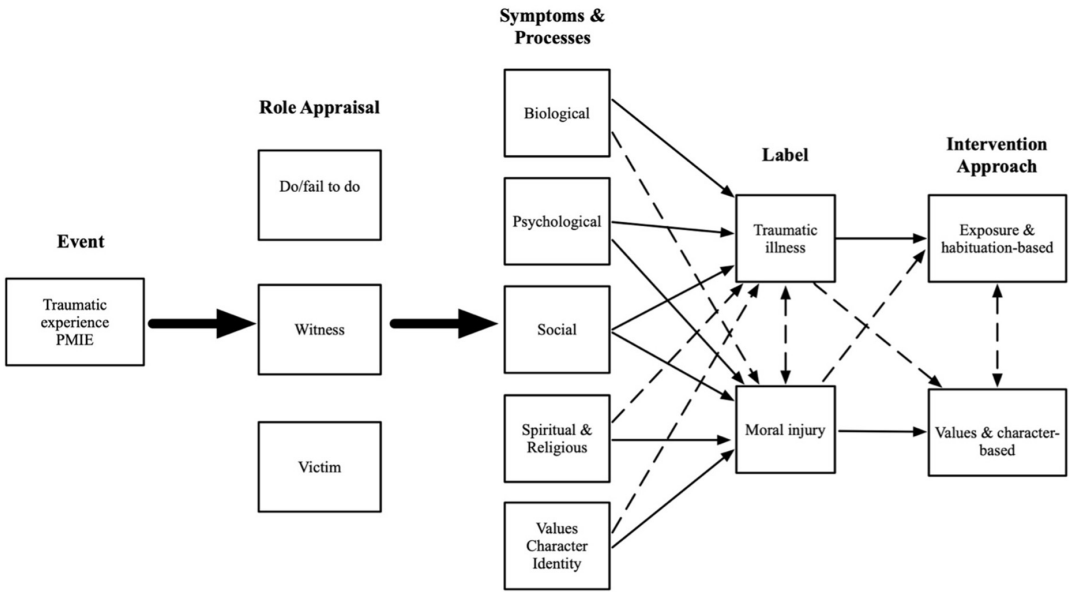

FIGURE 1
Conceptual diagram of the dual process model of moral injury and traumatic injury. The two large solid arrows indicate that events can lead to any and all role appraisal, and that any and all role appraisals can lead to any and all symptoms and processes. Thin solid arrows indicate a primary/strong link between individual symptoms and processes and labels and intervention approaches. Thin dashed arrows indicate a secondary/weak link between individual symptoms and processes and labels and intervention approaches.

character domains. In general, it is expected that perpetrator appraisal activates internally directed symptoms and processes like shame, guilt, and crises of moral identity and values, whereas witness or victim appraisals activate externally directed symptoms and processes like betrayal, anger, and crises of faith in external structures of morality (12). While we have described role appraisal in the context of a PMIE, appraisal also has a role in the development and maintenance of traumatic illness. In this context, appraisal typically describes evaluation of threat and danger, and problematic appraisals reflect deficient integration of traumatic memories leading to intrusive thoughts and attendant emotional and physiological dysregulation (25–27). Thus, while individuals may certainly identify themselves as perpetrators, witnesses, and victims in the context of traumatic experiences, the literature tends to characterize appraisal in the context of traumatic illness as evaluating the dangerous event and the dangerous world; in the context of moral injury, appraisal evaluates the moral self and the standard-bearers of the moral order.

Finally, we argue that moral injury may compel an individual to take on non-discrete (e.g., overlapping) roles as a function of *space* and *time* (17). Briefly, space is simply the physical location of a given PMIE. Within a particular space, an individual can begin in one role (e.g., witnessing a battle buddy die) and can potentially take on other roles as they move within that same space (e.g., perpetrator in retaliatory act). In the aftermath of an PMIE, time moves an individual to take on an additional role: that of a witness. This is because the rumination process compels an individual to bear witness to the event. Regardless of an individual's initial role(s) (perpetrator, victim, and/or witness), memories serve a forcing function of situating an individual as an actor-observer of the same event.

Symptoms and processes

The DPM posits five symptom and process domains that can be examined and applied to individual experiences to produce a profile conditioned on the role appraisal that follows a PMIE or traumatic experience. These five domains are: biological, psychological, social, spiritual/religious, and values, identity and character. A strength of the dual processes model is its ability to account for the complex interplay of symptoms and processes across these domains to support a best-fit profile consistent with traumatic illness, moral injury, or both.

Biological domain

While moral injury has emerged as an important topic in the psychological and behavioral health literature, investigators and clinicians are still working toward identifying biological markers and other indicators associated with moral injury. In contrast, there has been enormous interest in refining biological accounts of traumatic illness since the early 2000s (28, 29). While these accounts must, like other perspectives, grapple with the enormous heterogeneity of symptom presentations under the traumatic illness framework, biological studies of

traumatic illness and PTSD in particular have highlighted several properties of the disorder, including alterations in neuroendocrine system function (e.g., low cortisol and high epinephrine levels, higher autonomic response following exposure to trauma cues) and alterations in brain structure (e.g., reduced hippocampal and cortical volume) associated with PTSD diagnosis (30, 31). Biologically driven investigations of PTSD have also highlighted the interplay between genetic risk factors, environmental exposures, and epigenetic processes that may undergird risk for the development of PTSD following exposure to traumatic experiences (32).

While contemporary descriptions of traumatic illness and PTSD have moved beyond relatively narrow fear and memory-based sequelae following exposure to life-threatening events or sexual assault, biological accounts nevertheless highlight the important role of systems and structures associated with fear, stress, arousal, memory, and learning in the etiology and maintenance of PTSD (28, 33). When the physiological expressions of these processes are evident in the context of a traumatic event exposure and additional psychological symptoms strongly associated with traumatic illness, the presence of traumatic illness is strongly indicated. Conversely, we argue that moral injury is better defined, at least for now, by non-biological domains. Furthermore, strong evidence has yet to connect symptoms like hyperarousal and reexperiencing, which are amenable to biological explanation of threat-response system disruption, to PMIEs and their sequelae, leading some researchers to hypothesize that moral injury may be mediated by pathways distinct from threat-based traumatic illness (34, 15).

Psychological domain

While trauma and stressor-related disorders comprise an entire diagnostic cluster in the DSM 5 (2013), PTSD remains the core expression of traumatic illness. PTSD is a psychological disorder and is recognized and understood by its four symptom clusters: reexperiencing symptoms, avoidance symptoms, alterations in arousal and reactivity, and with the introduction of DSM-5 (2013), negative alterations in mood and cognition. The reorganization of PTSD criteria in DSM-5 marks a significant conceptual overhaul of the disorder. The first indicator of this reconceptualization is the transplanting of PTSD from anxiety disorders category into its new category, trauma and stressor-related disorders. Second, the addition of the negative cognitions and mood symptom cluster made possible over 600,000 possible PTSD diagnostic combinations which allow an individual to meet criteria for the disorder (35) – 52% of these do not contain any symptom overlap. These changes reflect a broadening of the universe of symptoms which might characterize PTSD such that two individuals can have symptom profiles with zero overlap that both meet diagnostic criteria for the disorder (32, 36). While a larger debate about the epistemological and clinical value of these changes is beyond the scope of this manuscript, it seems plausible that less well-developed domains of human experience, like moral transgression, moral failure, and moral injury, may have been subsumed under the PTSD rubric to account for things that seem like PTSD but may reflect less well-understood patterns of symptoms and processes. Certain psychological symptoms (e.g., nightmares reliving terrifying experiences, avoidance of fear-inducing reminders of traumatic experiences) seem to function as cleaner indicators of a narrow PTSD diagnosis. However, scholars of moral injury have argued that it is plausible for an individual who has committed, witnessed, or been the victim of a moral transgression to experience unwanted thoughts or other intrusive symptoms, wish to avoid reminders of the transgression, and feel angry and isolated (11, 37). These are all symptoms associated with PTSD, but may, under the DPM, better characterize a moral injury when considered in the context of additional symptom domains. Further, while it may be argued that intrusive symptoms are less likely to present in the context of a PMIE not also accompanied by a surge of neuroendocrine activity and associated disruptions in fear and memory processing of the sort expected in near-death or other terrifying events, some PMIEs may indeed fit this characterization. Think of a drone pilot who follows commands to bomb a target and later learns he has mistakenly killed a wedding party of women and children. This pilot may experience intrusive thoughts or nightmares, depressed mood, and even increased heart rate when returning to his work station. . .but are these symptoms better characterized by PTSD or a perceived moral transgression leading to moral failure and moral injury? In the DPM, careful examination of the nature of an individual's psychological symptoms and associated narratives, in conjunction with analysis of their role appraisal and event-exposure, is required to understand whether psychological symptoms best support a diagnosis of PTSD, moral injury, or both.

Social domain

Deficits in social functioning, including interpersonal conflict, social anxiety and avoidance behavior, difficulty building and maintaining relationships, and occupational problems, are core characteristics of traumatic illnesses like PTSD (38). Similarly, in the case of moral injury and particularly in military populations, researchers have observed social disturbances associated with PMIEs and moral injury outcomes, including feelings of social isolation and rejection (20), loss of trust in authority (21), and lack of perceived social support (23). But the social process domain is critically important in any account of moral injury beyond downstream consequences of PMIEs because the moral values that must be transgressed to produce a PMIE are themselves socially derived and maintained. In their review of the social psychology of morality, Ellemers et al. (39) refer to moral values as "socially anchored," emerging from communal beliefs that define the boundaries of acceptable behavior. Thus, in critical ways, moral

injury is a social experience; it is only possible when social (e.g., moral) values are transgressed and where social harm has been done. Whether through perpetration, victimization, or witnessing, an individual who experiences a PMIE may find themselves unmoored without the social anchor that previously secured their sense of right and wrong. In the perpetrator or witness role, an individual who commits or fails to stop a moral transgression that violates salient social boundaries may feel unworthy, ashamed, afraid of the social consequences of discovery. In the victim or witness role, an individual may feel rage or disgust at a moral transgression, especially when perpetrated in an institutional context undergirded by the moral values which have themselves been transgressed, as in the case of a military service member who witnesses the killing of innocents or a devout young Catholic who witnesses abuse or is themselves abused by a priest. In these cases, the consequences of the transgression are grave, but part of what has been shaken is faith in the social prescription of morality. The core feature of the social domain is thus the clash between important social rules or values and actual behavior. In the DPM, careful exploration of the roots of social problems, their temporal links to PMIEs or traumatic experiences, and integration with other symptom and process domains, facilitate development of a holistic account of individual suffering best characterized by traumatic illness, moral injury, or both.

Spiritual and religious domain

Spirituality and religion in the context of traumatic illness and moral injury remain fertile territory for investigation. While philosophers and scholars continue to debate the contours of these constructs, for our purposes religion can be understood as a socio-cultural system of beliefs, practices, and norms that structure human interaction and provide both a framework of meaning for everyday experience and answers to metaphysical quandaries, typically in dependence on a god, gods, or other manifestation of the divine (40, 41). Spirituality is less well defined, but can be understood to refer to the human experience of meaning, purpose, and connection with the self, others, nature, the world, and even the totality of existence (42, 43). Much work examining connections between religion, spirituality, and moral injury derives from the military context and is concerned with the role of military chaplains caring for military service members, but clinicians increasingly recognize the utility of a bio-psycho-social-spiritual model for understanding human problems more broadly (42–44). Pew research data (45) show that 48% of Americans identify as religious and spiritual, 27% identify as spiritual but not religious, and 6% identify as religious but not spiritual, while only 18% identify as neither religious nor spiritual. Thus, the great majority of Americans understand their experiences of connection, meaning, and purpose to be integrated within larger religious and/or spiritual structures.

The previous symptom domains we reviewed fit within a relatively well-defined clinical conceptualization of traumatic illness and suggest a related moral injury syndrome, also defined in clinical terms, might be amenable to change through clinical tools like habituation, cognitive restructuring, and pharmacotherapy (46). The religious and spiritual domain marks a departure from this formula. When an individual with a spiritual or religious identity experiences a PMIE, the religious framework that renders the world intelligible and/or the spiritual beliefs and values that lend meaning and structure to experience can be profoundly damaged. The more deeply religious and spiritual constructs are integrated into the individual's worldview, the more likely the individual is to experience their moral suffering in these terms. Individuals whose worldviews and moral codes are structured by religious or spiritual frameworks, concepts, and language may experience PMIEs and subsequent symptoms through spiritual and religious lenses and describe these experiences using the idioms and metaphors of their religious and spiritual traditions (22). Indeed, a recent latent class analysis of warzone veterans by Currier et al. (47) identified two subgroups of those with moral injury: one subgroup whose experiences were better characterized by psychological symptoms (e.g., self-doubt) and another better characterized by spiritual struggles (e.g., with the divine). Thus, under the DPM, the emergence of religious or spiritual crisis following a salient event-exposure is a strong indicator that a moral injury has occurred. Consistent with the overarching conceptual claims of the DPM, we argue that individuals whose experiences of suffering is mediated by religious and spiritual frameworks may do better with an intervention approach that centers and is informed by these frameworks, rather than one derived from the classical clinical model for treating traumatic illness as a disruption in fear and memory that requires habituation. In other words, if the harm of moral injury is experienced in spiritual and religious terms rather than in psychological or biological terms, the tools of religion and spirituality may be important to consider when developing an intervention approach for moral injury (48). The emerging literature addressing moral injury in the context of military chaplain's spiritual helping provides support for this view (42, 49).

Values, character and identity domain

Many conceptualizations of moral injury remain rooted in clinical language because investigations of moral injury, its definition, and identifying characteristics, emerged from accounts of military veterans diagnosed with traumatic injury (11, 16). More recently, clinicians and researchers have called for a broadening of this approach to include a spiritual dimension, yielding a bio-psycho-social-spiritual model (49). However, the biological and psychological dimensions often receive the most practical emphasis in treatment contexts, meaning that assessment, diagnosis, and intervention for moral injury is

often conducted using medical and psychological tools (9, 17). In addition, the share of Americans who identify as neither religious nor spiritual, while small, is growing (50); these individuals may experience moral suffering tied not to spiritual or religious frameworks but to their own deeply held moral beliefs and identity. The DPM points toward an alternative pathway for understanding moral suffering by building on the emerging literature around spirituality in the context of moral injury and integrating a values, character, and identity domain. In this domain, a moral transgression represents failure to adhere to internal moral values, or those prescribed by an important group or institution, incurring a stain on the individual's moral character (17).

Aristotle's *Nicomachean Ethics* (51) continues to inform contemporary philosophical and psychological conceptions of virtue and character [e.g., (52–54)]. In the Aristotelian account, character is constructed over time by actions; an excellent character is forged by actions that reflect deeply held moral virtues like courage, honor, generosity, fairness, and truthfulness (17). In Shay's *Achilles in Vietnam* (2003), heroic Achilles' character is undone by the slaying of his lover Patroclus – Achilles is transformed into a raging berserker, killing and desecrating the body of his honorable Trojan enemy Hektor in front of Hektor's family. In this act, at odds with his values and identity as a paragon of Greek warrior virtue, Achilles' character is damaged and his identity destabilized. Thus, by character, we refer to an established pattern of alignment between internal values and behavior that facilitates a stable moral identity. While, as we observed earlier, internal values are often socially derived or influenced, they may also exist in opposition to perceived social mores. The defining feature of character in this account is its internal locus (i.e., the relation between the moral self the individual idealizes and the one their behavior reveals) rather than adherence to social rules.

As described previously, individuals can occupy multiple positions in moral failure events (e.g., victims, witnesses, and perpetrators), but regardless of their role or position in the event, moral failure provokes a crisis of character (16). In this crisis, the individual's character, their moral identity, maintained by the integration of moral values with actions, is damaged, either by the individuals' own actions (perpetrator), their passive presence when others violate moral values (witness), or when trusted representatives or leaders of the social betray moral values and cause harm. In each of these cases, the values that the individual perceives to be foundational to their character and moral identity are challenged with a discontinuity, provoking discrepancy between the individual's self-narrative and their actual experience (39). Damage to character and moral identity, like spiritual suffering, can be experienced in many ways. Some of these will resemble symptoms associated with traumatic illness (17). For example, individuals who suffer a crisis of faith and a discontinuity in character and moral identity as a result of committing a moral transgression may experience nightmares, feelings of guilt and shame, social withdrawal, and mood changes similar to those suffering from traumatic illness. But there is a key difference; experiences of suffering in the context of a moral injury may not represent a pathological condition that merits a separate diagnosis and clinical intervention. Instead, under the DPM, moral injury may require an alternative approach to healing characterized by tools and strategies that help to reconstruct moral values, repair character, and integrate experiences of moral suffering into a flexible moral identity.

Labeling

There is considerable overlap between the diagnostic symptoms of traumatic illnesses like PTSD and symptoms and processes characteristic of moral injury (11, 46). Under the DPM framework, symptoms and processes within biological, psychological, social, spiritual and/or \religious, and character, values, and identity domains may be present in both traumatic illness and moral injury contexts. Further, the DPM posits that moral injury and traumatic illness may exist either independently (i.e., one without the other), or in a comorbid fashion. By examining event-exposure characteristics, role appraisals, and symptom and process domains, the DPM provides a flexible framework for determining whether a label of traumatic illness, moral injury, or both, provides a best fit to the information space. This flexibility allows for the hypothesis that moral injury can be mediated by pathways distinct from those linked to threat or fear-based traumatic illness.

Vignettes

The first stage of the DPM examines the characteristics of an event exposure to determine whether it fits the description of a traumatic experience, PMIE, or both. While a clear judgment may not be possible at this stage, exploring the nature of the event itself may yield some insight into the role appraisal and pattern of symptoms and processes that follow. For example, we can imagine an individual involved in a sudden and violent car collision when driving on the freeway. This individual may experience shock, terror, and the fear of death, and understand that they are the victim of a terrible accident, but they may not experience any strong moral emotions or feel that a moral transgression has taken place. On the other hand, we can also imagine an individual whose previously loving spouse abruptly disappears, clears out the family bank account, and abandons them and their young children. In this case, the individual may not feel terror, but they may feel that they are the victim of an awful moral transgression. Finally, we can imagine a young soldier clearing buildings in Fallujah, coming under heavy enemy fire day after day, seeing friends die, functioning at maximum alertness, until 1 day he is confronted by a teenager in an open doorway holding an explosive device. The soldier acts as his training dictates, shooting and killing the teenager, saving

his own and his squad's lives. He may continue to experience hyperarousal and intrusive thoughts after returning home. But later, he may also feel a moral transgression has taken place. Perhaps his own. Perhaps the leaders that put him in that country to begin with have transgressed. Perhaps the men that used that teenager have. Perhaps they all have. The soldier may see himself as perpetrating a moral transgression, but he may also see himself as the witness, or even the victim, of others' transgressions.

These examples demonstrate that, by exploring the nature of the event-experience itself, the DPM facilitates formulation of preliminary hypotheses about how events and role appraisals lead to symptoms and processes characteristic of traumatic illness, moral injury, or both. The car accident victim may begin to experience nightmares about car crashes and hyperarousal when hearing a car horn or tires squeal. They may stop driving and curtail their social activities to avoid having to be in cars. Where previously they found relief from stress in prayer, this is no longer the case after the accident. With these changes come changes in how they see themselves. Where previously they were independent and capable, now they are fearful, embarrassed, isolated, and depressed. They are someone they do not recognize. Thus, we can see the symptom and process domains unfold; biological processes like stress-response and arousal are dysregulated, and psychological symptoms including avoidance, reexperiencing, and mood changes are prominent. While the accident victim's social functioning and identity are affected, these effects are secondary to biological and psychological symptoms highly suggestive of traumatic illness.

By contrast, the spouse abandoned by their partner may not experience hyperarousal, but they may have intrusive thoughts about why and how such a thing could have happened. Where previously they might have seen a larger plan at work in their life, secure in their belief that by following the rules good things would happen, they now felt cut loose, overcome by anger at their partner and the world. They had done everything right, followed the rules, and for what? They didn't trust anyone, and they were scared to try. Picking up the pieces of their life felt impossible. In this case, we can see that psychological symptoms including mood changes and negative cognitions are present, but the integrity of values, identity, and character frameworks that render the world intelligible have been damaged by moral transgression highly suggestive of moral injury.

Finally, the combat veteran may return home and be plagued by nightmares of his experiences in Fallujah. He may be hypervigilant in crowds, unable to relax in social settings. He may have intrusive thoughts about his experiences, particularly when seeing young men who remind him of the teenager he had to kill. As a result, he may try to avoid these situations. But he may also begin to wonder if he has lost something important, ineffable, that he will never regain. He was trained and prepared to kill to defend his country, but he didn't think he'd have to kill a child. He followed the news and learned that there were no weapons of mass destruction hidden in Iraq, and that he had thus been sent to kill and see his friends die on a false pretext. His belief in the moral authority of his leaders was shattered. What had he killed for? What had his friends died for? Here, we can see evidence of both biological and psychological symptoms indicative of traumatic illness, and spiritual and values, character and identity symptoms indicative of moral injury symptoms at work. If referred to the VA, it is likely that this combat veteran would receive a PTSD diagnosis and under the best case circumstances be treated with evidenced-based interventions like Cognitive Processing Therapy [CPT; (8)] or Prolonged Exposure [PE; (55)]. Through the process of exposure and habituation, these approaches may indeed help the combat veteran to resolve his reexperiencing, hyperarousal, and avoidance symptoms. But how can they help with his moral suffering? How can they rebuild the shattered system of values and meaning that undergirded his character and identity? How can they resolve his anger at the politicians who sent him to fight for a lie and his fear that, even though he had to kill to survive, his soul is stained indelibly?

Intervention approaches

There are well validated and widely used clinical interventions to treat PTSD. Cognitive CPT, PE, and Eye Movement Desensitization and Reprocessing [EMDR; (56)] are the most widely used, and are considered by many to represent the "gold standard" for the treatment of PTSD. In general, these therapies work well for many individuals, yet upward of one half of those receiving treatment with one of these interventions fail to respond; for those suffering from PTSD related to combat, nearly two-thirds still have a diagnosis after completing CPT or PE treatment (57), while EMDR has been shown to be ineffective for treating PTSD in a military population and is recommended only as a last resort (58). While there are numerous explanations for the ineffectiveness of these psychotherapy interventions, ranging from poor adherence in delivering the treatment protocol to lack of organizational support for the implementation of these evidence-based interventions, we believe that a more likely explanation in many cases is that the intervention is not targeting the right set of symptoms.

While existing psychotherapies are reasonably effective in ameliorating the symptoms associated with PTSD, they are less effective in addressing the symptoms associated with moral injury. Specifically, the existing treatments for PTSD fail to provide significant benefit to those suffering from a moral injury which challenges one's character and identity. Experiencing a violation of a deeply held moral beliefs can result in one questioning their own identity and sense of self, including views that the world is unfair and unjust. Such disillusionment may result in downstream mental and behavioral health problems

associated with PTSD, including intense feelings of thwarted belongingness and a disconnection from others, isolation, alcohol and substance misuse and feelings one does not deserve to live. But, it would be unreasonable for an intervention aimed at treating PTSD to resolve these symptoms when they are the result of a moral injury. Instead, interventions are needed that address the rebuilding of one's damaged identity and character. The key components of such an intervention approach is discussed in the following section.

Character development and repair

We argue that when an individual's experience of suffering is driven primarily by symptoms and processes located within spiritual and/or religious and values, character, and identity domains, and thus indicative of moral injury, the starting point for repair is character. We will briefly review how character is formed and shaped and then discuss how to address rebuilding character in the aftermath of moral injury. Our line of thinking on character will be guided once more by Aristotelian ethics [NE; (51)] followed by tenets of Stoic philosophy as well as other group/institution-based mechanisms for rebuilding character.

Character development

In describing human goodness, Aristotle coined the term *ethike arete* or excellence in character that is rooted in the moral values (e.g., courage, friendliness, generosity). Individuals come to know what it means to be good or to do good to themselves and others from the groups they belong to, ranging from their family to their peer groups to formal institutions (e.g., school, church, military). People acquire moral values as a function of both formal learning and informal socialization with in-group others. Over time, these moral values become the ethical markings of character and serve the dual function of defining an individual (e.g., courageous) and prescribing appropriate behavior (e.g., courage). The overarching goal of living life guided by these moral values is *eudaimonia,* a thriving or flourishing life.

Character repair

By experience, however, individuals learn that they will often fail to live up to moral values, either by choice or circumstance. In these instances, there exists a dissonance, or a discrepancy between values and behaviors. How then does an individual reconcile this discrepancy? Because social groups are the arbiters of moral values, what mechanisms do these groups have that will allow an individual to preserve their character and repair damage to moral identity?

Stoicism: Self-assessment and self-forgiveness

Often described as a philosophy born out of adversity, Stoicism was highly attuned to the causes and consequences of human suffering and was very practical in its approach to *eudaimonia.* Briefly, Stoicism is an Hellenistic philosophy rooted in virtue ethics and pragmatic ideas for leading a virtuous life (59). We propose that one way to rebuild character is to borrow from the Stoics' practices of self-reflection and self-forgiveness. The Stoics were aware that self-improvement required regular self-assessments. For example, Marcus Aurelius' *Meditations* was a compilation of his own notes written to himself alone (i.e., not for public consumption) for the purpose of self-reflection and improvement, with some of the text providing details on how he practiced Stoicism. From Seneca, we see more of this self-assessment and self-forgiveness practice: "When the lamp has been removed from my sight, and my wife, no stranger now to my habit, has fallen silent, I examine the whole of my day and retrace my actions and words; I hide nothing from myself, pass over nothing. For why should I be afraid of any of my mistakes, when I can say: 'Beware of doing that again, and this time I pardon you"' (60). By examining these writings, we can see that the Stoics understood moral identity and character to be inherently imperfect, in need of examination and care, particularly when confronted with challenging experiences.

Self-forgiveness research has indeed demonstrated empirical support for the practices of character examination, social engagement and accountability, and commitment to change. Woodyatt (in press) recommends the following practical steps in self-forgiveness: (1) understanding the proper role of emotions to avoid self-condemnation, (2) being surrounded by a community that encourages humility and authenticity, and (3) reaffirming the violated values or giving oneself another chance to do better. The latter point is critical for character redevelopment because opportunities to engage in doing good for self and others reinforces the awareness of and capacity for goodness; doing affects being.

ADM James Stockdale, the highest-ranking POW in the Hanoi Hilton, credits stoicism as having helped him endure almost 8 years of torture in prison. In *Courage Under Fire* (1993), he details how forgiveness (of self and others) as well as actively taking part in the "tap code" network for social support, were critical in maintaining and repairing their own and each other's integrity of character.

Religion: Repentance and restoration

Perhaps more than any other social structure, religious institutions have provided ways and means by which an individual can rebuild their character. Koenig and Al Zaben (61) conducted a recent review of religious rituals or spiritual practices used to treat moral injury. For our purposes, we will focus on those that have implications for rebuilding character. Of the eight interventions specified by Koenig and Al Zaben (61), only two appear to have a direct bearing on character. The Pastoral Narrative Disclosure (PND), developed by Carey and Hodgson (49) comprise eight steps, namely: rapport, reflection, review, reconstruction, restoration, ritual, renewal, and reconnection. Underlying these steps is the sacrament

of penance, a religious ritual used to absolve wrongdoing and achieve forgiveness and cleansing. PND, however, was designed as an adjunctive, rather than a stand-alone, treatment of moral injury, similar to Litz et al. (62) Adaptive Disclosure Therapy. Analogous to PND, but shorter in length, is Moral Injury Reconciliation Therapy [MIRT; (63)]. The five-session MIRT addresses recognition of moral injury, lament and confession, response using one's own value system, forgiveness and identity, and reconciliation through habit training. Both these spiritual/religious interventions address the core issue of rebuilding an individual's character through reconstruction (for PND) and identity and habit training (for MIRT).

Conclusion

The DPM provides a flexible analytical framework for evaluating event-exposures, role appraisals, and downstream symptoms and processes to facilitate appropriate labeling of complex and heterogenous experiences consistent with traumatic illness, moral injury, or both, with important implications for developing treatment options. While the most thoroughly reviewed evidence-based treatments for traumatic stress hinge on exposure and habituation mechanisms to manage dysregulation of fear and memory systems, these mechanisms often do not address core domains of moral injury identified in the DPM, including spiritual, religious, values, character, and identity domains. This view is consistent with evidence (64) showing that military veterans diagnosed with and treated for PTSD often demonstrate relatively poor outcomes; we argue that these cases may reflect comorbid or discrete moral injury. Further, we argue that because moral injury reflects profound damage to values, character, and moral identity, healing from moral injury will require tools and methods that center these domains.

Author contributions

NB conceptualized, wrote, and edited the manuscript. HA, SS, and CC contributed to writing and editing the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Virginia: American Psychiatric Association (2013). doi: 10.1176/appi.books.9780890425596

2. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New Engl J Med.* (2004) 351:13–22. doi: 10.1056/NEJMoa040603

3. Castro CA, McGurk D. The intensity of combat and behavioral health status. *Traumatology.* (2007) 13:6–23. doi: 10.1177/1534765607309950

4. Brewin CR, Holmes EA. Psychological theories of posttraumatic stress disorder. *Clin Psychol. Rev.* (2003) 23:339–76. doi: 10.1016/S0272-7358(03)00033-3

5. Clark DM, Ehlers A. Posttraumatic stress disorder: from cognitive theory to therapy. In: Leahy RL editor. *Contemporary Cognitive Therapy: Theory, Research, and Practice*. New York, NY: The Guilford Press (2004). p. 141–60.

6. Foa EB, Huppert JD, Cahill SP. Emotional processing theory: an update. In: Rothbaum BO editor. *Pathological anxiety: Emotional Processing in Etiology and Treatment*. New York, NY: The Guilford Press (2006). p. 3–24.

7. Rauch S, Foa E. Emotional processing theory (EPT) and exposure therapy for PTSD. *J Contemp Psychother.* (2006) 36:61–5. doi: 10.1007/s10879-006-9008-y

8. Resick PA, Monson CM, Chard KM. *Cognitive Processing Therapy for PTSD: A Comprehensive Manual*. New York NY: Guilford Publications (2016).

9. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral injury: an integrative review. *J Traumat Stress.* (2019) 32:350–62. doi: 10.1002/jts.22362

10. Shay J. *Achilles in Vietnam: Combat Trauma and the Undoing of Character. 1994*. New York, NY: Scribner (2003).

11. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003

12. Litz BT, Kerig PK. Introduction to the special issue on moral injury: conceptual challenges, methodological issues, and clinical applications. *J Traumat Stress.* (2019) 32:341–9. doi: 10.1002/jts.22405

13. Nash WP, Marino Carper TL, Mills MA, Au T, Goldsmith A, Litz BT. Psychometric evaluation of the moral injury events scale. *Mil Med.* (2013) 178:646–52. doi: 10.7205/MILMED-D-13-00017

14. Shay J. Moral injury. *Psychoanal Psychol.* (2014) 31:182. doi: 10.1037/a0036090

15. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clini Psychol Rev.* (2009) 29:695–706.

16. Shay J. *Achilles in Vietnam: Combat trauma and the Undoing of Character*. New York, NY: Simon & Schuster (2003).

17. Atuel HR, Barr N, Jones E, Greenberg N, Williamson V, Schumacher MR, et al. Understanding moral injury from a character domain perspective. *J Theoret Philos Psychol.* (2021) 41:155–73. doi: 10.1037/teo0000161

18. Koenig HG, Ames D, Youssef NA, Oliver JP, Volk F, Teng EJ, et al. The moral injury symptom scale-military version. *J Relig Health.* (2018) 57:249–65. doi: 10.1007/s10943-017-0531-9

19. Williamson V, Stevelink SA, Greenberg N. Occupational moral injury and mental health: systematic review and meta-analysis. *Br J Psychiatry.* (2018) 212:339–46. doi: 10.1192/bjp.2018.55

20. Flipse Vargas A, Hanson T, Kraus D, Drescher K, Foy D. Moral injury themes in combat veterans' narrative responses from the National Vietnam Veterans' Readjustment Study. *Traumatology.* (2013) 19:243–50. doi: 10.1177/1534765613476099

21. McCormack L, Ell L. Complex psychosocial distress postdeployment in veterans: reintegration identity disruption and challenged moral integrity. *Traumatology.* (2017) 23:240. doi: 10.1037/trm0000107

22. Wortmann JH, Eisen E, Hundert C, Jordan AH, Smith MW, Nash WP, et al. Spiritual features of war-related moral injury: a primer for clinicians. *Spiritual Clin Pract.* (2017) 4:249. doi: 10.1037/scp0000140

23. Currier JM, Farnsworth JK, Drescher KD, McDermott RC, Sims BM, Albright DL. Development and evaluation of the expressions of moral injury scale—military version. *Clin Psychol Psychother.* (2018) 25:474–88.

24. Shay J. Moral injury. *Psychoana Psychol.* (2014) 31:182.

25. Ehlers A, Mayou RA, Bryant B. Cognitive predictors of posttraumatic stress disorder in children: results of a prospective longitudinal study. *Behav Res Therapy.* (2003) 41:1–10. doi: 10.1016/S0005-7967(01)00126-7

26. Halligan SL, Michael T, Clark DM, Ehlers A. Posttraumatic stress disorder following assault: the role of cognitive processing, trauma memory, and appraisals. *J Consult Clin Psychol.* (2003) 71:419. doi: 10.1037/0022-006X.71.3.419

27. Marsac ML, Ciesla J, Barakat LP, Hildenbrand AK, Delahanty DL, Widaman K, et al. The role of appraisals and coping in predicting posttraumatic stress following pediatric injury. *Psychol Trauma.* (2016) 8:495–503. doi: 10.1037/tra0000116

28. Yehuda R. Biology of posttraumatic stress disorder. *J Clin Psychiatry.* (2001) 62:41–6.

29. Yehuda R, Koenen KC, Galea S, Flory JD. The role of genes in defining a molecular biology of PTSD. *Disease Mark.* (2011) 30:67–76. doi: 10.1155/2011/185354

30. Amihaesei IC, Mungiu OC. Posttraumatic stress disorder: neuroendocrine and pharmacotherapeutic approach. *Med Surg J.* (2012) 116:563–6.

31. Pitman RK, Rasmusson AM, Koenen KC, Shin LM, Orr SP, Gilbertson MW, et al. Biological studies of post-traumatic stress disorder. *Nat Rev Neurosci.* (2012) 13:769–87. doi: 10.1038/nrn3339

32. Polimanti R, Wendt FR. Posttraumatic stress disorder: from gene discovery to disease biology. *Psychol Med.* (2021) 51:2178–88. doi: 10.1017/S0033291721000210

33. Meaney M, Yehuda R. Epigenetic mechanisms and the risk for PTSD. In: Nemeroff C, Marmar C editors. *Post-Traumatic Stress Disorder*. Oxford: Oxford University Press (2018). p. 293–314. doi: 10.1093/med/9780190259440.003.0017

34. Farnsworth JK, Drescher KD, Evans W, Walser RD. A functional approach to understanding and treating military-related moral injury. *J Context Behav Sci.* (2017) 6:391–7. doi: 10.1016/j.jcbs.2017.07.003

35. Galatzer-Levy IR, Bryant RA. 636,120 ways to have posttraumatic stress disorder. *Perspect Psychol Sci.* (2013) 8:651–62. doi: 10.1177/1745691613504115

36. Olbert CM, Gala GJ, Tupler LA. Quantifying heterogeneity attributable to polythetic diagnostic criteria: theoretical framework and empirical application. *J Abnormal Psychol.* (2014) 123:452. doi: 10.1037/a0036068

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

38. Frueh BC, Turner SM, Beidel DC, Cahill SP. Assessment of social functioning in combat veterans with PTSD. *Aggress Violent Behav.* (2001) 6:79–90. doi: 10.1016/S1359-1789(99)00012-9

39. Ellemers N, Van Der Toorn J, Paunov Y, Van Leeuwen T. The psychology of morality: a review and analysis of empirical studies published from 1940 through 2017. *Pers Soc Psychol Rev.* (2019) 23:332–66. doi: 10.1177/1088868318811759

40. Spiro ME. Religion: problems of definition and explanation. *Anthropol Approaches study Relig.* (1966) 85:96.

41. Merriam-Webster.com. (2022). Available online at: https://www.merriamwebster.com/dictionary/religion (accessed February 15, 2022).

42. Hodgson TJ, Carey LB. Moral injury and definitional clarity: betrayal, spirituality and the role of chaplains. *J Relig Health* (2017) 56:1212–28. doi: 10.1007/s10943-017-0407-z

43. Puchalski CM. Physicians and patients' spirituality: ethical concerns and boundaries in spirituality and health. *AMA J Ethics.* (2009) 11:804–15. doi: 10.1001/virtualmentor.2009.11.10.oped1-0910

44. Shay J. *Achilles in Vietnam: Combat Trauma and the Undoing of Character. 1994*. New York, NY: Scribner (2003).

45. Lipka M, Gecewicz C. *More Americans now say they're Spiritual but not Religious*. Washington, D.C: Pew Research Center (2017).

46. Jinkerson JD. Defining and assessing moral injury: a syndrome perspective. *Traumatology.* (2016) 22:122. doi: 10.1037/trm0000069

47. Currier JM, Isaak SL, McDermott RC. Validation of the expressions of moral injury scale-military version-short form. *Clin Psychol Psychother.* (2020) 27:61–8. doi: 10.1002/cpp.2407

48. Norma S, Maguen S. *Moral Injury. National Center for PTSD, U.S. Department of Veterans Affairs*. (2021). Available online at: https://www.ptsd.va.gov/professional/treat/cooccurring/moral_injury.asp (accessed Feb 15, 2022)

49. Carey LB, Hodgson TJ. Chaplaincy, spiritual care and moral injury: Considerations regarding screening and treatment. *Front Psychiatry.* (2018) 9:619. doi: 10.3389/fpsyt.2018.00619

50. Lipka M. *10 facts about atheists*. Washington, D.C: Pew Research Center (2019).

51. Ameriks K, Clarke DM. *Aristotle: Nicomachean Ethics*. Cambridge: Cambridge University Press (2000).

52. Haidt J. The new synthesis in moral psychology. *Science* (2007) 316:998–1002.

53. Lapsley DK, Power F. *Character Psychology And Character Education*. Notre Dame, IND: University of Notre Dame Press (2005).

54. Peterson C, Seligman ME. *Character Strengths And Virtues: A Handbook And Classification*. (Vol. 1). Oxford: Oxford University Press (2004).

55. Foa EB. Prolonged exposure therapy: past, present, and future. *Depress Anxiety.* (2011) 28:1043–7. doi: 10.1002/da.20907

56. Shapiro F. *Eye Movement Desensitization and Reprocessing (EMDR) Therapy: Basic Principles, Protocols, and Procedures*. New York, NY: Guilford Publications (2017).

57. Steenkamp MM, Litz BT, Hoge CW, Marmar CR. Psychotherapy for military-related PTSD: A review of randomized clinical trials. *JAMA.* (2015) 314:489–500. doi: 10.1001/jama.2015.8370

58. Verstrael S, van der Wurff P, Vermetten E. Eye movement desensitization and reprocessing (EMDR) as treatment for combat-related PTSD: a meta-analysis. *Mil Behav Health.* (2013) 1:68–73. doi: 10.1080/21635781.2013.827088

59. Pigliucci M. *How To Be A Stoic: Using Ancient Philosophy To Live A Modern Life*. New York, NY: Basic Books (2017).

60. Seneca LA, Davie J, Reinhardt T. *Dialogues And Essays*. Oxford: Oxford University Press (2008).

61. Koenig HG, Al Zaben F. Psychometric validation and translation of religious and spiritual measures. *J Relig Health.* (2021) 60:3467–83. doi: 10.1007/s10943-021-01373-9

62. Litz BT, Lebowitz L, Gray MJ, Nash WP. *Adaptive Disclosure: A New Treatment for Military Trauma, Loss, and Moral Injury*. New York, NY: Guilford Publications (2017).

63. Lee LJ. *Moral Injury Reconciliation: A Practitioner's Guide for Treating Moral Injury, PTSD, Grief, and Military Sexual Trauma through Spiritual Formation Strategies*. London: Jessica Kingsley Publishers (2018).

64. Steenkamp MM, Litz BT, Marmar CR. First-line psychotherapies for military-related PTSD. *JAMA* (2020) 323:656–7. doi: 10.1001/jama.2019.20825

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Development of an online supportive treatment module for moral injury in military veterans and police officers

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Background: Military members and police officers often operate in high stakes situations and under high levels of physical and psychological stress. Consequently, they may be confronted with morally injurious experiences and develop moral injury. Most treatments for moral injury are cognitive-behavioral, face-to-face treatments, which may be supported by online interventions. Online interventions have shown promise in the treatment of trauma-related psychopathology, but few such interventions for moral injury yet exist.

Objective: To develop and conduct a preliminary evaluation of an online treatment module for moral injury in treatment-seeking military veterans and police officers, to be used in conjunction with regular face-to-face treatment.

Method: An online module was developed based on the moral injury literature, using elements from seven existing treatments. A preliminary evaluation was conducted using both quantitative and qualitative methods, and focusing on perceived feasibility, acceptability and engagement of the module, as well as potential benefits and harms. The concept module was evaluated by 15 assessors, including patient representatives, multidisciplinary caregivers and experts.

Results: The module was rated favorably, with mean evaluation scores ranging from 7.9 to 8.8 on a 10-point scale. Several suggestions for improvement were made, especially concerning privacy issues, safety instructions, patient-therapist collaborations, and role plays, and the module was adapted accordingly.

Conclusion: Using input from literature, patient representatives and experts, we developed an online treatment module for moral injury in military veterans and police officers, to be used in conjunction with face-to-face therapy. Acceptability and feasibility will be further examined in a future pilot study.

KEYWORDS

moral injury, police officers, military veterans, e-health, online treatment

Introduction

The concept of moral injury refers to the lasting and multidimensional impact of perpetrating, failing to prevent or witnessing acts that transgress deeply held moral expectations and beliefs (1). Intentionally harming a civilian during armed conflict, failing to save a child from a fire, or standing by as a colleague mistreats a prisoner are examples of such acts. Involvement in morally transgressive acts may lead to moral injury, especially when it occurs in high stakes situations (2), where those involved risk death, serious injury or sexual violence (3). While the moral injury concept has been predominantly developed and studied in military populations, it may also apply to other populations exposed to occupational trauma, especially police officers (4, 5). Like military members, police officers are trained to serve and protect, meaning they may use legitimate, but not excessive, force, and must act to save civilians from serious harm. Given that such tasks may be performed under high levels of physical and psychological stress, both military members and police officers are at risk of encountering potentially morally injurious events (PMIE's) and consequently, of developing moral injury.

Moral injury is a psychological, social and existential wound that has been found to be associated with the development of psychiatric problems and functional impairment, including posttraumatic stress disorder (PTSD), suicidal ideation and depressive symptoms (4, 6). Consequently, for some individuals who suffer from moral injury, psychological intervention may be necessary to increase their psychosocial wellbeing and quality of life. The development of interventions for alleviating moral injury is relatively in its infancy. Most psychological interventions for moral injury, including Adaptive Disclosure (AD) (7), Trauma-Informed Guilt Reduction Therapy (TrIGR) (8) and Acceptance and Commitment Therapy for Moral Injury (ACT-MI) (3) are based on cognitive-behavioral treatment (CBT) frameworks (9). Such frameworks commonly encourage patients to work on their treatment goals outside of the treatment room. In recent years, this is increasingly done through internet or e-health interventions. Internet-delivered CBT has shown promise in treating patients with posttraumatic stress disorder (PTSD) (10–12), including military veterans (13).

The term "internet interventions" may refer to a range of interventions, from complete internet-delivered treatments to digital treatment components such as online modules (14). Several such treatments or treatment components may be suitable for helping patients heal from moral injury. However, as far as we know, references to the use of internet interventions for moral injury are limited to a case study of the successful treatment of a service member using ACT-MI *via* telehealth (15), and a feasibility and acceptability study of an online therapy group for healthcare providers working during the COVID-19 pandemic (16). This implies that most treatments for patients with moral injury take place face-to-face. Supporting face-to-face treatment with internet interventions such as online modules may carry several benefits. Patients may work on their treatment goals from their own home and in their own time, keeping arousal low; patients may be provided with structured, accurate visual and written information that may be more easily processed or referred back to; patients and therapists may exchange information in a digitally secure environment; and insights derived from the internet intervention may then be shared in and inspire face-to-face treatment sessions.

In order to support the face-to-face treatment of patients with moral injury through internet interventions, we developed an online treatment module for moral injury in treatment-seeking military veterans and police officers in the Netherlands. Dutch military members are known to encounter PMIE's during peace-keeping missions, including being in the position of bystander, indirect effects of decisions and actions, and transgressive behavior (17). In a quarter of military veterans, this may lead to feelings of shame and guilt post-mission, which in turn is related to more severe depression and anger (17). During and after missions, Dutch military members and veterans may experience conflicting values as well as feelings of moral detachment and senselessness (18). Little research has been conducted on moral injury in Dutch police officers. Treatment-seeking Dutch police officers have been exposed to an average of 19.5 work-related potentially traumatic experiences, including PMIE's such as executing charges in which persons were injured, injury of a colleague, and failed cardiopulmonary resuscitation (19). Consequently, around 43% of treatment-seeking Dutch police officers meet symptom profiles of moral injury, with or without PTSD (20).

In this paper, we report on the development and preliminary evaluation of an online treatment module for treatment-seeking military veterans and police officers in the Netherlands. Aim of the development of this module was to make available an online intervention to support face-to-face treatment of military veterans and police officers with moral injury. Aim of the preliminary evaluation was to gain feedback on and improve the concept version of the module involving various stakeholders and experts. Our hypothesis was that the concept version of the module would be considered acceptable, feasible, engaging and not harmful, but might still be improved.

Method

Setting

The module was developed at ARQ Centrum'45, the Dutch national center for expert diagnostics and treatment of complex psychotrauma. The center offers tertiary care to trauma-exposed military veterans and police officers who have failed to benefit from or have relapsed after first-line treatment (21). Most of these patients meet criteria for PTSD according to DSM-5

and are routinely treated with treatments of choice following the Dutch treatment guidelines for PTSD (21): trauma-focused CBT [including prolonged exposure (PE), narrative exposure therapy (NET), and brief eclectic psychotherapy for PTSD (BEPP)] or eye movement desensitization and reprocessing (EMDR) therapy.

To support face-to-face treatment through e-health interventions, ARQ Centrum'45 uses an e-health platform called Minddistrict. Minddistrict offers online modules and diaries for patients that can be accessed through mobile devices. These modules are developed in collaboration with patient representatives and care providers. The modules are generally transdiagnostic, i.e., focused on complaints or symptoms rather than on diagnoses, and generally consist of written information, video material of experts and patient representatives, and online assignments. Assignments may be completed independently by the patient or may be shared with the therapist who then provides written feedback. All information exchanged through Minddistrict is secure, requiring a login and password.

Development steps

Development was based on guidance for the development of complex interventions to improve health and healthcare (22), using the following steps (not necessarily in this order): (1) planning of the development process, (2) involving stakeholders, (3) bringing together a team, (4) reviewing published research evidence, (5) drawing on existing theories, (6) articulating program theory, (7) undertaking primary data collection, (8) understanding context, (9) paying attention to implementation, (10) designing and refining the intervention. Development ran from February 2021 till February 2022 and was chiefly conducted by a clinical psychologist, a social-psychiatric nurse and a communication expert, in consultation with Minddistrict, two patient representatives, an army chaplain and three therapists.

Literature search

To decide on the content of the module, we conducted an APA PsycINFO search of peer-reviewed papers on psychotherapeutic treatments for moral injury using the search terms "moral injury AND (treatment OR therapy OR intervention OR manual)." The resulting evidence was limited. Case studies were found of ACT-MI (15), BEPP for Moral Trauma (BEPP-MT) (23), Cognitive Therapy (CT) (24, 25) and PE (24, 26). Pilot studies were found of AD (27) and Impact of Killing (IoK) (28–30). We excluded interventions intended primarily for delivery by chaplains or clergy, including Building Spiritual Strength (BSS) (31) and the Mental Health Clinician and Community Clergy Collaboration (32). In addition, we consulted the book *Addressing moral injury in clinical practice* (33), which provides an overview of treatment approaches for moral injury. Last, we searched for interventions for which detailed manuals or protocols had been published, which was the case for AD (7), TrIGR (8), and ACT-MI (3). AD (1, 7) is an integral cognitive-behavioral treatment of moral injury, involving eight steps: connection, preparation and psychoeducation, modified exposure, examination and integration of maladaptive beliefs, dialogue with a benevolent moral authority, reparation and forgiveness, fostering reconnection, and after-treatment planning. TrIGR (8) is a cognitive treatment that primarily focuses on the identification and appraisal of four domains of cognitive errors: hindsight bias, lack of justification, responsibility, and wrongdoing. ACT-MI (3) focuses on acceptance of moral pain (through interventions such as psychoeducation, defusion and mindfulness) and commitment to living a value-driven life (through interventions such as fostering forgiveness and compassion, and identifying and acting upon values).

In conclusion, we based the module on interventions described in the following treatments: ACT-MI, AD, BEPP-MT, CT, IoK, PE and TrIGR.

Integrating the literature, we concluded that the treatments include most if not all of the following interventions: (1) psychoeducation, (2) processing of morally injurious memories, (3) exploring maladaptive attributions, (4) mindfulness, (5) forgiveness, (6) reconnection, and (7) living according to important values. Those interventions may be perceived as addressing the three prominent domains that may be affected in moral injury: psychological (emotional, cognitive and behavioral), social/interpersonal, and spiritual/existential (1, 4).

Module development

Based on the literature, we then developed a first version of the module. This version consisted of eight chapters with the following topics: module explanation, moral injury and PTSD, moral code and values (chapter 1), morally injurious experiences, moral emotions, moral pain and moral judgments (chapter 2), moral injury narrative, hotspot, prolonged exposure and EMDR (chapter 3), determining and exploring hindsight bias, lack of justification, responsibility and wrongdoing (chapter 4), a written, imaginary or actual dialogue with a benevolent moral authority (chapter 5), practicing mindfulness (chapter 6), the costs and benefits of forgiveness, and forgiving actions (chapter 7), determining values, and value-driven actions (chapter 8). The length of the module (eight chapters) was based on the average length of standardized treatments for moral injury, ranging from six (TrIGR) to ten (IoK) sessions. All chapters contained written information, video clips of patient representatives and professionals, and assignments.

Language

Following recommendations for therapist style and stance when working with morally injured patients, written information was carefully worded to be encouraging, supportive and non-judgmental (7). We took care to use inclusive language, for example by using case vignettes that alternately referred to military veterans and police officers, men and women, and persons with a western and non-western first name. In addition, we took language proficiency into account by limiting sentences to 15 words and avoiding use of the passive tense, in accordance with Dutch B1 language guidelines (34). Difficult words, such as abstract words and jargon, were avoided by using easier alternatives or by giving an explanation and/or illustrative example. To further improve readability, paragraphs were limited to 450 characters.

Video material

Video clips were filmed by a professional filmmaker. The final clips included descriptions of morally burdening experiences, moral emotions and cognitions, coping, reprocessing and reconnection, by a male military veteran and a female police officer who had both been in treatment for moral injury; a word of welcome and explanations of moral injury, prolonged exposure and EMDR, by a therapist; explanations on moral injury, morality, values, forgiveness and the work of a chaplain, by a military chaplain; and roleplays of a dialogue with a benevolent moral authority, exploring cognitive errors, and living a value-driven life, featuring a therapist and a patient played by a therapist. Care was taken that the descriptions of morally burdening experiences were specific enough to spark recognition but general enough not to upset patients. All video clips were pre-discussed and scripts were written of the roleplays in consultation with a military veteran. All clips were approved by those who featured in them before being included in the module. The two patient representatives signed informed consent forms for inclusion of the video clips in the module. They were debriefed after filming and received a gift coupon in recognition of their effort as well as reimbursement of their travel expenses. The military chaplain also received a gift coupon.

Assignments

Assignments were included that consist mostly of invitations to describe personal experiences of morally injurious events, moral injury symptoms, moral emotions and judgements, values and goals, and to examine moral judgments. To this end, spaces are provided where patients may insert text. In addition, patients are invited to watch video clips of patient representatives and experts, and psychoeducational videos of the Dutch societies for CBT and EMDR. Last, mindfulness exercises were inserted that are available through Minddistrict. Care was taken to include only assignments that might be performed at home, without the presence of a therapist, and asking patients to choose a good time and place and to note how they felt afterwards. At the end of each module chapter, assignments are saved and therapists receive an email alert to provide written feedback.

Preliminary evaluation

Design

In order to improve the online module, we conducted a preliminary quantitative and qualitative assessment of module content, style, format and delivery. Evaluation focused on perceived feasibility, acceptability and engagement of the module, as well as potential value and benefits, harms and unintended consequences (22, 35).

Procedure

A questionnaire was made evaluating the content, format, style, delivery and perceived proceeds of the overall module, and the contents of the separate chapters. The questionnaire consisted of 13 quantitative items rated on a 10-point scale ranging from 1 (*very low*) to 10 (*very high*) (for example, "How would you rate the content of this chapter?"), as well as 21 open questions with room for comments and suggestions (for example, "Do you expect the module to be potentially harmful to users? If so, in what respect?").

An email was sent to 15 stake holders and experts asking them to evaluate the module. Upon consent, they were provided with an online link to the module and to the questionnaire. Response was 100%. Four assessors provided only qualitative feedback. Evaluations were conducted by two patient representatives; one military chaplain; two researchers specializing in moral injury or e-health; and ten therapists from five treatment centers specializing in the treatment of military veterans, police officers and/or moral injury. As none of the patient representatives were currently in treatment and the evaluation did not concern medical research, no medical-ethical assessment was required.

Analysis

Descriptive statistics were calculated using SPSS version 23 for Windows. Answers to the open questions as well as additional written feedback sent by some assessors were inserted in Excel and analyzed following the General Inductive Approach for analyzing qualitative evaluation data (36). All text that was deemed relevant to the evaluation aims was labeled to identify themes. Next, in a second round of coding, some themes were merged to reduce overlap and redundancy among the codes. The resulting themes were subsequently combined

under superordinate categories, which were based on the evaluation aims.

Results

Descriptive statistics

The module was rated very favorably, with the mean evaluation scores of various chapters and aspects ranging from 7.9 to 8.8. Module content was rated M = 8.8 (SD = 0.8, range 8–10), style M = 8.5 (SD = 0.8, range 7–10), format M = 8.5 (SD = 0.8, range 7–10), and delivery M = 8.2 (SD = 1.1, range 7–10). Perceived benefits for users were rated M = 8.5 (SD = 9.3, range 7–10).

Qualitative analysis

Qualitative analysis revealed several themes related to various components of the module, which we organized across four categories: acceptability, feasibility, engagement, and unintended consequences (see Table 1).

Acceptability

All assessors deemed the module to be acceptable and to meet an important clinical need, as in the Netherlands treatments developed specifically for moral injury are limited. Several assessors noted that certain elements of the module, such as its focus on self-forgiveness and moral values, are not addressed in current treatments and therefore particularly valuable. Simultaneously, some expressed concern that these elements could be challenging, as concepts such as "forgiveness" and "moral values" are rather abstract and could, without sufficient examples, be hard to fully comprehend. Similarly, they warned that the idea of self-forgiveness could feel out of reach and therefore discouraging for many suffering from moral injury. Nevertheless, all assessors considered the module to be suitable for the target population and were very positive about the inclusion of videos of patient representatives. Veteran assessors, in particular, described these video examples as relatable, illuminating, and helpful.

To increase acceptability, several assessors mentioned the importance of emphasizing confidentiality. They suggested more explicitly addressing confidentiality concerns at the start of the module, by explaining how the content is protected and whether a therapist will be able to see any of the answers filled in. Some assessors suggested repeating this information when an exercise asks for self-disclosure, to increase openness and lower any distrust patients may feel.

Overall, all assessors expected the module to be beneficial to those suffering from moral injury. As potential benefits, they mentioned better insight into one's distress, easier communication about moral injury with others, and an increased understanding of how therapy may help.

Feasibility

Assessors generally found the module to be feasible and user-friendly. Several assessors raised questions about how to incorporate the module into existing treatments, to maximize its benefits and decrease potential risks. They suggested that synchronizing the module with face-to-face therapy, as intended, would enable patients to discuss certain topics and build on exercises with their therapist. Simultaneously, this could make it easier for patients to reach out for support if elements of the module were experienced as triggering.

Engagement

The information provided by the module was considered to be clear and concise. The videos were found to be particularly informative and engaging. Some assessors offered suggestions for changing certain wordings or for expanding explanations to improve comprehensibility.

Assessors felt Minddistrict was easy to use, though some commented the module could be improved by having a menu for navigating between different chapters. Several other practical suggestions for improving the module were offered, including adding various exercises.

Unintended consequences

Most assessors raised concern that some elements of the module could be triggering, particularly for patients experiencing a lot of distress. Potentially triggering elements of the module include the videos of patient representatives sharing their stories and a narrative writing assignment. At the same time, assessors believed that these unintended consequences would be manageable and acceptable if patients would be able to reach out to a therapist when necessary.

Adaptation

Based on the evaluation, module content was adapted. The main adaptations were that privacy issues were explained more elaborately, safety instructions (i.e., asking patients to choose a good time and place to complete an assignment) were repeated more often, collaboration with the therapist was explained more clearly, and role play videos were shortened. In addition, psychoeducation and assessments were adapted to provide a stronger focus on moral injury due to moral transgressions by others (so-called betrayal trauma).

TABLE 1 Sample quotations illustrating feedback categories and themes.

Categories	Themes	Description	Sample quotation
Acceptability	Suitability for the target population	The assessors believed the module is suitable for the target population. They appreciated the video examples provided by patient representatives, which were described as something patients would be able to relate to.	"The videos of the patient representatives are wonderful and illustrate the subject beautifully."
	Confidentiality	Some assessors stressed the importance of explicitly addressing any confidentiality concerns patients may have, both at the start of the module and when exercises ask for the disclosure of personal experiences and thoughts.	"It might be good to also describe confidentiality/privacy in assignments where clients have to be vulnerable? (I) can imagine that there are distrustful clients who find it difficult to fill in their experiences on a website? Maybe suggest an alternative, for example: you can also write this down for yourself in a notebook."
	Benefits	Assessors believed the module would most likely be beneficial to patients. Potential benefits they mentioned include an increased understanding of moral injury and better insight into how therapy and certain exercises can be helpful.	"(The module) would give me a lot of clarity and reassurance. To understand what it does to you, that it is not crazy what you are struggling with. It makes it easier to discuss things, also with your partner (…). This can lead to more understanding. I found these things difficult to explain myself, so this module is very clear and helpful."
Feasibility	Clinical context	Many assessors stressed the importance of offering the module as blended treatment. They emphasized it would be best to conduct the module alongside in-person therapy, to maximize the potential of the module. Embedding the module within a clinical context was also perceived as helpful in case module topics were triggering.	"With the guidance of the practitioner, it is feasible. It could trigger a lot. There should be an option to contact your practitioner. Especially if your appointment is next week. Simply knowing that is possible is reassuring."
Engagement	Clarity of information	Module information provided was generally evaluated as clear and complete. Particularly the videos of various experts and patient representatives were found to be illuminating and engaging. Some assessors offered suggestions for improving information.	"Good to see the concept of moral injury explained from different perspectives. Good differentiation between PTSD and moral injury, with the explanation of the patient representative. I think clients would be able to benefit a lot from that."
	Overview of the module	Most assessors found the module clear and orderly structured, with a logical progression from one topic to the next. Some suggested the module would be easier to navigate if it had a more user-friendly menu to browse between chapters.	"It might be useful to have a navigation menu where you can browse back to all the different chapters. So if the patient wants to revisit the mindfulness chapter, this can be done with a single click in the navigation menu."
	Suggestions for improvement	Assessors offered various practical suggestions for improving the module, including adding certain exercises and examples of how to work on recovery.	"Maybe explicitly state that (…), not only forgiveness and acceptance help, but also actively doing meaningful things? Achieving forgiveness not only through internal, mental processes, but also by actively doing things."
Unintended consequences	Potentially triggering elements	Assessors believed risks associated with the module to be low. However, some potentially triggering elements were mentioned, including an exposure exercise and stories of moral injury shared by the patient representatives.	"I can imagine that this is a tough chapter for people who (still) have a lot of PTSD symptoms. Such as the question to write down memories. Though I expect that this would be considered at intake."

Discussion

We reported on the development phase of an online treatment module for moral injury. Development resulted in an online module consisting of eight chapters and including written text, videos and assignments. The concept module was evaluated and rated favorably by various stake holders and experts. In addition, assessors commented favorably on the module's

acceptability, feasibility and engagement. However, they feared that some module components including some videos and assignments might be emotionally upsetting when watched or completed at home. Module content was then adapted.

The favorable evaluation of the module is in line with other studies that show that blended treatment, combining online modules with face-to-face treatment, is perceived as purposive and effective (37). Indeed, blending may be key given that patients' motivation to engage in internet-based interventions may be relatively low. In one study of military veterans' willingness to use e-mental health, only 50.6% of those without PTSD and 30.9% of those with probable PTSD were willing to try online computer-based interventions (38). A study of internet-based TF-CBT for service members without face-to-face contact resulted in a 32.3% drop-out (39)—a percentage that is relatively high (40).

Although the module was rated favorably, its current form may have some disadvantages. While the module fits in a tradition of online CBT interventions for mental health, this tradition has been criticized for failing to stimulate adherence and sustained engagement (41). An argument has been put forward for creating digital tools that provide a better fit with patients' lives and practitioners' workflows, and involving patients and practitioners from the start of development (41). In hindsight, we indeed feel that patient representatives might have been involved more actively from the start of development and might have been asked which facets of moral injury should be addressed in the module in general and in the patient representatives' videos. As for practitioners' workflows, the module was developed in a digital platform that is widely used by practitioners to support face-to-face treatment.

Regarding unintended consequences, assessors feared that some video material and assignments might be emotionally upsetting. Indeed, in a study of internet-based TF-CBT for service members, 9.5% reported severe resistance against writing assignments, and another 23.8% experienced intense negative feelings while they were writing (38). However, another study of internet-based TF-CBT showed that adverse events and treatment satisfaction ratings were equal in two treatment arms with and without exposure components (42). Thus, although writing assignments may be perceived as emotionally challenging, this does not necessarily limit treatment satisfaction and effectiveness.

In conclusion, this module is the first online module to support face-to-face treatment of moral injury in police officers and military veterans. It was carefully developed based on development guidelines and the extant literature and in collaboration with patient representatives and experts from multiple disciplines. After evaluation, the module was adapted. In the near future, the adapted module will be evaluated in a feasibility and acceptability study using both quantitative and qualitative research methods. In addition, adapting the module to other populations, such as morally injured refugees or healthcare workers, may be considered.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

JH developed the module, conducted the evaluation, and drafted the first version of this paper. MG analyzed the qualitative and quantitative outcomes and drafted the first version of this paper. SD developed the module, conducted the evaluation, and contributed to the final version of this paper. SE developed the module and contributed to the final version of this paper. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

References

1. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003

2. Shay J. Moral injury. *Psychoanal Psychol.* (2014) 31:182–91. doi: 10.1037/a0036090

3. Evans WR, Walser RD, Drescher KD, Farnsworth JK. *The Moral Injury Workbook: Acceptance & Commitment Therapy Skills for Moving Beyond Shame, Anger & Trauma to Reclaim Your Values.* Oakland, CA: New Harbinger Publications (2020).

4. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral injury: an integrative review. *J Trauma Stress.* (2019) 32:350–62. doi: 10.1002/jts.22362

5. Papazoglou K, Chopko B. The role of moral suffering (moral distress and moral injury) in police compassion fatigue and PTSD: an unexplored topic. *Front Psychol.* (2017) 8:1999. doi: 10.3389/fpsyg.2017.01999

6. Maguen S, Griffin BJ, Copeland LA, Perkins DF, Finley EP, Vogt D. Gender differences in prevalence and outcomes of exposure to potentially morally injurious events among post-9/11 veterans. *J Psychiatr Res.* (2020) 130:97–103. doi: 10.1016/j.jpsychires.2020.06.020

7. Litz BT, Lebowitz L, Gray MJ, Nash WP. *Adaptive Disclosure: A New Treatment for Military Trauma, Loss, and Moral Injury*. New York, NY: The Guilford Press (2016).

8. Norman S, Allard C, Browne K, Capone C, Davis B, Kubany E. *Trauma Informed Guilt Reduction Therapy: Treating Guilt and Shame Resulting from Trauma and Moral Injury*. London: Academic Press (2019).

9. Currier JM, Drescher KD, Nieuwsma J. Introduction to moral injury. In: Currier JM, Drescher KD, Nieuwsma J, editors. *Addressing Moral Injury in Clinical Practice*. Washington, DC: American Psychological Association (2021). p. 3–18.

10. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Publishing (2013).

11. Lewis C, Roberts NP, Simon N, Bethell A, Bisson JI. Internet-based cognitive behavioural therapy (i-CBT) for post-traumatic stress disorder (PTSD): systematic review and meta-analysis. *Acta Psychiatr Scand.* (2019) 140:508–21. doi: 10.1111/acps.13079

12. Simon N, McGillivray L, Roberts NP, Barawi K, Lewis CE, Bisson JI. Acceptability of internet-based cognitive behavioural therapy (i-CBT) for post-traumatic stress disorder (PTSD): a systematic review. *Eur J Psychotraumatol.* (2019) 10:1646092. doi: 10.1080/20008198.2019.1646092

13. Jones C, Miguel-Cruz A, Smith-MacDonald L, Cruikshank E, Baghoori D, Chohan AK, et al. Virtual trauma-focused therapy for military members, veterans, and public safety personnel with posttraumatic stress injury: systematic scoping review. *JMIR mhealth uhealth.* (2020) 8:e22079. doi: 10.2196/22079

14. Smoktunowicz E, Barak A, Andersson G, Banos RM, Berger T, Botella C, et al. Consensus statement on the problem of terminology in psychological interventions using the internet or digital components. *Internet Interv.* (2020) 21:100331. doi: 10.1016/j.invent.2020.100331

15. Borges LM. A service member's experience of acceptance and commitment therapy for moral injury (ACT-MI) via telehealth: "learning to accept my pain and injury by reconnecting with my values and starting to live a meaningful life". *J Contextual Behav Sci.* (2019) 13:134–40. doi: 10.1016/j.jcbs.2019.08.002

16. Smith-MacDonald L, Lusk J, Lee-Baggley D, Bright K, Laidlaw A, Voth M, et al. Companions in the abyss: a feasibility and acceptability study of an online therapy group for healthcare providers working during the COVID-19 pandemic. *Front Psychiatry.* (2022) 12:801680. doi: 10.3389/fpsyt.2021.801680

17. Rietveld ND. *Gewetensvolle Veteraan: Schuld- en schaamtebeleving Bij Veteranen Van Vredesmissies*. Oisterwijk: BOXPress BV (2009).

18. Molendijk T. Toward an interdisciplinary conceptualization of moral injury: from unequivocal guilt and anger to moral conflict and disorientation. *New Ideas Psychol.* (2018) 51:1–8. doi: 10.1016/j.newideapsych.2018.04.006

19. Van der Meer CAI, Bakker A, Smit AS, Van Buschbach S, Den Dekker M, Westerveld GJ, et al. Gender and age differences in trauma and PTSD among dutch treatment-seeking police officers. *J Nerv Ment Dis.* (2017) 205:87–91. doi: 10.1097/NMD.0000000000000562

20. Mensink BM, Van Schagen AM, Van der Aa N, Ter Heide FJJ. Moral injury in trauma-exposed, treatment-seeking police officers and military veterans: latent class analysis. *Front Psychiatry.* 13:904659. doi: 10.3389/fpsyt.2022.904659

21. GGZ Standaarden. *Zorgstandaard Psychotrauma-en Stressorgerelateerde Stoornissen.* (2020). Available online at: https://www.ggzstandaarden.nl/zorgstandaarden/psychotrauma-en-stressorgerelateerde-stoornissen/introductie (accessed March 3, 2022).

22. O'Cathain A, Croot L, Duncan E, Rousseau N, Sworn K, Turner KM, et al. Guidance on how to develop complex interventions to improve health and healthcare. *BMJ Open.* (2019) 9:e029954. doi: 10.1136/bmjopen-2019-029954

23. De la Rie SM, Van Sint Fiet A, Bos JB, Mooren N, Smid G, Gersons BP. Brief eclectic psychotherapy for moral trauma (BEP-MT): treatment protocol description and a case study. *Eur J Psychotraumatol.* (2021) 12:1929026. doi: 10.1080/20008198.2021.1929026

24. Held P, Klassen BJ, Brennan MB, Zalta AK. Using prolonged exposure and cognitive processing therapy to treat veterans with moral injury-based PTSD: two case examples. *Cogn Behav Pract.* (2018) 25:377–90. doi: 10.1016/j.cbpra.2017.09.003

25. Murray H, Ehlers A. Cognitive therapy for moral injury in post-traumatic stress disorder. *Cogn Behav Ther.* (2021) 14:e8. doi: 10.1017/S1754470X21000040

26. Evans WR, Russell LH, Hall-Clark BN, Fina BA, Brown LA, Foa EB, et al. Moral injury and moral healing in prolonged exposure for combat-related PTSD: a case study. *Cogn Behav Pract.* (2021) 28:210–23. doi: 10.1016/j.cbpra.2020.12.006

27. Gray MJ, Schorr Y, Nash W, Lebowitz L, Amidon A, Lansing A, et al. Adaptive disclosure: an open trial of a novel exposure-based intervention for service members with combat-related psychological stress injuries. *Behav Ther.* (2012) 43:407–15. doi: 10.1016/j.beth.2011.09.001

28. Maguen S, Burkman K, Madden E, Dinh J, Bosch J, Keyser J, et al. Impact of killing in war: a randomized, controlled pilot trial. *J Clin Psychol.* (2017) 73:997–1012. doi: 10.1002/jclp.22471

29. Purcell N, Koenig CJ, Bosch J, Maguen S. Veterans' perspectives on the psychosocial impact of killing in war. *Couns Psychol.* (2016) 44:1062–99. doi: 10.1177/0011000016666156

30. Burkman K, Purcell N, Maguen S. Provider perspectives on a novel moral injury treatment for veterans: Initial assessment of acceptability and feasibility of the impact of killing treatment materials. *J Clin Psychol.* (2019) 75:79–94. doi: 10.1002/jclp.22702

31. Harris JI, Erbes CR, Engdahl BE, Thuras P, Murray-Swank N, Grace D, et al. The effectiveness of a trauma focused spiritually integrated intervention for veterans exposed to trauma. *J Clin Psychol.* (2011) 67:425–38. doi: 10.1002/jclp.20777

32. Pyne JM, Rabalais A, Sullivan S. Mental health clinician and community clergy collaboration to address moral injury in veterans and the role of the veterans affairs chaplain. *J Health Care Chaplain.* (2019) 25:1–19. doi: 10.1080/08854726.2018.1474997

33. Currier JM, Drescher KD, Nieuwsma J. *Addressing Moral Injury in Clinical Practice*. Washington, DC: American Psychological Association (2021).

34. *Dienst Publiek en Communicatie Ministerie Van Algemene Zaken.* Available online at: https://www.communicatierijk.nl/vakkennis/rijkswebsites/aanbevolen-richtlijnen/taalniveau-b1 (accessed March 5, 2022).

35. O'Cathain A, Hoddinott P, Lewin S, Thomas KJ, Young B, Adamson J. Maximising the impact of qualitative research in feasibility studies for randomised controlled trials: guidance for researchers. *Pilot Feasibility Stud.* (2015) 1:1–13. doi: 10.1186/s40814-015-0026-y

36. Thomas DR. A general inductive approach for analyzing qualitative evaluation data. *Am J Eval.* (2006) 27:237–46. doi: 10.1177/1098214005283748

37. Urech A, Krieger T, Möseneder L, Biaggi A, Vincent A, Poppe C, et al. patient post hoc perspective on advantages and disadvantages of blended cognitive behaviour therapy for depression: a qualitative content analysis. *Psychoth Res.* (2019) 29:986–98. doi: 10.1080/10503307.2018.1430910

38. Whealin JM, Seibert-Hatalsky LA, Willett Howell J, Tsai J. E-mental health preferences of veterans with and without probable posttraumatic stress disorder. *J Rehabil Res Dev.* (2015) 52:725–38. doi: 10.1682/JRRD.2014.04.0113

39. Niemeyer H, Knaevelsrud C, Schumacher S, Engel S, Kuester A, Burchers S, et al. Evaluation of an internet-based intervention for service members of the German armed forces with deployment-related posttraumatic stress symptoms. *BMC Psych.* (2020) 20:205. doi: 10.1186/s12888-020-02595-z

40. Hembree EA, Foa EB, Dorfan NM, Street GP, Kowlaski J, Tu X. Do patients drop out prematurely from exposure therapy for PTSD? *J Trauma Stress.* (2003) 16:555–62. doi: 10.1023/B:JOTS.0000004078.93012.7d

41. Mohr DC, Riper H, Schueller SM. A solution-focused research approach to achieve an implementable revolution in digital mental health. *JAMA psychiatry.* (2018) 75:113–4. doi: 10.1001/jamapsychiatry.2017.3838

42. Spence J, Titov N, Johnston L, Jones MP, Dear BF, Solley K. Internet-based trauma-focused cognitive behavioural therapy for PTSD with and without exposure components: a randomized controlled trial. *J Affect Disord.* (2014) 162:73–80. doi: 10.1016/j.jad.2014.03.009

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Scenario-based supported interventions for moral injury and posttraumatic stress disorder: Data report of film and television references for use with uniformed professionals

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Introduction

Uniformed Professionals (UPs), including military members, public safety personnel, and essential service providers, operate in increasingly fast-paced, unpredictable, complex and ambiguous environments. Situations arising in these contexts often require UPs to make prompt decisions and act rapidly to protect themselves and others. While their decision-making is informed by a values-based framework, code of conduct, implicit and explicit duties, and standards of practice, moral dilemmas that arise in the course of service can challenge their values and beliefs. Moral dilemmas are a special class of moral decisions in which (i) there is a conflict between at least two core values/obligations (loyalty, obedience, respect for life); (ii) acting in a way that is consistent with one underlying value means failing to fulfill the other(s); (iii) harm will occur regardless of the option chosen; and (iv) a decision is inescapable and inevitable; some action must be taken (1). In some cases, moral dilemmas can contribute to mental health problems such as PTSD, depression, anxiety, and moral injury (MI).

MI is a psychological and spiritual injury that arises as a result of exposure to a potentially morally injurious event (PMIE), including participating in, witnessing, or failing to prevent an act(s) that transgresses core beliefs (2). Guilt, shame, anger, betrayal, powerlessness, and suicidal ideation are commonly associated with MI. UPs can experience various types of shame and guilt associated with perceived moral transgressions including dishonesty, harm to others, injustice, violation of trust, failure to care, or lack of self-control. They can also experience survivor guilt, guilt over acts of omission or commission, or guilt about thoughts/feelings.

Emerging themes in the field of MI include betrayal (e.g., leadership failures, betrayal by peers, failure to live up to one's own moral standards, betrayal by trusted civilians), disproportionate violence (e.g., acts of revenge, mistreatment of combatants), and incidents involving civilians (e.g., harm caused, assault, destruction of property). Moral transgressions associated with violence in service environments (e.g., sexual trauma, friendly fire, "fragging" (i.e., the deliberate or attempted killing of a soldier by a fellow soldier) have also been the focus of significant consideration. These are all difficult to speak about in advance of and following exposure to PMIEs.

Novel approaches and solutions are needed prior to and following exposure to PMIEs to minimize their impact and address PTSD and MI that may result. Such approaches necessitate recognition of moral issues and the development and practice of moral awareness. This requires systematic and continuous interventions focused on enhancing moral reasoning and judgment, and instilling values such as integrity, moral courage, professionalism, and responsibility. We propose that scenario-based supported interventions (SBSIs) that use movie and television references are a novel and promising approach to both stimulate a discourse on PMIEs, PTSD and MI, and support a range of MI interventions including primary prevention, "psychological first aid" training or intervention (3, 4), and individual and group-oriented treatment interventions (5, 6).

SBSIs, informed by moral and ethical training and cognitive-based models, have three substantive objectives: (i) increasing moral awareness, understanding moral dimensions, and recognizing moral implications of their decisions; (ii) exercising moral judgment, recognizing different and at times competing cultural moral systems, and identifying an appropriate understanding of their role in the situation and their potential responses, and (iii) increasing confidence and mastery of managing morally complex situations (7). Importantly, Thompson et al. (8) advocated that scenarios used in primary prevention should be morally ambiguous or complex so that UPs are able to "*confront the absence of "right" answers,... [and understand that] they may not [always] be able to resolve the dilemma, solve the problem, or "do the right thing*"" (p. 279), as there are times when this may be the case in operations (8). We propose that there is a fourth objective: (iv) providing a reflective mirror - where the mirror is a metaphor for the reflective practitioner and one's experiences that are shared among peers through a common language.

SBSIs can be used in psychoeducational classroom settings and therapeutic contexts. The benefits of integrating movie and television references in UP populations into leader-led discussions during professional military education (PME) was first explored by Thompson et al. (8), followed by Warner et al. (9), and Thompson and Jetly (10). Thompson et al. (8) argued that PME provides the time for critical thinking skills to analyze moral challenges (such as contempt, anger, disgust, shame, guilt, awe, honor, elevation, pride), using three key psychoeducational processes: (i) situational reconstruction, in which individuals revisit the experience in order to gain perspective; (ii) focusing, in which individuals explore their moral emotions and physical reactions to the event; as well as (iii) compensatory self-improvement, in which individuals envision what actions they can now take to develop confidence in their ability to take future action [also see de Graaff et al. (11)]. While the video clips and material provided a novel technique to assist leaders with framing the context of the discussion, retaining soldiers' attention, and focusing it on key training concepts, the greatest impact of the program came from the chain-teaching format: "*The brief video clips provided a framework for discussion of topics relevant to the day-to-day scenarios that these soldiers were encountering, sometimes including ambiguous and difficult ethical dilemmas. The chain teaching provided a method for unit leaders to give guidance on how they expected their subordinates to respond to ethically challenging situations and also allowed for direct discussion between participants about situations they had actually encountered in their work*." (9, p. 922). A recent scientific review of the effectiveness of a training program for military leaders using SBSIs noted significant reductions in soldier mistreatment of noncombatants and simultaneous improvement in soldiers' ethical attitudes (9). Peer insights and support, mentor supervision, and access to mental health professionals within resident PME can not only allow UPs to "*prepare themselves for the morally traumatic situations they may experience during future deployments, and learn how to prepare their colleagues to do the same*" (8, p. 278), but "*create an environment in which they can process past PMIEs*" (8, p. 278).

Movie vignettes and television clips have also been used as cinematherapy to address PMIEs and MI. In addition to cinematherapy, SBSIs using movie and television clips may be helpful in a variety of psychoeducational contexts and include evidence-based methods such as group movie therapy, art therapy, and bibliotherapy. Four distinct but connected stages of self-development can be facilitated through cinematherapy: (i) identification, (ii) emotional release, (iii) insight, and (iv) universalization (12, 13). A teacher or clinician can use these stages to stimulate and structure discussions for prevention through treatment of MI. During the identification stage, individuals see a commonality, similarity, and/or connection with the character and/or situation. This stage offers an opportunity for examination of the behaviors and motives of the characters and self-exploration. In the second stage, individuals can work through a problem and emotions that surface, and release emotions and tensions. In the third stage, by understanding the behaviors and motivations of a character, individuals can empathize with and develop better awareness and understanding of issues and situations within

their own lives. In the universalization stage, individuals recognize that others have similar experiences and difficulties. Individuals can experience an increased sense of community and reduced sense of isolation, aloneness, and shame or guilt (14). As an SBSI, cinematherapy can foster critical thinking skills. *Via* situational reconstruction, moral challenges can be experienced, physical reactions/responses to these events can be explored, and actions can be envisioned that help build confidence in future decision-making and action-taking measures.

UP leaders are among those exploring innovative approaches to address PMIEs in pre/post-deployment training. The research by Thompson et al. (8) was the first of its kind to encourage the use of SBSIs in UP populations. Our goal was to establish and describe a dataset of relevant movie and television references for use as SBSIs with UPs prior to exposure to PMIEs or in the course of treatment for MI. Development of the dataset was informed by Ge et al. (15), who created an expanded database of emotional film clips for use in treatment with individuals diagnosed with schizophrenia.

Methods

An environmental scan of popular cinema and television shows was conducted between November 2019 and April 2022 with the aim of isolating relevant and accessible English language movies and television episodes produced between 1930 to 2022 for inclusion in the dataset. This included searches of Internet film databases (e.g., imdb.com, wingclips.com, trakt.tv, ranker.com), online movie scripts (e.g., script-o-rama.com, quodb.com, scripts-onscreen.com, dailyscript.com), screenplays (e.g., sfy.ru, moviescriptsandscreenplays.com, scripts.tv-calling.com), review articles of films about trauma and PTSD, and film and television review sites. Keywords used in the searches included post-traumatic stress (PTSD), battle fatigue, trauma, anguish, stress, shellshock, anxiety, depression, isolation, shame, and grief. Screening and selection of movies and television episodes was conducted by a research team member (AP) based on a search of films by theme and title, review of film scripts, and screening of movies and television episodes to determine clip relevance, ecological validity, relatability by selected populations, popularity, length, viewability, and depiction of a growth-oriented character arc (i.e., exposure to a PMIE or potentially traumatic experience, followed by potential or obvious healing/recovery). Excluded were low-budget schlock horror films (e.g., overly-sensationalized and excessively violent, gory clips or those depicting victimization, abuse or exploitation), and films wherein characters did not exhibit a growth-oriented character arc in a manner easily depicted in a video clip.

A database protocol was developed and a spreadsheet prepared to capture study findings. A preliminary searchable dataset was constructed including descriptive information/categories to facilitate selection of clips appropriate for psychoeducational or therapeutic use. The clips included were limited in length as per fair dealing/copyright regulations, with linkage to online digital delivery platforms (e.g., Films-on-Demand, Criterion-On-Demand) being explored.

Dataset

Data collection protocol

More than one thousand movies and television episodes were selected. After reviewing scripts and screenplays, viewing films and television episodes, and screening by inclusion/exclusion criteria, a total of 569 movie and television show references were identified. Findings were compiled by AP into an initial searchable dataset containing 155 video clips for creating the SBSI dataset. Clips from movie and TV episodes ($n = 394$) are yet to be reviewed and included in the dataset based on media availability and sources [see Figure 1: Diagram showing the workflow steps (data collection and primary curation)].

Clips were cataloged by theme, population (i.e., Emergency Medical Services (EMS), Health Care, Fire, Police, Military, Pseudo-Military), trauma symptom/traits (i.e., avoidance, depression, emotional dysregulation, flashbacks, guilt/shame, nightmares, self-harm) and PTSIs (i.e., substance misuse, institutional betrayal, sanctuary trauma, military sexual trauma, burnout, complex grief, PTSD complex) for use by educators, mental health professionals and researchers. Movie title, type, release date, director, production company, clip length, relevance, intensity, and brief descriptions were also included. The dataset has been developed for ease of access by potential users and within various contexts (e.g., psychoeducation, peer support, family support, social support, and psychotherapy/cinematherapy). This effort resulted in a unique dataset that can be used at various stages of intervention, from primary prevention through treatment.

Dataset description and structure

The dataset consists of a range of information. This includes the full name of the movie or television show, release date, director, production company, film length, clip time codes, and a description. The type of scene/experience is also included (e.g., army training, combat trauma, moral injury, noncombat PTSD, sexual assault, trauma, childhood trauma, veterans (Korean, WW1, WW2, OED/OIF/OND, Vietnam, Indigenous, pseudo-soldiers, Civil War, Russian), civilians, documentary, parody, and anime). Each clip is rated for relevance on a Likert

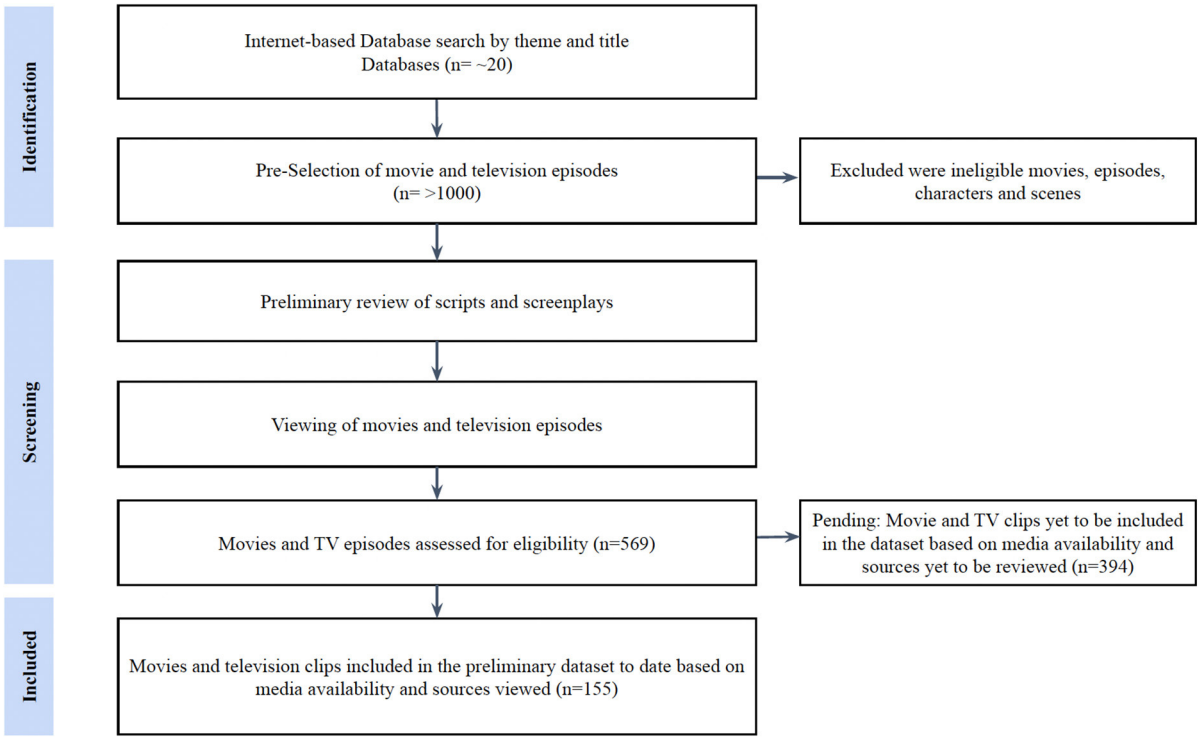

FIGURE 1
Diagram of workflow steps (data collection and primary curation) for creating the SBSI Dataset.

scale (1 being of little relevance to 10 being most relevant) and intensity/potentially triggering content (1 being mild and 10 being disturbing). External links to the clips are also applied. An information section includes as a brief description of the clip's content. The dataset also includes a variety of symptoms/traits (including avoidance, depression, emotional dysregulation, flashbacks, guilt/shame, nightmares, self-harm), and lists a number of post-traumatic stress injuries (PTSIs) (including substance misuse, institutional betrayal, sanctuary trauma, military sexual trauma, burnout, complex grief, and complex PTSD). The specific population for whom the video clip is relevant is noted (e.g., peer support, military, police, fire, health care, EMS, and civilian). Lastly, there is a section in the dataset that describes where the clip may be helpful as an SBSI including psychoeducation, psychotherapy, and spiritual, peer, social, and family support (see Table 1 for Dataset structure).

Interpretation and use

SBSIs are a novel means of using popular culture movie vignettes and television clip references that can facilitate self-reflection and stimulate discourse of salient topics around PMIEs, PTSD and MI. Use of the popular culture references in this catalog offers a novel approach for interventions, from primary prevention through therapeutic interventions. The creation of this work adds a readily available and searchable database, "*tools at one's fingertips*," that makes it easier to locate and use relevant clips for engaging in training or therapy. This evolving dataset will be made available and disseminated in compliance with copyright regulations.

SBSIs and this database can be used in individual or group contexts. In individual settings, this could be facilitated using Head Mounted Displays where the participant can have an immersive personalized experience of the movie or television clip. In a group setting, these clips can be viewed together, creating a shared experience and stimulating a discourse around experiences and topics that are otherwise difficult to discuss. The metaphor of a mirror can be used to guide the tensions between the individual's reflective listening process and his or her inner experience while reflecting. The conceptualization of reflective listening constitutes a dialectical shift that opens a different approach to the problem of the "tain or back surface," eventually concluding in an interactional formulation of reflection as the provision of tentative understandings (16). These understandings are designed to be amended in response to feedback. The reflective mirror, in the context of psychoeducational training,

TABLE 1 Dataset structure.

General information	Symptoms/traits	Post-traumatic stress injuries	Populations	Interventions
Media Title	Avoidance	PTSD	Pseudo-Military	Psychoeducation
Release Date	Depression	Moral Injury	Military	Psychotherapy
Director	Emotional Dysregulation	Complex Grief	Police	Spiritual Support
Production Company	Flashbacks	Institutional Betrayal	Fire	Peer Support
Length	Guilt, Shame	Substance Misuse	Health Care	Family Support
Film or TV Show Type	Nightmares	Sanctuary Trauma	EMS	Social Support
Relevance	Self-Harm	Military Sexual Trauma	Civilian	
Intensity		Burnout		
Viewable Clip				
External Resources				
Information				

specifically SBSIs, provides the opportunity for enhancing reflexivity and reflective thinking during training. SBSIs can also be used in relation to sensitive times in relation to deployment.

Pre-deployment

For purposes of prevention and health promotion, resources from this dataset can be integrated in psychoeducational classroom discussions preparing individuals for experiences they may face in service contexts. The use of SBSIs provides the time for critical thinking skills and self-awareness in experiencing moral challenges *via* situational reconstruction, and exploring physical reactions/responses to these events (17). They may also contribute to envisioning what actions will further develop the confidence of UPs in future decision-making and action-taking measures.

Post-deployment

This database can also be used in critical incident debriefing, or therapeutic contexts and psychoeducation to enable individuals to process exposures to PMIEs and facilitate recovery. SBSIs, with the use of film clips, facilitates the reconstruction of past experiences and provides UPs with the opportunity to explore how events may be different from what they previously experienced. The use of videos in therapy, cinematherapy, has been shown to facilitate self-awareness and development, connection with common experiences, elicitation and release of emotions, gaining of insight, and awareness that they are not alone (12–14). Ultimately, SBSIs that use film clips provide opportunities for self-disclosure and discussion which may result in increased self-esteem, positive coping mechanisms, and decision-making skills (18). As such, SBSIs are important in developing a strong sense of self, and buffering against adversity and crisis, resulting in a willingness to engage in action-taking measures (19).

Conclusion

UP leaders are incorporating a variety of training methods into their pre- post-deployment training. A description of a searchable database of movie and television references focused on PMIEs, PTSD, and MI is presented for use as SBSIs with UPs. Used in psychoeducational and therapeutic contexts, SBSIs may provide a common shared language. SBSIs may provide a common shared language, and means of normalizing and reducing stigma associated with PMIEs. Association and identification with characters in movie and television clips may facilitate empathy while simultaneously increasing awareness, understanding and reflection and addressing unresolved feelings such as grief, loss, shame and guilt associated with MI. In a group setting, movie clips can provide the medium to discuss these sensitive situations and emotions. As the use of SBSIs with UPs, however, is in its infancy and is not standard protocol, training for UP leaders and therapists will yet need to be developed to inform how to most appropriately and effectively incorporate such interventions if they are to have any effect on reducing the impact of PMIEs on UPs or support treatment for moral injury. The dataset will continue to evolve, be updated and be made available and disseminated in compliance with copyright regulations. We look forward to conducting a proof-of-concept study to initially explore the feasibility and acceptability of this evolving dataset into pre/post-training and therapy, and the feasibility and acceptability among military members and public safety personnel and UP leaders providing training and therapeutic interventions.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation and in compliance with copyright regulations.

Author contributions

AP contributed to the primary data search strategies, data collection, and development of the database. SB-P and EV contributed to the project design, article preparation, and overall supervision. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. North Atlantic Treaty Organization (NATO). *Moral Dilemmas and Mental Health Problems. Science and Technology Organization Technical Report*. (TREATY, STO-TR-HFM-179, RTG). (2018). Available online at:https://www.sto.nato.int/publications/STO%20Technical%20Reports/STO-TR-HFM-179/\protect\T1\textdollar\protect\T1\textdollarTR-HFM-179-ALL.pdf (accessed April 8, 2022).

2. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003

3. Sijbrandij M, Horn R, Esliker R, O'may F, Reiffers R, Ruttenberg L, et al. The effect of psychological first aid training on knowledge and understanding about psychosocial support principles: a cluster-randomized controlled trial. *Int J Environ Res Public Health*. (2020) 17:484. doi: 10.3390/ijerph17020484

4. Anderson GS, Nota Di, Groll D, Carleton RN. Peer support and crisis-focused psychological interventions designed to mitigate post-traumatic stress injuries among public safety and frontline healthcare personnel: a systematic review. *Int J Environ Res Public Health*. (2020) 17:7645. doi: 10.3390/ijerph17207645

5. Brooks SK, Weston D, Wessely S, Greenberg N. Effectiveness and acceptability of brief psychoeducational interventions after potentially traumatic events: a systematic review. *Eur J Psychotraumatol*. (2021) 12:1923110. doi: 10.1080/20008198.2021.1923110

6. O'Donnell ML, Lau W, Fredrickson J, Gibson K, Bryant RA, Bisson J, et al. An open label pilot study of a brief psychosocial intervention for disaster and trauma survivors. *Front Psychiatry*. (2020) 11:483. doi: 10.3389/fpsyt.2020.00483

7. Johnson CS. Addressing the moral agency of culturally specific care perspectives. *J Moral Educ*. (2011) 40:471–89. doi: 10.1080/03057240.2011.619335

8. Thompson MM, Thompson MH, Adams BD. *Moral and Ethical Dilemmas in Canadian Forces Military Operation: Qualitative and Descriptive Analyses of Commanders' Operational Experiences*. Defence Research and Development Toronto (2008). Available online at: https://apps.dtic.mil/sti/pdfs/ADA505336.pdf (accessed April 8, 2022).

9. Warner CH, Appenzeller GN. Mobbs A, Parker JR, Warner CM, Grieger T, et al. Effectiveness of battlefield-ethics training during combat deployment: a programme assessment. *Lancet*. (2011) 378:915–24. doi: 10.1016/S0140-6736(11)61039-8

10. Thompson MM, Jetly R. Battlefield ethics training: integrating ethical scenarios in high-intensity military field exercises. *Eur J Psychotraumatol*. (2014) 5:23668. doi: 10.3402/ejpt.v5.23668

11. de Graaff MC, Schut M, Verweij DE, Vermetten E, Giebels E. Emotional reactions and moral judgment: The effects of morally challenging interactions in military operations. *Ethics Behav*. (2016) 26:14–31. doi: 10.1080/10508422.2014.975815

12. Jeon KW. Bibliotherapy for gifted children. *Gifted Child Today Mag*. (1992) 15:16–9. doi: 10.1177/107621759201500604

13. Morawski CM. A role for bibliotherapy in teacher education. *Read Horiz J Literacy and Lang Arts*. (1997) 37:6.

14. Sharp C, Smith JV, Cole A. Cinematherapy: metaphorically promoting therapeutic change. *Couns Psychol Q*. (2002) 15:269–76. doi: 10.1080/09515070210140221

15. Ge Y, Zhao G, Zhang Y, Houston RJ, Song J. A standardised database of Chinese emotional film clips. *Cogn Emot*. (2019) 33:976–90. doi: 10.1080/02699931.2018.1530197

16. Arnold K. Behind the mirror: Reflective listening and its tain in the work of Carl Rogers. *Humanist Psychol*. (2014) 42:354–69. doi: 10.1080/08873267.2014.913247

17. Harden L, Jones N, Whelan C, Phillips A, Simms A, Greenberg N, et al. systematic review of psychological training or interventions given to UK military personnel prior to deployment. *BMJ Mil Health*. (2021) 167:63–9. doi: 10.1136/bmjmilitary-2019-001296

18. Colakkadioglu O, Celik DB. The effect of decision-making skill training programs on self-esteem and decision-making styles. *Eurasian J Educ Res*. (2016) 16:259–76. doi: 10.14689/ejer.2016.65.15

19. van Niekerk AMS, Roets HE. The psycho-educational practice of mental toughness in dealing with trauma. *Int J Psychologi Stud*. (2017) 9:83–93. doi: 10.5539/ijps.v9n4p83

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The impact of morally injurious events in a refugee sample: A quantitative and qualitative study

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Background: Posttraumatic Stress Disorder (PTSD) is often reported by refugees that faced violence and persecution. Some stressful events may also entail moral conflicts or dilemmas, described as "potentially morally injurious events" (PMIE). Very few studies have yet investigated the nature of these PMIEs in traumatized refugees, using both quantitative and qualitative data.

Method: For this retrospective study, secondary data analysis was used to examine the traumatic events of 183 patients. Based on established definitions of a PMIE, participants were allocated to a Moral Injury (MI) group if they reported lasting distress after exposure to an event of which they indicated that it transgressed their moral beliefs. The remaining participants were allocated to the No-MI group. The type of PMIEs was categorized using qualitative analysis. The groups were compared in terms of PTSD severity, feelings of guilt, and general mental health symptoms.

Results: Of the total sample, 55 participants reported one or more acts of transgression (MI group) and 128 reported no acts of transgression (No-MI group). Analyses of PMIEs revealed six themes 1) failing to prevent harm to others, 2) not giving aid to people in need, 3) leaving family members behind that consequently lead to injury or death of others, 4) making indirect and direct moral decisions leading to injury or death of others, 5) betrayal, and 6) engaging in the harm of others. No differences were found between groups on the clinical outcomes, except for feelings of guilt.

Conclusion: A considerable number of traumatized refugees reported confrontation with PMIEs. Experiencing PMIEs appeared unrelated to elevated posttraumatic mental health issues.

KEYWORDS

moral injury, moral stress, refugees, PTSD, guilt

Introduction

As a result of persecution, conflict, violence, and human rights violations, more than 89.3 million people worldwide were forcibly displaced of which 52.3 million internally displaced at the end of 2021 (1). The majority of the refugees has experienced multiple traumatic events such as sexual violence and imprisonment (2). Furthermore, many of them endured stressors during the migration process, such as separation from family, stays in refugee camps, and lengthy asylum procedures (3). Not surprisingly, the prevalence of mental health problems in refugees is high (4, 5). Mood and anxiety disorders are often reported, even years after resettlement (6, 7), indicating a high and persisting mental burden in refugees. The effects of violence and persecution go beyond fear-related reactions. Some traumatic experiences also entail moral conflicts or dilemmas and may be described as "potentially morally injurious events" (PMIEs). These events include "bearing witness to perceived immoral acts, failure to stop such actions, or perpetration of immoral acts that are inhumane, cruel, depraved, or violent, bringing about pain, suffering, or death of others" [(8), p. 9]. The term "moral injury" refers to "the lasting psychological, biological, spiritual, behavioral, and social impact of perpetrating, failing to prevent, or bearing witness to acts that transgress deeply held moral beliefs and expectations" [(9), p. 697]. Both definitions illustrate that moral injury and PMIEs can result from either active acts of commission (hereafter indicated as "commissions") or a failure of acts that prevented harm (hereafter indicated as "omissions") and can either be a result of appraisals of one's own moral transgressions (MI-Self) or appraisals of moral transgressions by others (MI-Other) (10, 11). There are indications that MI-self appraisals result in different outcomes than MI-other appraisals. For instance, research has shown that MI-Other appraisals were associated with more severe Posttraumatic Stress Disorder (PTSD) symptoms and MI-Self appraisals were associated with a lower level of intrusions (10, 11). In first-responder populations, it was found that actively perpetrating acts that transgressed moral values or beliefs (MI-self) was related to more self-blame, guilt and re-experiencing than exposure to life-threat situations without moral transgressions (12). Also, there was a reciprocal relationship between PMIEs with transgressions of oneself and PTSD symptoms 6 months later (13). Also, veterans who actively killed others had more suicidal ideations than individuals without these killing experiences (14).

Many studies investigating moral injury have focused on military populations (8, 15). Transgressions of moral beliefs included events such as killing, betrayal, and failing to prevent harm to civilians (16). Studies in a refugee population sample demonstrated that the majority of the refugees reported MI-other appraisals or a combination of MI-other and MI-self appraisals. Also, being troubled by acts of moral transgression was related to mental health problems such as PTSD, depression, and anger (10, 11, 17). Moral transgressions also predicted externalizing symptoms but not internalizing symptoms in refugee adolescents (18). Results provided evidence that the majority in a help-seeking refugee sample (68) reported embitterment and moral injury appraisals were positively associated with levels of embitterment, revealing the importance of perceived injustice in mental health problems after trauma exposure (19). Still there is very limited knowledge on the prevalence of moral injury in refugees as well as the nature of the PMIEs that refugees endure. Refugees are often exposed to a cumulation of traumatic events, that may meet the definition of a PMIE (8), but the nature and scope of PMIEs in refugees is yet to be examined. Also, little is known about the relationship between moral transgressions (either by oneself or others) and feelings of guilt, PTSD symptoms, and other mental health symptoms in refugees (12–14).

As far as we are concerned, there are no studies that examined PMIEs in a refugee sample by describing the nature of the PMIEs that refugees report. Therefore, the first aim of this study was to examine the nature of PMIEs among refugees, using a qualitative approach. Whereas we expected to find similar PMIEs as found in military contexts, we assumed that a number of PMIEs may reflect moral transgressions that are typical for a refugee population. For instance, leaving family members behind or making decisions about who receives (medical) aid first. Next to the PMIEs, we also aimed to provide descriptions of the traumatic events that patients were exposed to, differentiating between MI-self and MI-other and report the number of events in the total group of patients. Our second aim was to compare refugees with and without PMIEs in terms of PTSD severity, feelings of guilt, and general mental health complaints. We expected participants in the MI group to have more severe psychological complaints, manifesting in higher levels of PTSD, feelings of guilt, and other mental health complaints. This prediction was based on earlier studies (4, 10, 20, 21). In specific, we expected that the MI group would report more cluster D symptoms and feelings of guilt than the No-MI group since moral transgressions are associated with more feelings of guilt and wrongdoing (22). Guilt is often seen as an important emotion in moral injury (23) and can be viewed as a central component of PMIEs. Guilt is associated with having committed a moral transgression (MI-Self), whereas MI-Other events have been associated with anger in refugee populations (10). In a recent study among refugees, it was found that both preexisting general moral beliefs and situation specific blame appraisals were important for emotional outcomes such as guilt and anger (24).

Method

Participants

This retrospective study was conducted at a Dutch center for specialist diagnostics and treatment of people with complex psychotrauma complaints (i.e., ARQ National Psychotrauma Centre/Centrum'45). The majority of patients referred to this centre are severely traumatized individuals who received one or multiple treatments at other institutions, with limited success. The sample in the current study consisted of refugees (all above 18 years old) referred for diagnostics and treatment between 2014 and 2018.

Procedure

Data for this retrospective study were primarily collected for clinical purposes as part of the routine screening and assessment procedure prior to the start of treatment at ARQ Centrum'45. Data that were not stored automatically were entered into the system by authorized members of the clinical staff. Subsequently, data were archived anonymously for scientific research purposes by our data management department. After this procedure, anonymized data were made available to the researchers conducting this retrospective study. Patients were informed about the storage of anonymized assessment data and given the opportunity to have their data removed from the database, a procedure that is coordinated by our data management department. At intake patients were interviewed about their psychological complaints and the traumatic events they encountered. They also filled out several questionnaires as part of the Routine Outcome Monitoring, including the Brief Symptom Inventory (BSI), and the Life Events Checklist for DSM-5 (LEC-5). We used officially translated questionnaires in several languages (e.g., Dutch, English, French, Farsi, Bosnian Serbian, and Arabic) and if a specific language was not available, an official interpreter assisted. Furthermore the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) was administered in English, Dutch or with assistance of an interpreter. Patients were asked to offer written informed consent that the data from the assessment procedure as well as their electronical patient file could anonymously be archived for scientific research purposes; 379 patients did so.

For secondary analysis, participants were allocated into two groups based on information of the intake procedure: the MI group (one or more PMIEs) or no-MI group (no PMIEs). The traumatic events reported at intake were examined in order to assign the group categorization. First, one clinician made a broad preselection of the intake reports in order to categorize the events that were mentioned in the reports as "potential MIE." Traumatic events were indicated as PMIE when the description of the event and its consequences included information on 1) moral transgressions of the person himself or others (e.g., "watching how a friend was physical attacked"), or 2) the event was accompanied by feelings of guilt, shame, regret, remorse (e.g., "felt guilty because I didn't react to it"), or 3) the event included a perceived moral decision or a moral conflict directly related to the event (e.g., "I made the choice to flee but wasn't sure about it"). The potential PMIEs were listed separately in an anonymized file. In case more than one PMIE was reported in the intake report, all PMIEs were selected. Then, two other clinicians categorized the PMIEs following the definition of PMIEs by Drescher et al. (8) and the definition of moral injury by Litz et al. (9): An event was categorized as PMIE when the description of the event included 1) either a moral decision or a moral transgression by the person himself or others (either commissions or omissions) and 2) negative (emotional) consequences for the person himself or important others, either in a psychological, biological, spiritual, behavioral, or social manner. All participants with a designated PMIE were allocated to the MI group. When no information on the traumatic events or moral transgressions could be found, the information was ambiguous, or there was no information on the consequences of the event, patients were excluded from the current study, resulting in the reduction of the total sample of 379 participants to a total number of 183 participants. Of this sample 55 participants were assigned to the MI group and 128 participants to the No-MI group.

Measures

Demographics

As part of the assessment procedure (described above) the following demographical variables were documented: age, gender, and country of origin.

Traumatic events

The Life Events Checklist for DSM-5 (LEC-5) is a 17-item self-report measure used to screen for exposure to potentially traumatic events, as defined with the A-criterion of PTSD according to the DSM-5 (25). It assesses exposure to 16 events known to lead to PTSD or distress and one appended item assessing any additional stressful event. Answers are rated on 6-point scales with anchors: 1 = "happened to me"; 2 = "witnessed it"; 3 = "learned about it"; 4 = "part of my job," 5 = "not sure"; 6 = "does not apply." Findings show the LEC is a psychometrically sound instrument (26).

PTSD severity

The Clinician-Administered PTSD scale for DSM-5 (CAPS-5) is a 30-item structured diagnostic interview that measures the number of PTSD symptoms (25) as well as PTSD severity

and delayed expression. The CAPS-5 is a psychometrically sound measure, with strong reliability and validity (27, 28). The total severity score demonstrated high internal consistency ($\alpha = 0.88$). The subscale in this study that measured criteria D symptoms of PTSD also showed good internal consistency ($\alpha = 0.76$).

Mental health symptoms and feelings of guilt

The Brief Symptom Inventory (BSI) is a 53-item self-report questionnaire (29) that measures symptoms of psychological stress on nine subscales: depressive mood, interpersonal sensitivity, hostility, somatization, psychoticism, suspicion, phobic fear, cognitive problems and anxiety. One item of the BSI ("feelings of guilt") was individually analyzed to assess guilt. Answers are scored on a 5-point Likert scale (0 = "totally disagree" to 4 "totally agree"). Researchers have found good psychometric properties of the instrument in the general (30) and refugee population (31).

Statistical analysis

For this retrospective study, we used secondary data analysis. IBM SPSS Statistics 27.0 was used to conduct the statistical analyses, performed with a significance level of $p < 0.05$ (two-tailed). The data were screened for multivariate and univariate outliers across and within conditions according to the procedure by Tabachnick and Fidell (32). There were no multivariate outliers detected with Mahalanobis distances. However, there were multiple univariate outliers (more than three standard deviations) on the variables trauma load (LEC-5 total score), PTSD severity (CAPS-5 total score), and criterion D symptoms (number of symptoms and severity). The outlier cases of these variables were replaced with the highest non-outlier case (32). Missing data were detected for the variable trauma load ($n = 12$) (measured with the LEC), for the PTSD severity variable ($n = 1$), and for the BSI total score ($n = 1$).

The assumptions of independence of observations and normality were met. However homogeneity of variances were not met for all variables. For the variables PTSD severity and criterion D symptoms (severity) the variance was significantly different in the two groups, $F_{(1, 180)} = 11.36$, $p < 0.001$ and $F_{(1, 180)} = 5.75$, $p < 0.05$, respectively. For these variables, the Welch t-test was used in the analyses. Due to unequal group sizes, Pillai's trace was used in the interpretation of the results as it is more robust than other statistics to violations of model assumptions (33).

For our fist aim, qualitative analysis was carried out. The PMIEs of the participants were categorized in themes based on coding of the events following an inductive approach. The two clinicians that made the final categorization of PMIEs also categorized all PMIEs into either; commissions or omissions. Also, they made a distinction between MI-self and MI-other. The distinction between self and other was based on the Moral Injury Events Scale (MIES) (16, 20) and the Moral Injury Appraisal Scale (MIAS) (11) where events were categorized as MI-self when the individual was the one who committed an act that was morally wrong or failed to prevent acts that were morally wrong (e.g., "I am troubled by morally wrong things I have done" and "I went against my own morals by failing to do something I should have done") (MIAS). An event was categorized as MI-other when individuals were troubled because others acted morally wrong (e.g., "I am troubled because I saw other people do things that were morally wrong") (MIAS). Lastly, the clinicians closely examined the summaries of the PMIEs in order to identify common themes following an inductive approach. This was done by highlighting the most important words or sentences that described the content and subsequently identify common themes. For instance, sentences such as "tried to give medical aid" and "was not able to help" were put together and labeled as the category "not giving aid to people in need."

For our second aim, independent samples t-tests and a chi-square test were run to explore the differences between MI groups on the demographical variables. The differences between the MI groups (independent variable) on the dependent variables mental health symptoms (total score BSI), and feelings of guilt (sub-item of the BSI) were assessed with a multivariate analysis of variance (MANOVA). The differences between MI groups (independent variable) on PTSD severity and cluster D symptoms of PTSD were assessed with two Welch t-tests. Fisher's exact test (crosstabs) was used to test the differences between groups with respect to item 16 of the LEC-5 ("serious injury, harm, or death you caused to someone else").

Results

Demographics

Table 1 shows the descriptive statistics of the demographic variables. The MI group and the No-MI group differed significantly with respect to gender, $\chi^2_{(1, 183)} = 9.07$, $p = 0.003$, but not with respect to age $F_{(1, 182)} = 2.83$, $p = 0.094$, $\eta^2 = 0.015$. In the total sample, there were more male than female patients and there were only nine women in the MI-group in comparison to 50 women in the No-MI group. The age of participants ranged from 18 to 74 years. Participants were included from more than 47 different countries of origin. Most participants were from (fomer) Yugoslavia (13.1%), Afghanistan (10.9%), Iran (9.8%), Iraq (9.3%), Syria (7.1%), and Nigeria (6.6%). There were six participants of which the country of origin was not documented.

TABLE 1 Descriptive statistics of demographic variables for each group.

Measure		Moral injury group		No-moral injury group		Total	
		N (%)	M (SD)	*N* (%)	M (SD)	*N* (%)	M (SD)
Total sample		55 (30)		128 (70)		183 (100)	
Age			39.78 (10.56)		42.78 (12.18)		40.68 (11.12)
Gender	Female	9 (15.3)		50 (84.7)		59 (32.2)	
	Male	46 (37.1)		78 (62.9)		124 (67.8)	
Country of origin	Afghanistan	7 (12.7)		7 (12.7)		20 (10.9)	
	Iran	5 (9.1)		13 (10.2)		18 (9.8)	
	Iraq	5 (9.1)		12 (9.4)		17 (9.3)	
	Nigeria	3 (5.5)		9 (7)		12 (6.6)	
	Syria	2 (3.6)		11 (8.6)		13 (7.1)	
	Yugoslavia	14 (25.5)		10 (7.8)		24 (13.1)	
	Other	19 (34.5)		60 (46.8)		79 (43.2)	
	Unknown	2 (1.09)		4 (2.19)		6 (3.28)	

Traumatic events

For descriptive statistics, see Table 2. Overall in this sample, the trauma load was high, with each participant experiencing at least three traumatic events and a maximum of 14 events reported by five participants. Physical assault was most often reported in the total sample, followed by assault with a weapon, and combat or exposure to a war-zone (in the military or as a civilian). In the MI group, about 12.7% responded with "yes" to the statement "serious injury, harm, or death you caused to someone else" in comparison to 7.8% in the No-MI group. Fisher's exact test showed that this difference was not significant, $p = 0.40$. Furthermore, there were no significant differences in the endorsement of traumatic events between both groups, except for item 10 ("combat or exposure to a war-zone (in the military or as a civilian") (94% in MI-group and 75% in No-MI group) and item 14 ("sudden violent death") (80% in MI-group and 57% in No-MI group), respectively, $p < 0.005$ and $p < 0.01$.

Aim 1: Qualitative analyses of PMIEs

In total, all participants in the MI group reported at least one PMIE. Of the total sample ($N = 55$), 40 participants (72.7%) reported PMIEs that included commissions or omissions of themselves (MI-self), five participants (9.1%) reported PMIEs based on the acts and responsibility of others (MI-other), and six participants (10.9%) reported both. Furthermore, 21 participants (38.2%) reported events where they failed to act in a way that they found morally right (omissions), 27 participants (49.1%) reported acts with a moral transgression performed by themselves (commissions), and seven participants (12.7%) reported a combination of these two. Only six participants (10.9%) reported PMIEs that were related to being in combat as a soldier. The remaining participants reported PMIEs as civilians.

The descriptions of PMIEs contained mostly war related dilemmas and injuries and could be classified in the following categories: 1) failing to prevent harm to others (omission), 2) not giving aid to people in need (omission), 3) leaving family members behind that consequently lead to injury or death of others (commission), 4) making indirect and direct moral decisions that consequently led to injury or death of others (both commissions and omissions, 5) betrayal (commission) 6) and engaging in the harm of others (commission). The majority of the participants in this sample reported the fourth category, followed by the first category. Regarding the first category, participants mostly reported witnessing events of (extreme) violence and harm to others but failing to stop this violence. These events were accompanied by feeling powerless next to guilt, shame, and sadness. For the second category, the description that was mentioned most often was not giving medical help to others in need. Primarily, because they were injured themselves and therefore not able to help but feeling regret and guilt afterwards. As for the third theme, some participants reported that they left family members behind due to several reasons. Although it seemed the right decision at that moment, they reported feelings of guilt and regret, especially when they heard that the family members they left behind were in danger. The fourth category assembles a variety of events and was predominantly about the choice for a specific profession or the choice to become politically active, which caused a risk of arrestment or imprisonment or put others at risk. As for the fifth category, two participants reported events of betrayal. One person felt betrayed by others and the other person reported that he or she betrayed someone else under pressure and threat. Lastly, a few participants actively engaged in harming other people. Interestingly, almost everyone

TABLE 2 Number and percentage of the traumatic events reported by participants in each group.

Measure	Moral injury group		No-moral injury group		Total	
	N	%	*N*	%	*N*	%
Natural disaster	18	35.3	31	30.1	49	31.8
Fire or explosion	37	74.0	71	70.3	108	71.5
Transportation accident	28	54.9	64	62.7	92	60.1
Serious accident at work, home, or during recreational activity	15	29.4	26	25.5	41	26.8
Exposure to toxic substance	14	28.0	15	14.9	29	19.2
Physical assault	43	84.3	91	89.2	134	87.6
Assault with a weapon	44	86.3	88	98.1	132	86.8
Sexual assault	16	31.4	43	42.2	59	38.6
Other unwanted or uncomfortable sexual experience	12	23.5	37	35.9	49	31.8
Combat or exposure to a war-zone (in the military or as a civilian)*	48	94.1	77	74.8	125	81.2
Captivity	35	70.0	64	62.7	99	65.1
Life-threatening illness or injury	23	45.1	45	44.6	68	44.7
Severe human suffering	48	94.1	91	88.3	139	90.3
Sudden violent death**	41	80.4	59	57.3	100	64.9
Sudden accidental death	15	29.4	45	43.7	60	39.0
Serious injury, harm, or death you caused to someone else	7	14.0	8	7.7	15	9.7
Any other experience	24	51.1	51	50.0	75	50.3

*$p < 0.005$ and **$p < 0.01$.

reported that they acted under duress because they were (physically) threatened.

Aim 2: Quantitative analyses

PTSD severity

The vast majority of participants in this study met DSM-5 criteria for PTSD based on the CAPS ($N = 160$, 87.4%). Furthermore, 66 (36.1%) participants had a PTSD diagnosis with delayed expression and 39 (21.3%) participants had a PTSD diagnosis with dissociative symptoms. For descriptive statistics, see Table 3. The MI group reported greater PTSD severity and cluster D severity than the No-MI group, but a Welch *t*-test showed that this effect was not statistically significant for both PTSD severity and cluster D severity (Table 2). As the MI group included significantly more males than the No-MI group, an explorative one-way ANCOVA was used to examine if there was an effect of group (independent variable) on PTSD severity (dependent variable), whilst controlling for gender (covariate). Results showed no significant difference between the groups after controlling for gender, $F_{(1, 179)} = 1.47$, $p = 0.22$. For descriptive statistics, see Table 2.

Mental health symptoms and feelings of guilt

The MI group reported slightly more mental health symptoms on the total BSI score than the No-MI group but this difference was not statistically significant $F_{(1, 168)} = 0.63$, $p = 0.54$. Also for the subscales of the BSI no statistically significant differences were found, all $F_{(1, 181)} \geq 0.013$, all $p \geq 0.138$. Based on the observation that the MI group included significantly more males than the No-MI group, an explorative one-way ANCOVA was conducted that examined the effect of group level on mental health symptoms (total BSI score), whilst controlling for gender. Results showed no significant difference between the groups after controlling for gender $F_{(1, 179)} = 0.52$, $p = 0.47$. On item level, the MI group reported significantly more feelings of guilt (item 52 of the BSI) than the No-MI group, $F_{(2, 167)} = 4.02$, $p < 005$. For descriptive statistics, see Table 3.

Discussion

The first aim of this study was to examine the nature of PMIEs among treatment seeking traumatized refugees in a qualitative manner. Over 30% of the refugees in this study reported one or more PMIEs at intake. The PMIEs of refugees included 1) failing to prevent harm to others, 2) not giving aid to people in need, 3) leaving family members behind that consequently lead to injury or death of others, 4) making indirect and direct moral decisions that consequently lead to injury or death of others, 5) betrayal, and 6) engaging in harming others. Failing to prevent harm to others, harming others and betrayal were described in earlier studies with military groups (16).

TABLE 3 Descriptive statistics of PTSD severity symptoms and mental health symptoms.

Measure		Moral injury group		No-moral injury group		$t_{(180)}$	p	Cohen's D	Total	
		M	*SD*	*M*	*SD*				*M*	*SD*
PTSD severity		41.69	8.50	39.44	11.71	2.413	0.122	0.22	40.16	10.81
	Cluster B (severity)	11.56	3.37	11.23	3.92				11.33	3.74
	Cluster C (severity)	4.11	1.73	4.05	1.77				4.07	1.75
	Cluster D (severity)	14.46	3.79	13.58	5.08	1.837	0.177	0.24	13.86	4.71
	Cluster E (severity)	11.48	3.51	10.42	4.11				10.76	3.95
Mental health symptoms		2.29	0.66	2.19	0.75				2.22	0.72
	Somatic complaints	2.02	0.91	1.98	0.91				1.99	0.91
	Cognitive problems	2.59	0.74	2.59	0.93				2.59	0.87
	Interpersonal sensitivity	2.28	0.92	2.13	1.03				2.17	0.99
	Depressive mood	2.60	0.97	2.57	0.97				2.57	0.94
	Fear	2.56	0.84	2.46	0.90				2.49	0.88
	Hostility	1.78	1.02	1.57	1.03				1.64	1.02
	Phobic anxiety	2.20	1.00	1.94	1.06				2.03	1.04
	Paranoid thinking	2.44	0.97	2.22	1.05				2.29	1.03
	Psychoticism	1.94	0.80	1.98	0.93				1.97	0.89
	Feelings of guilt (item 52 BSI)	2.52	1.51	1.92	1.54				2.11	1.52

However, the scope of PMIEs in refugees goes beyond combat-related PMIEs often found in the military. From the qualitative results it appeared that only 11% of the participants reported combat-related PMIEs that are similar to military personnel who were deployed in active duty.This study shed light on PMIEs that were specifically related to the refugee context, such as the decision to flee the country and leaving loved ones behind. In most cases the person felt guilt when they found out that those family members were harmed or persecuted, because of their decision to flee. The quantitative results showed that the MI-group reported significantly more often the experience of being in combat or exposure to a war-zone (measured with the LEC-5) than the No-MI group. This suggest that exposure to war or combat are important contextual factors in the experience of PMIEs in refugees.

These results provide insight into the difficult moral dilemmas and PMIEs that refugees can face. In contrast to earlier studies [e.g., (10)] the qualitative results of our study showed that the majority of refugees in the MI-group reported moral transgressions by themselves (MI-self) instead of transgressions by others, except for betrayal. Yet, it could be hypothesized that many identified moral transgressions in our study (e.g., failing to prevent harm to others) also involved transgressions by others, although this was not explicitly reported by the participants as a moral transgression (and therefore not reflected in the data). Also, the quantitative results of our study confirm that the MI-group was exposed to MI-Other experiences, reflected in their endorsement of items of the LEC-5. Here it was found that in the MI-group 80% of the participants witnessed a sudden violent death in comparison to 57% in the No-MI group. At least some of these deaths may involve moral transgressions by others (i.e., MI-Other experiences). Future research could investigate whether exposure to a war-zone and being witness to a sudden violent death are more likely to be experienced as morally injurious in comparison to other traumatic events. Interestingly, the MI-group included significantly more males than females in comparison to the No-MI group. This is comparable to other studies on moral injury in treatment seeking refugees (17). However, there is limited knowledge on gender differences in moral injury. The few studies available showed that PMIEs that included betrayal or being a witness were more often reported by women. No gender differences were found for perpetration-based PMIEs (34).

Our second aim was to compare refugees with and without PMIEs in terms of PTSD severity, feelings of guilt, and general mental health complaints. In contrast to our hypotheses, results showed no differences between the groups in terms of our outcome variables, except for feelings of guilt measured with one item of the BSI. This suggest that experiencing PMIEs is associated with more feelings of guilt but does not directly result in severe clinical symptoms. There are multiple possible explanations for our results. One explanation is that the refugees in this study were reluctant to provide details on experiences potentially yielding high levels of shame or guilt. As a result of human rights violations, mistrusting others can become a survival strategy for refugees in social contexts (35), reducing

the chance of sharing sensitive details. Therefore, PMIEs may be underreported at intake, which is before treatment and before a trusting therapeutic alliance has been established. Hence, a number of refugees may be incorrectly assigned as No-MI because the PMIEs were rated by clinicians at intake and no specific measure of PMIEs was administered. Also ceiling effects might play a role since both groups consisted of severely traumatized individuals. Another explanation for these findings could stem from the difference between MI-self and MI-other. It has been postulated that facing moral violations of others is associated with life-threat and fear, resulting in more PTSD symptoms, in comparison to moral violations of oneself which is more associated with guilt and shame (20). In this study, the majority of the participants (72.7%) reported PMIEs that included moral transgressions of oneself. This suggests that guilt was more dominant than fear, perhaps resulting in less elevated PTSD symptoms than expected. It might be possible that committing a moral transgression is related to different outcomes compared to witnessing a moral transgression. It would be interesting to investigate whether omissions and commissions have different outcomes in terms of mental health symptoms. This is relevant for the treatment of distress associated with moral injury. For refugees in specific, this study acknowledges the importance of focusing on cognitive evaluations regarding responsibility, failing to prevent harm to others and decision making, as these were the most important themes that resulted from the qualitative analyses. Considering that our study showed that feelings of guilt were significantly stronger in the MI-group compared to the No-MI group, interventions that address guilt are also advised. For instance, Trauma-Informed Guilt Reduction (TrIGR) is a transdiagnostic psychotherapy that addresses guilt, shame, and moral injury symptoms after exposure to PMIEs and is indicated for a variety of trauma types including exposure to war and combat (36, 37). Also, the Brief Eclectic Psychotherapy for Moral Trauma (BEP-MT) is a newly developed treatment protocol that integrates components of cognitive-behavioral, psychodynamic, and systemic psychotherapy and was researched in a single case study (38).

A strength of the study is that it is the first that qualitatively examined the type of PMIEs experienced by treatment-seeking refugees with PTSD symptoms. Nevertheless there are several limitations to this study. The first limitation is that PMIEs were identified based on information obtained during intake sessions. No specific measure of PMIEs was administered. As a result it is possible that participants were incorrectly categorized as No-MI or vice versa. In this study, those participants for whom a distinction could not be made or data were missing in order to make a decision, were excluded, resulting in a considerable reduction of the sample size. Consequently, it is plausible that important information is missed. Also, the clinicians that made the categorizations of PMIEs pre-selected events that focused on a perceived moral decision or moral conflict by the person himself. However, this might unintentionally resulted in mainly MI-self experiences instead of MI-other experiences, which could explain why mainly MI-other themes were revealed in the qualitative analyses. Future studies should examine PMIEs more systematically. Furthermore, all of the participants were treatment seeking, which reduces the generalizability of the findings. Another limitation is the cross-sectional design of the study, lacking information on the course of mental health of participants over time, which would provide a more comprehensive understanding on the development of mental health complaints in relation to PMIEs. Finally, only guilt was taken into account whereas other emotions such as blame, regret, shame or anger are also important outcome measures of PMIEs. Also, it is a lack of this study that guilt was only measured with one item and not with a validated instrument.

In conclusion, this study illustrates the presence of PMIEs in a refugee population. Refugees with one or more PMIE had more feelings of guilt in comparison to refugees with no PMIEs but scores on indices of PTSD and general psychopathology were similar in the two groups. Further research needs to look into the PMIEs of refugees with a valid instrument to assess moral injury in a large sample and monitor PTSD complaints over time. Furthermore, the differences between commissions and omissions and moral transgressions performed by oneself or others remains unclear. Future studies should investigate this in order to understand the relationship between PMIEs and mental health outcomes in refugees.

Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available. Requests to access these datasets should be directed to databeheer@arq.org.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

Author contributions

SR contributed to the study concept and design. NM analyzed the data and drafted the manuscript. SR, NM, and PB participated in the interpretation and revision process of the manuscript. All authors read and approved the final manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. United Nations High Commissioner for Refugees. *Global Trends in Forced Displacement*. (2020). Available online at: https://www.unhcr.org/60b638e37/unhcr-global-trends-2020

2. Bhui K, Abdi A, Abdi M, Pereira S, Dualeh M, Robertson D, et al. Traumatic events, migration characteristics and psychiatric symptoms among somali refugees–preliminary communication. *Soc Psychiatry Psychiatr Epidemiol.* (2003) 38:35–43. doi: 10.1007/s00127-003-0596-5

3. Ryan DA, Benson CA, Dooley BA. Psychological distress and the asylum process: a longitudinal study of forced migrants in Ireland. *J Nerv Ment Dis.* (2008) 196:37–45. doi: 10.1097/NMD.0b013e31815fa51c

4. Nickerson A, Schnyder U, Bryant RA, Schick M, Mueller J, Morina N. Moral injury in traumatized refugees. *Psychother Psychosom.* (2015) 84:122–3. doi: 10.1159/000369353

5. Spiller TR, Schick M, Schnyder U, Bryant RA, Nickerson A, Morina N. Symptoms of posttraumatic stress disorder in a clinical sample of refugees: a network analysis. *Eur J Psychotraumatol.* (2017) 8:1318032. doi: 10.1080/20008198.2017.1318032

6. Bogic M, Ajdukovic D, Bremner S, Franciskovic T, Galeazzi GM, Kucukalic A, et al. Factors associated with mental disorders in long-settled war refugees: refugees from the former Yugoslavia in Germany, Italy and the UK. *Br J Psychiatry.* (2012) 200:216–23. doi: 10.1192/bjp.bp.110.084764

7. Henkelmann JR, de Best S, Deckers C, Jensen K, Shahab M, Elzinga B, et al. Anxiety, depression and post-traumatic stress disorder in refugees resettling in high-income countries: systematic review and meta-analysis. *BJPsych Open.* (2020) 6:e68. doi: 10.1192/bjo.2020.54

8. Drescher KD, Foy DW, Kelly C, Leshner A, Schutz K, Litz B. An exploration of the viability and usefulness of the construct of moral injury in war veterans. *Traumatology.* (2011) 17:8–13. doi: 10.1177/1534765610395615

9. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev.* (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003

10. Hoffman J, Liddell B, Bryant RA, Nickerson A. The relationship between moral injury appraisals, trauma exposure, and mental health in refugees. *Depress Anxiety.* (2018) 35:1030–9. doi: 10.1002/da.22787

11. Hoffman J, Liddell B, Bryant RA, Nickerson A. A latent profile analysis of moral injury appraisals in refugees. *Eur J Psychotraumatol.* (2019) 10:1686805. doi: 10.1080/20008198.2019.1686805

12. Litz BT, Contractor AA, Rhodes C, Dondanville KA, Jordan AH, Resick PA, et al. Distinct trauma types in military service members seeking treatment for posttraumatic stress disorder. *J Trauma Stress.* (2018) 31:286–95. doi: 10.1002/jts.22276

13. Currier JM, McDermott RC, Farnsworth JK, Borges LM. Temporal associations between moral injury and posttraumatic stress disorder symptom clusters in military veterans. *J Trauma Stress.* (2019) 32:382–92. doi: 10.1002/jts.22367

14. Maguen S, Metzler TJ, Bosch J, Marmar CR, Knight SJ, Neylan TC. Killing in combat may be independently associated with suicidal ideation. *Depress Anxiety.* (2012) 29:918–23. doi: 10.1002/da.21954

15. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral Injury: an integrative review. *J Trauma Stress.* (2019) 32:350–62. doi: 10.1002/jts.22362

16. Nash WP, Marino Carper TL, Mills MA, Au T, Goldsmith A, Litz BT. Psychometric evaluation of the moral injury events scale. *Mil Med.* (2013) 178:646–52. doi: 10.7205/MILMED-D-13-00017

17. Nickerson A, Bryant RA, Rosebrock L, Litz BT. The mechanisms of psychosocial injury following human rights violations, mass trauma, and torture. *Clin Psychol: Sci Pract.* (2014) 21:172–91. doi: 10.1111/cpsp.12064

18. McEwen C, Alisic E, Jobson L. Moral injury appraisals in young people from refugee backgrounds in Melbourne, Australia. *Psychol Trauma.* (2022). doi: 10.1037/tra0001214. [Epub ahead of print].

19. Spaaij J, Schick M, Bryant RA, Schnyder U, Znoj H, Nickerson A, et al. An exploratory study of embitterment in traumatized refugees. *BMC Psychol.* (2021) 9:96. doi: 10.1186/s40359-021-00599-2

20. Bryan CJ, Bryan AO, Anestis MD, Anestis JC, Green BA, Etienne N, et al. Measuring moral injury: psychometric properties of the moral injury events scale in two military samples. *Assessment.* (2016) 23:557–70. doi: 10.1177/1073191115590855

21. Currier JM, Holland JM, Drescher KD. Residential treatment for combat-related posttraumatic stress disorder: identifying trajectories of change and predictors of treatment response. *PLoS ONE.* (2014) 9:e101741. doi: 10.1371/journal.pone.0101741

22. Stein NR, Mills MA, Arditte K, Mendoza C, Borah AM, Resick PA, et al. A scheme for categorizing traumatic military events. *Behav Modif.* (2012) 36:787–807. doi: 10.1177/0145445512446945

23. Jinkerson JD. Defining and assessing moral injury: a syndrome perspective. *Traumatology.* (2016) 22:122. doi: 10.1037/trm0000069

24. Hoffman J, Nickerson A. An experimental investigation of the impact of blame appraisals and moral injury beliefs on psychological outcomes. *Cognit Ther Res.* (2022) 46:319–32. doi: 10.1007/s10608-021-10264-y

25. Weathers FW, Bovin MJ, Lee DJ, Sloan DM, Schnurr PP, Kaloupek DG, et al. The clinician-administered PTSD scale for DSM-5 (CAPS-5): Development and initial psychometric evaluation in military veterans. Psychol Assess. (2018) 30:383-95. doi: 10.1037/pas0000486

26. Gray MJ, Litz BT, Hsu JL, Lombardo TW. Psychometric properties of the life events checklist. *Assessment.* (2004) 11:330–41. doi: 10.1177/1073191104269954

27. Boeschoten MA, Van der Aa N, Bakker A, Ter Heide FJJ, Hoofwijk MC, Jongedijk RA, et al. Development and evaluation of the dutch clinician-administered PTSD scale for DSM-5 (CAPS-5). *Eur J Psychotraumatol.* (2018) 9:1546085. doi: 10.1080/20008198.2018.1546085

28. Müller-Engelmann M, Schnyder U, Dittmann C, Priebe K, Bohus M, Thome J, et al. Psychometric properties and factor structure of the german version of the clinician-administered PTSD scale for DSM-5. *Assessment.* (2020) 27:1128–38. doi: 10.1177/1073191118774840

29. Derogatis LR, Melisaratos N. The brief symptom inventory: An introductory report. *Psychol Med.* (1983) 13:595–605.

30. Beurs E, Zitman FG. De Brief Symptom Inventory (BSI): De betrouwbaarheid en validiteit van een handzaam alternatief voor de SCL-90. *Maandblad Geestelijke Volksgezondheid.* (2006) 61:120–41.

31. Raghavan SS, Rosenfeld B, Rasmussen A. Measurement invariance of the brief symptom inventory in survivors of torture and trauma. *J Interpers Viol.* (2017) 32:1708–29. doi: 10.1177/0886260515619750

32. Tabachnick BGFLS. *Using Multivariate Statistics. 7th ed*. Pearson (2018).

33. Ateş C, Kaymaz Ö, Kale HE, Tekindal MA. Comparison of test statistics of nonnormal and unbalanced samples for multivariate analysis of variance in terms of type-i error rates. *Comput Math Method Med.* (2019) 2019:2173638. doi: 10.1155/2019/2173638

34. Maguen S, Griffin BJ, Copeland LA, Perkins DF, Finley EP, Vogt D. Gender differences in prevalence and outcomes of exposure to potentially morally injurious events among post-9/11 veterans. *J Psychiatr Res.* (2020) 130:97–103. doi: 10.1016/j.jpsychires.2020.06.020

35. Ní Raghallaigh M. The causes of mistrust amongst asylum seekers and refugees: Insights from research with unaccompanied asylum-seeking minors living in the Republic of Ireland. *J Refugee Stud.* (2013) 27:82–100. doi: 10.1093/jrs/fet006

36. Capone C, Norman SB, Haller M, Davis B, Shea MT, Browne K, et al. Trauma Informed Guilt reduction (TrIGR) therapy for guilt, shame, and moral injury resulting from trauma: rationale, design, and methodology of a two-site randomized controlled trial. *Contemp Clin Trials.* (2021) 101:106251. doi: 10.1016/j.cct.2020.106251

37. Norman S. Trauma-informed guilt reduction therapy: overview of the treatment and research. *Curr Treat Options Psychiatry.* (2022) 5:1–11. doi: 10.1007/s40501-022-00261-7

38. de la Rie SM, van Sint Fiet A, Bos JBA, Mooren N, Smid G, Gersons BPR. Brief Eclectic Psychotherapy for Moral Trauma (BEP-MT): treatment protocol description and a case study. *Eur J Psychotraumatol.* (2021) 12:1929026. doi: 10.1080/20008198.2021.1929026

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Caught between is and ought: The Moral Dissonance Model

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Considerable academic effort has been invested in explaining the causes of, and processes behind moral injury. These efforts are mostly focused on assessment and treatment within a clinical setting. Collective and social factors contributing to moral injury are often overlooked in current literature. This perspective article considers the role of contextual factors associated with moral injury and proposes a framework that describes their relation to individual aspects. The resulting Moral Dissonance Model (MDM) draws on existing theories and frameworks. The MDM explains how dissonance can occur when the actual behavior–the response to a morally challenging situation–contradicts with morally desirable behavior. Individual and collective factors, which change over time, contribute to the experience of dissonance. The inability to sufficiently solve dissonance can lead to moral injury, but not as a matter of course. The MDM can help to understand the underlying processes of moral distress. It raises awareness of the influence of public debate and controversy, and the resulting changing societal attitudes over time. Its implications and future use are discussed.

KEYWORDS

moral injury, moral dissonance, decision-making, moral distress, military, social context, modeling, framework

1. Introduction

Moral injury describes the suffering that may develop after a violation of deeply held moral beliefs and values. While consensus on the definition of moral injury is currently lacking (1), moral injury is generally assumed to result from the betrayal by a leader or trusted authority (2) or exposure to events that involve either perpetrating or witnessing actions that violate one's core beliefs (3).

The concept of moral injury is rooted in discontent with dominant theory and treatment regarding post-traumatic stress disorder (PTSD). Although PTSD and moral injury show overlap in their respective symptomatology (2, 4), the moral and social dimensions of military distress were believed to be lacking in the current definition of PTSD (3–7). Thus, around a decade ago, military psychiatrists and psychologists adapted the concept moral injury to capture moral conflict-colored feelings of shame, guilt, betrayal and anger as a result of soldiers' deployment (5).

Most current studies on moral injury focus on its clinical assessment [e.g., (1, 8–11)]. As noted by Molendijk et al. (5), a consequence of such a focus is that moral injury is turned "…into an individual-focused and pathologizing construct which explains

trauma only in terms of intra-psychic and inter-personal processes, and gives sufferers the status of patients with mental disorders" (p. 3). This might lead to unnecessarily pathologizing of what can be considered normal moral processes (12).

In addition, by focusing on individual suffering the role of contextual factors is easily overlooked. Given the fact that morality itself is inherently social, it is unwarranted to treat moral injury as a concept that only relates to the experience of an individual (13–17). Contextual factors are all circumstances surrounding the individual's experience of an event, and include (military) culture, political mandate, and societal attitudes. These circumstances contribute to the occurrence of moral distress [e.g., (1, 5)]. For instance, Molendijk and colleagues (18, 19) describe how moral distress results from political decision-making and framing, but also from a lack of societal recognition (e.g., criticism and/or misplaced admiration regarding military missions).

In this perspective paper, we explore how to conceptualize the individual experience of moral distress in interaction with contextual factors, which can change over time. In doing so, we attempt to describe the manifestation of moral distress as a normal process, and move away from the focus on individual suffering and treatment of most current research. Building upon established theories and frameworks, we propose the Moral Dissonance Model (MDM) as a visualization of the continuous interplay between individual experience and contextual aspects. We believe that such a model is applicable to a wider context than the military, a research direction advocated by the reviews of Molendijk et al. (5) and Griffin et al. (1).

2. Establishing a comprehensive framework around is and ought

2.1. Distinguishing actual behavior from its consequences: The is

Litz et al. (3) describe a conceptualization of moral injury that is highly influential in current literature [e.g., (11)]. Their model starts with the occurrence of a "morally injurious experience"–as noted by Farnsworth et al. (14), this sometimes is even reduced to simply "moral injury." Such terms confound *the occurrence* of a specific behavior (or lack thereof) with *a specific outcome* of that behavior (e.g., moral injury), which may "contribute to tautological assumptions about the impact of these events (e.g., that certain events necessarily cause moral injury)" [(8), p. 2]. As a first step in deconstructing moral distress, we believe it is important to steer away from such assumptions.

In the model by Litz et al. (3), transgression (i.e., the experienced dissonance between an individual's morals and their actual behavior in reaction to a morally distressing event) is the starting point of a path that leads to moral injury. This framework focusses on the individual consequences of a confrontation with a morally difficult situation and it does not take the broader surrounding context into account. Social factors–which are part of the context–are included in models such as proposed by Koenig et al. (20) and the dual process model of moral injury (21). However, these models use context primarily in relation to morally traumatized individuals within their social environment, i.e., social alienation, social anxiety and social isolation are mentioned as the consequences of traumatization (1, 21).

Models describing how people make sense of, judge, and make decisions in morally colored situations can be found outside clinical literature. These models describe the processes that influence behavior before and during a morally difficult situation, instead of focusing on its consequences. For instance, organizational pressures, moral norms and behavior expected from others are some of the factors mentioned in the Ethical Dissonance Cycle (22), the Integrated Ethical Decision-making Model (23) and the model of moral choice behavior (24).

We have applied this contextual strand of thought using the Sensemaking Intuition Model (25). Sonenshein describes how the individual, confronted with an ethical issue, constructs an instantaneous intuitive judgement, i.e., an automatic affective reaction such as "right" or "wrong." This sensemaking is shaped by collective and individual factors; morality and ethics develop in childhood and are influenced during lifetime–especially within organizations such as the military or police where recruits are immersed in a new moral system (26, 27). Collective factors (e.g., the expectation of others and existing moral norms) also play a role in making morally challenging decisions (24).

Intuitive judgements and the resulting behavior occur rapidly and often without awareness. The actual behavior or response now constitutes the *is*: it cannot be altered and is (historically) situated in a certain place and time. A non-response or 'freezing' response can be considered a reaction too; individuals feel responsible for the behavior shown even if they were unable to act in a given situation and bear no moral responsibility for harm (28, 29).

2.2. Justifying behavior: The ought

Directly following the shown behavior, the individual needs to rationalize and justify it toward him/herself and others. This happens *post-hoc*, and it is in this phase that dissonance can occur when the actual behavior contradicts with a morally more desirable behavior; a sense of *ought*. People experience dissonance as problematic and are intrinsically motivated to reduce its consequent psychological stress (30, 31).

In daily life, most of us can adequately deal with experienced dissonance. This can be partly explained by the individual's cognitive flexibility. Cognitively flexible people perceive difficult situations as controllable, are able to perceive

multiple alternative explanations for life occurrences and human behavior, and are able to generate multiple alternative rationalizations to justify behavior (32, 33). Proneness to feelings of shame and neuroticism are two other aspects that may cause a higher susceptibility to experience dissonance (3). These individual factors influence the way somebody perceives and internally experiences a morally distressing event.

The distinction between what is and what ought-to-be can be traced back to 1739 when it was mentioned by Hume–albeit in a different manner (34). Hume believed it to be inherently impossible to deduce a (prescriptive) ought-statement about moral values from a (descriptive) is-statement on the state of affairs in the world. He thus separated the world of facts from the world of morality: the so-called Hume's Guillotine. While we, unlike Hume, do not purport to offer views on moral epistemology, the analogy of the is-ought problem can be made to the experience of moral dissonance. The distinction between descriptive and prescriptive cognitions has been used in the study of moral injury. Indeed, Farnsworth (35) proposed that moral injury is defined in part by prescriptive cognitions–that is, a person's judgement about what morally ought to be. For example, a veteran may feel guilt that he did not rescue a fellow soldier trapped in enemy fire and scolds himself as a coward. The veteran, in effect, prescriptively states that he should have acted differently (35).

2.3. The Moral Dissonance Model: Changes through context and time

The MDM combines the two elements described above and is depicted in Figure 1. Confronted with a morally ambiguous situation the individual intuitively tries to make sense of it before responding. This initial reaction constitutes the objective/actual behavior, or the non-alterable *is*. This is shown in the left of the Figure 1. After the initial response people will try to rationalize their behavior to themselves (individually) and others (socially), depicted on the right of the Figure 1. Moral dissonance arises when the displayed behavior is experienced to conflict with a morally more desirable behavior (*ought)*, shown in the middle of the Figure 1. Simply put, an individual will think: "I should have acted otherwise". An enduring inability to reach consonance can lead to moral injury (as depicted by the dotted line in the Figure 1).

The dissonance between is and ought can become more pressing by changing moral contexts-as there is a continuous change between the displayed behavior and a present, ever-changing sense of how the individual should have acted differently. What is striking about the stories of persons who experienced morally difficult situations, is their lively recollection about the events—years, sometimes decennia, after they occurred (36). These experiences, historically situated in a certain context, such as war, are often very different from their present-day lifeworld. The is-ought dynamic is susceptible to such changes.

For one, people personally develop over time and can develop new moral values, also depending on the changing social contexts in which one lives and works. Accordingly, a person can re-alter the idea of how he or she ought to have acted in the past. Judgements by society, organizations, family, friends, or bystanders can also upset an earlier felt balance (18). In certain moral contexts expectations prevail that allow or even encourage actions that are vehemently rejected in other contexts. For instance, there can be a stark difference between the circumstances and moral values of the workplace and those in the private sphere; the use of violence in the military is seen as morally acceptable and can conflict with privately held values. After acting out (violently) in concurrence with military values, privately a person can think that he or she ought to have acted differently, causing dissonance.

Contexts change not only over place but also over time, for example when a service member returns home after deployment of several months. During their reintegration into society, unwarranted admiration for veterans, or, conversely, public criticism on a military mission can result in the experience of misrecognition and may cause moral injury (18). The moral world of the military mission wherein a service member acted in a certain manner, then collides with the moral world of society.

As an illustration of how a change of context can influence the individual's perception of a morally difficult situation, we describe the experience of a Dutch veteran stationed in Afghanistan[1]. As part of the International Assistance Security Forces (ISAF), the veteran regularly had to visit with an Afghan police commander, as he was an important actor in local security and in the ISAF network. This commander was accompanied by a so-called "chaiboy," a 10-year-old boy who danced and poured tea for the guests. It was known that the commander also sexually abused the child. The veteran explained how at the time, the situation caused dissonance: despite feeling extremely uncomfortable, the veteran chose not to intervene. She knew that it was impossible—as a woman and a foreigner—to confront the commander. It would ruin the relationship.

Her rationalization was sufficient in the context of the mission in Afghanistan. Upon return to the Netherlands, however, following the pregnancy with her first child, doubts did arise. With the birth of her daughter, she realized how vulnerable children are. Many years later, through individual change and a change of context, she felt powerless–an emotion she could not allow before. It was impossible to change the outcome of the Afghanistan dilemma, she did however look for positive changes

1 In 2019, this veteran was interviewed for a related research project that explored moral dilemmas within several professions, including military, police, prosecution, health care, and humanitarian aid work (36).

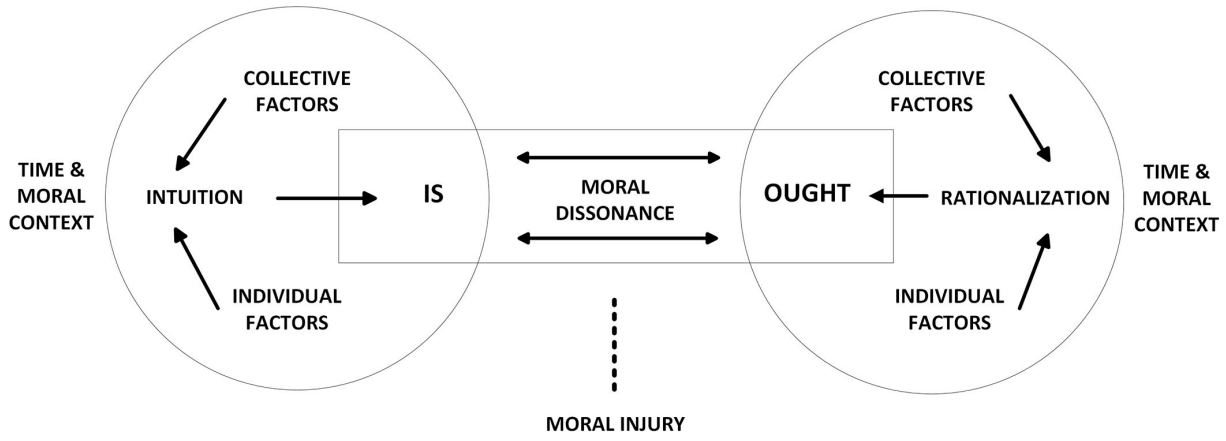

FIGURE 1
The Moral Dissonance Model.

she could make in her everyday life, by speaking out against discrimination or sexual intimidation, and by deciding, three weeks after the birth of her first daughter, to have her second daughter adopted.

3. Discussion

This perspective paper addresses the issue that current moral injury literature is overly focused on a clinical construction of the concept–where, in fact, moral injury has roots in, and implications for, both individual experiences and the social fabric itself (17). We introduced the Moral Dissonance Model (MDM) as a conceptual framework which can help understand the interplay of individual and collective factors related to moral injury beyond the clinical setting. Although the MDM relates to the influential causal framework of Litz et al. (3), the latter model specifically aims to reconstruct a process that leads to moral injury. The MDM, on the other hand, takes an opposite approach: dissonance, which can occur in everyday situations, is a normal human reaction that will not necessarily end in "injury"–but still can be tremendously distressing (37, 38).

In constructing the MDM, we shy away from the more clinical reasoning about moral injury. As noted by Griffin et al. [(1), p. 357], moral distress "… is a product of culturally imbued, shared values that are internalized by individuals—some of which (e.g., loyalty to country) may conflict with others (e.g., thou shalt not kill)." Even if moral injury occurs, it is not solely a product of intrapsychic conflict, and recovery is intrinsically connected with the extent personal views are shared with others. The context (be it family, community, working organization or culture) is part of the healing process in which the individual must return (p. 358). Such a general process of dissonance is also applicable to work sectors outside the military domain, which often is a focus in moral injury research (2, 39). During the recent COVID-19 pandemic, it was obvious how much medical professionals were confronted with moral dilemmas (40, 41). Indeed, the term moral distress relates to the nursing profession (42) and implies the experience of knowing the right thing to do while being in a situation in which it is nearly impossible to do so.

We believe the MDM can help understand the underlying processes of moral distress and put them into words–it raises awareness of the influence of public debate and controversy, and the resulting changing societal attitudes over time. However, we do recognize the MDM has limitations. A generalized model does no justice to the complex reality people in moral ambiguous situations are confronted with. Our example of the Dutch veteran stationed in Afghanistan is a case in point: she experienced dissonance from the outset and this was not completely resolved with her *post-hoc* rationalization. Dissonance caused by a moral violation, even before the actor has shown any behavior, is not explained by the MDM. Also, the MDM does not explain consequences as described by McDonald (43), who holds that moral injury does not only concern one's sense of moral failing, but also the painful thought that moral structure does not exist in the world at all.

In "normalizing" the moral dissonance process, also new questions emerge. In what way differs immediate dissonance caused by a perceived moral violation (as described in the example of the Dutch veteran), from behavior-based dissonance (as described in the MDM)? How do persons experience moral dissonance and how can we provide solutions to alleviate dissonance caused by an is-ought problem? How often does moral dissonance lead to moral injury and what are protective factors in the process from dissonance to injury?

In understanding the factors that induce dissonance, are we able to prevent it? And last but not least: what interventions at a contextual level can help counter individually felt moral distress?

Of course, there are cases in which the moral dissonance is so severe that it causes issues that can be labeled as moral injury. For these cases, treatment is needed. In therapy the patient can share the experience of a morally complex situation and the resulting feelings of shame and guilt. One form of treatment that shows a connection to the MDM is Acceptance and Commitment Therapy [ACT, (12)], which instructs the patient on the informative qualities of the moral pain. We believe the MDM can be part of the informative procedure, as it helps to define a certain type of moral dissonance and provides an easily comprehendible concept (is-ought).

In conclusion, a broader scope on what constitutes moral distress is needed to fully grasp all its influences. But even if we focus on the clinical diagnosis of moral injury, it should be recognized that it is not limited to repairing the wounds of the individual. In the end, military personnel, but also first responders and healthcare professionals are doing their work for the sake and benefit of society. Therefore, civilians should learn from and listen to their experiences of morally demanding situations (17) considering the complex and sometimes gruesome reality of these stories. Moral injury is not only a burden on the morally wounded themselves, but a matter that concerns us all.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

HT and BN: conception, writing, and research. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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References

1. Griffin BJ, Purcell N, Burkman K, Litz BT, Bryan CJ, Schmitz M, et al. Moral injury: an integrative review. *J Trauma Stress*. (2019) 32:350–62. doi: 10.1002/jts.22362

2. Shay J. Moral injury. *Psychoanal Psychol*. (2014) 31:182–91. doi: 10.1037/a0036090

3. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev*. (2009) 29:695–706. doi: 10.1016/j.cpr.2009.07.003

4. Maguen S, Litz BT. Moral injury in veterans of war. *PTSD Res Q*. (2012) 23:1–6.

5. Molendijk T, Verkoren W, Drogendijk A, Elands M, Kramer EH, Smit A, et al. Contextual dimensions of moral injury: an interdisciplinary review. *Mil Psychol*. (2022) 1–12. doi: 10.1080/08995605.2022.2035643

6. DePrince AP, Freyd JJ. The harm of trauma: pathological fear, shattered assumptions, or betrayal. In Kauffman J, editor. *Loss of the Assumptive World: A Theory of Traumatic Loss*. Brunner-Routledge (2002). p. 71–82.

7. Drescher KD, Foy DW, Kelly C, Leshner A, Schutz K, Litz B. An exploration of the viability and usefulness of the construct of moral injury in war veterans. *Traumatology*. (2011) 17:8–13. doi: 10.1177/1534765610395615

8. Frankfurt S, Frazier F. A review of research on moral injury in combat veterans. *Mil Psychol*. (2016) 28:318–30. doi: 10.1037/mil0000132

9. Jinkerson JD. Defining and assessing moral injury: a syndrome perspective. *Traumatology*. (2016) 22:122–30. doi: 10.1037/trm0000069

10. Yeterian JD, Berke DS, Carney JR, McIntyre-Smith A, St Cyr K, King L, et al. Defining and measuring moral injury: rationale, design, and preliminary findings from the moral injury outcome scale consortium. *J Traum Stress*. (2019) 32:363–72. doi: 10.1002/jts.22380

11. Mensink B, van Schagen A, van der Aa N, Ter Heide F. Moral injury in trauma-exposed, treatment-seeking police officers and military veterans: latent class analysis. *Front Psychiatry*. (2022) 13:904659. doi: 10.3389/fpsyt.2022.904659

12. Farnsworth JK, Drescher KD, Evans WR, Walser RD. A functional approach to understanding and treating military-related moral injury. *J Contextual Behav Sci*. (2017) 6:391–7. doi: 10.1016/j.jcbs.2017.07.003

13. Berger P, Luckman T. *The Social Construction of Reality. A Treatise in the Sociology of Knowledge*. London: The Penguin Press (1967).

14. Farnsworth JK, Drescher KD, Nieuwsma JA, Walser RB, and Currier JM. The role of moral emotions in military trauma: implications for the study and treatment of moral injury. *Rev Gen Psychol.* (2014) 18:249–62. doi: 10.1037/gpr0000018

15. Gert B, Gert J. *The Definition of Morality. The Stanford Encyclopedia of Philosophy*. (2020). Available online at: https://plato.stanford.edu/archives/fall2020/entries/morality-definition (accessed October 01, 2022).

16. Haidt J. Morality. *Perspect Psychol Sci.* (2008) 3:65–72. doi: 10.1111/j.1745-6916.2008.00063.x

17. Buechner BD. Untold stories of moral injury: what we are learning—and not learning—from military veterans in transition. *Front Commun.* (2020) 5:599301. doi: 10.3389/fcomm.2020.599301

18. Molendijk T. Moral injury in relation to public debates: the role of societal misrecognition in moral conflict-colored trauma among soldiers. *Soc Sci Med.* (2018) 211:314–20. doi: 10.1016/j.socscimed.2018.06.042

19. Molendijk T. The role of political practices in moral injury: a study of Afghanistan veterans. *Polit Psychol.* (2019) 40:261–75. doi: 10.1111/pops.12503

20. Koenig HG, Ames D, Youssef NA, Oliver JP, Volk F, Teng EJ, et al. The moral injury symptom scale-military version. *J Relig Health*. (2018) 57:249–65. doi: 10.1007/s10943-017-0531-9

21. Barr N, Atuel H, Saba S, Castro CA. Toward a dual process model of moral injury and traumatic illness *Front Psychiatry.* (2022) 1898:1–12. doi: 10.3389/fpsyt.2022.883338

22. Burchard M. Ethical dissonance and response to destructive leadership: a proposed model. *Emerg Leadership J.* (2011) 4:154–76.

23. Schwartz MS. Ethical decision-making theory: an integrated approach. *J. Business Ethics*. (2016) 139:755–76. doi: 10.1007/s10551-015-2886-8

24. Chorus CG. Models of moral decision making: literature review and research agenda for discrete choice analysis. *J Choice Model.* (2015) 16:69–85. doi: 10.1016/j.jocm.2015.08.001

25. Sonenshein S. The role of construction, intuition, and justification in responding to ethical issues at work: the sensemaking-intuition model. *Acad Manage Rev.* (2007) 32:1022–40. doi: 10.5465/amr.2007.26585677

26. Keltner D, Haidt J, Shiota MN. (2006). Social functionalism and the evolution of emotions. In: Schaller M, Simpson JA, Kenrick DT, editors. *Evolution and Social Psychology*. New York, NY: Psychology Press. p. 115–42.

27. Van Baarda T, Verweij D. Militaire Ethiek Een algemene inleiding. In: Van Baarda T, Verweij D. *Militaire Ethiek. Ethiek en integriteit bij de krijgsmacht, morele vorming en dilemmatraining*. Budel: Uitgeverij Damon (2010). p. 17–34.

28. Cavalera C. COVID-19 Psychological implications: the role of shame and guilt. *Front Psychol.* (2020) 11:571828. doi: 10.3389/fpsyg.2020.571828

29. Zimmerman MJ. *An Essay on Moral Responsibility*, Totowa, NJ: Rowman and Littlefield (1988).

30. Egan LC, Santos LR, Bloom P. The origins of cognitive dissonance: evidence from children and monkeys. *Psychol Sci*. (2007) 18:978–83. doi: 10.1111/j.1467-9280.2007.02012.x

31. Metin I, Camgoz SM. The advances in the history of cognitive dissonance theory. *Int J Human Soc Sci.* (2011) 1:131–6.

32. Dennis JP, Vander Wal JS. The cognitive flexibility inventory: instrument development and estimates of reliability and validity. *Cogn Ther Res.* (2010) 34:241–53. doi: 10.1007/s10608-009-9276-4

33. Robinson A. *The Impact of Cognitive Dissonance and Cognitive Flexibility on Belief Systems [research paper]*. Minnetonka: Adler graduate school (2013).

34. Hume D. *Treatise of Human Nature.* (1739). Available online at: https://gutenberg.org/ebooks/4705 (accessed February 21, 2022).

35. Farnsworth JK. Is and ought: descriptive and prescriptive cognitions in military-related moral injury. *J Trauma Stress.* (2019) 32:373–81. doi: 10.1002/jts.22356

36. Nauta B, Te Brake H, Raaijmakers I. *Dat ene dilemma: Persoonlijke verhalen over morele keuzes op de werkvloer*. [That one dilemma: personal stories about moral choices in the workplace] Amsterdam: Amsterdam University Press (2019).

37. Festinger L. *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press (1957).

38. Barkan R, Ayal S, Ariely D. Ethical dissonance, justifications, and moral behavior. *Curr Opin Psychol.* (2015) 6:1571161. doi: 10.1016/j.copsyc.2015.08.001

39. Currier JM, Holland JM, Drescher K, Foy D. Initial psychometric evaluation of the moral injury questionnaire–military version. *Clin Psychol Psychother.* (2015) 22:54–63. doi: 10.1002/cpp.1866

40. Borges LM, Barnes SM, Farnsworth JK, Bahraini NH, Brenner LA. A commentary on moral injury among health care providers during the COVID-19 pandemic. *Psychol Trauma.* (2020) 12:S138–40. doi: 10.1037/tra0000698

41. Cartolovni A, Stolt M, Scott PA, Suhonen R. Moral injury in healthcare professionals: a scoping review and discussion. *Nurs Ethics.* (2021) 28:590–602. doi: 10.1177/0969733020966776

42. Jameton A. *Nursing Practice, the Ethical Issues*. Englewood Cliffs, NJ: Prentice Hall (1984).

43. McDonald M. Haunted by a different ghost: Re-thinking moral injury. *Ess Philos.* (2017) 18:1–16. doi: 10.7710/1526-0569.1581

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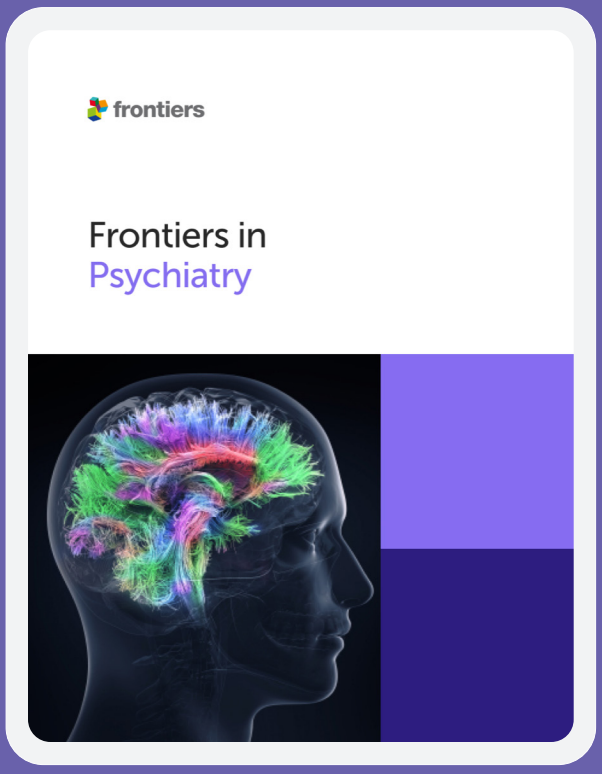

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