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A Review of Research on Moral Injury and Suicide Risk

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Keywords Moral injury · Suicidal ideation · Suicide attempt · Treatment · Review

Abstract

Purpose of Review This review summarizes empirical studies investigating the associations between moral injury and suicide-related outcomes.
Recent Findings A total of 47 studies met inclusion criteria and were reviewed. Samples included military, veteran, and civilian populations. Overall, more exposure to potentially morally injurious events (PMIE) and greater morally injurious symptom severity were both related to increased risk for suicide-related outcomes, including suicidal ideation and suicide attempt[s], and composite suicide-related variables. The strength of the association depended on the population, assessments used to measure moral injury and suicide-related outcomes, and covariates included in the model. Mediators and moderators of the association were identified including depression, posttraumatic stress, hopelessness, guilt, shame, social support, and resilience.
Summary Moral injury confers a unique risk for suicide-related outcomes even after accounting for formalized psychiatric diagnosis. Suicide prevention programs for military service members, veterans, and civilians working in high-stress environments may benefit from targeted interventions to address moral injury. While suicide-related outcomes have

not been included in efficacy trials of moral injury interventions, mediators and moderators of the association between moral injury and suicide-related outcomes are potential targets for therapeutic change, including disclosure, self-forgiveness, and meaning-making.

Introduction

Suicide is a significant public health concern, with nearly 800,000 people dying by suicide each year [1]. It is estimated that for every suicide-related death, there are at least 20 suicide attempts [1, 2]. In recent years, interest in the relationship between suicide-related outcomes and moral injury has increased. Moral injury refers to the *bio-psycho-social-spiritual* sequelae of participating in, witnessing, or learning about events that transgress one's deeply held beliefs [3, 4]. Moral injury can stem from exposure to range of events including but not limited to combat experiences, medical trauma, racial trauma, and sexual assault. Putative indicators of moral injury include feelings of shame, guilt, mistrust, anger, disgust, spiritual distress, sadness, thoughts of personal regret and systemic failures, and avoidance and self-handicapping behaviors [3, 5]. Studies also have shown that moral injury is associated with significant impairment in social, health, and occupational functioning [6, 7••]. Moral injury stems from exposure to one or more potentially morally injurious events (PMIEs). Three PMIE subtypes include transgressions by self, transgressions by others, and betrayal [8, 9•]. Of note, these PMIE subtypes can be further bifurcated into acts commission and omission. Many of the known psychological suicide risk factors are endemic to moral injury. For example, guilt and shame are associated with suicidal ideation and attempts [10–12] and mediate the relationship between posttraumatic stress disorder (PTSD) and suicide-related outcomes [12]. Believing that one is a burden, a form of self-deprecation common to moral injury, is an established suicide risk factor [13]. PMIE exposure is more strongly associated with guilt and self-blame than exposure to events that threaten serious injury or death [14••], suggesting that PMIE exposure may uniquely confer risk.

Despite growing interest in the concept of moral injury, our understanding of its association with suicide-related outcomes remains in its infancy. Moreover, whether moral injury treatment reduces suicide-related outcomes is also unknown. We synthesize research that empirically investigates the associations between moral injury and suicide-related outcomes. We also examine literature on moral injury interventions that assessed suicide-related outcomes. By synthesizing the current state of knowledge on this important topic, we hope to inform the development of effective prevention and intervention strategies for individuals who have been exposed to a PMIE, sustained a moral injury, and are at increased risk of suicide-related outcomes.

Method

A comprehensive literature search was conducted using the PubMed, PsycINFO, and PsychARTICLES databases. The following search terms were used: "moral injury" AND "suicid*" OR "suicidal ideation" OR "suicide attempt" OR "death by suicide" OR "suicidality." Studies were included if they (1) were published between 1980 and 2023; (2) used an empirical design; (3) investigated the association between moral injury and suicidal ideation, attempts, death by suicide, or suicidality in military, veteran, or civilian populations; and (4) were published in English. A total of 47 published studies were included

in the final review. Several studies used a composite variable, suicidality, that included a range of suicidal thoughts and behaviors that may include any combination of past and current suicidal ideation, suicide risk factors, and attempt.

Results

Tables 1 and 2 include a description of each study and summary of its relevant findings. There are duplicate listings if studies examined multiple suicide-related outcomes. Of the 47 studies included, 45 (95.7%) sampled military service members and veterans; only two studies sampled civilians. Of the 45 studies on military and veteran samples, 38 (80.9%) used cross-sectional designs and seven used longitudinal designs. Both studies of civilian samples used cross-sectional designs. Of note, three studies by Levi-Belz and colleagues were from the same data and three studies by Kelley and colleagues were from the same data. Thus, we report results from 42 unique samples.

Most studies used self-report measures to assess either PMIE exposure or moral injury symptom severity and suicide-related outcomes, although some studies used clinician-administered interviews or medical records to assess suicide-related outcomes or exposure to PMIEs. The most commonly used measure of PMIE exposure and associated subjective distress was the Moral Injury Events Scale (MIES) [9•], followed by the Moral Injury Questionnaire–Military Version (MIQ-M) [51]. The MIES includes nine items to assess exposure and subjective distress. A variety of factor solutions exist [8, 9•, 59•]. Across all of these various factor solutions, exposure and distress are not distinguished from each other. The MIQ-M is a 20-item measure that assesses both causes (i.e., events/exposures) and subjective effects (i.e., distress, moral injury symptoms). Some items refer to causes only, some to effects only, and some items contain both causes and effects. Initial factor analysis yielded a unidimensional structure [51].

Suicidal ideation and attempts were most commonly assessed using the Suicidal Behaviors Questionnaire-Revised (SBQ-R) [60] and Beck Scale for Suicide Ideation (BSS) [61]. In terms of demographic characteristics, the studies included samples of different ages, genders, and ethnicities, but the majority of the samples were comprised of predominantly White male participants. The vast majority of the studies were based on US samples.

Associations Between Moral Injury and Suicidal Ideation

Most studies ($n = 30$, 63.8%) investigated the association between moral injury and suicidal ideation (see Table 1). Of these, 26 (86.7%; including three longitudinal studies) found at least one significant positive association between moral injury and suicidal ideation. There was significant variation in which types of moral injury (i.e., transgression by self, others, betrayal, and related distress) and specific PMIEs (e.g., killing in combat, massacres, exposure to atrocities) were significantly associated. However, there was an overall

Table 1. Associations between moral injury (MI) and suicide-related outcomes

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
Suicidal Ideation	Cross-sectional survey data	Kovnick et al. [15]	Vietnamese older adults	2447	OLS regression, survey-weighted logistic regression, structural equation modeling	In both full sample and subsample of veterans, no significant association between morally injurious events and SI	Endorsement of exposure to MI wartime experiences derived from National Vietnam Veterans Readjustment Study, CES, DRRI
	Cross-sectional survey data and path analysis	Dennis et al. [16]	Male US combat veterans in outpatient VA PTSD clinic	603	Path analysis	Exposure to atrocities was significantly associated with guilt which, in turn, was associated with SI	VESI, CES, TRGI
	Cross-sectional survey data	Wisco et al. [17]	US veterans	564	Multivariate logistic regression	Transgression by self and total score, but not transgression by others or betrayal, was significantly associated with current SI	MIES
	Cross-sectional survey data	Williams and Berenbaum [18]	US veterans	50	Partial Correlations	Acts of omission was significantly positively associated with SI	MIES (modified to assess transgression by self and others only and separate out the act from the effect)
	Cross-sectional survey data	Corona et al. [19]	US veterans	564	Multivariate logistic regressions, follow-up simple slope tests	Association between transgression by others and betrayal, but not transgression by self, and SI was moderated by sense of meaning in life	MIES

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Bryan et al. [20]	US active duty	151	Generalized linear regression (results are for when all subscales in the model simultaneously)	Transgression by self was significantly positively associated with current SI and betrayal was negatively associated with current SI. Transgression by self was not significant	MIES
	Cross-sectional interview and survey data	Frankfurt et al. [21]	US veterans	190	Structural equation modeling	Transgressive acts was not significantly directly associated with suicidality. The indirect path from transgressive acts to suicidality through guilt was significant	Transgressive acts assessed using narratives elicited during C&P examination using CAPS-IV
	Cross-sectional survey data	Kelley et al. [22•]	US veterans	269	Bivariate correlations and mediation path analyses	Significant positive correlation between self and other-directed MI and SI. In combined model, direct and indirect (through meaning of life) effects of self-directed MI (but not other) and SI were significant	EMIS-M
	Cross-sectional survey data	Boscarino et al. [23]	US veterans, active duty, Guard/Reserve	1032	Stepwise multivariate logistic regression	High MI was not significantly associated with SI	MIES

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Levi-Belz et al. [24]	Israeli combat veterans	190	Bivariate correlations, hierarchical linear regression (full model reported), moderation analyses	Transgression by self and betrayal, but not by others, was significantly associated with current SI. Transgression by self and the interaction with self-disclosure were significant predictors of SI. Transgression by other and betrayal and their interaction with self-disclosure did not significantly predict SI. Self-disclosure moderated effect of transgression by self on SI, with less disclosure strengthening the association	MIES
	Cross-sectional survey data	Bryan et al. [25]	National Guard personnel	930	Exploratory structural equation modeling	Interaction of PTSD and moral injury increased risk for SI (at all levels of MI)	PHQ-9, DES-IV, ISI, AUDIT-C, NDC, DRRI-2 Unit Social Support
	Cross-sectional survey data	Maguen et al. [26]	US active duty soldiers	2854	Logistic regression, mediation analysis	Direct effect of killing in combat on SI was not significant. The indirect effect of killing in combat on SI via PTSD and depression was significant. Indirect effect on desire for self-harm via PTSD, but not depression, was significant	4 researcher-generated combat exposure questions

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Cameron et al. [27]	US veteran inpatients with substance use disorder	40	Hierarchical linear regression	MI total scores significantly associated with SI above and beyond PTSD and depression	MIES
	Cross-sectional survey data	Levi-Belz et al. [28•]	Israeli combat veterans	191	MANCOVA, biavariate correlations, hierarchical linear regression (full model reported)	Transgression by self and others, but not betrayal, significantly associated with current SI. Transgression by other, but not self or betrayal, was significantly associated with SI. Perceived social support moderated the effect of transgressions by self and other on SI, with lower levels strengthening the association	MIES
	Cross-sectional survey and interview data	Maguen et al. [29]	US veterans	259	Logistic regression	Endorsement of SI was associated with more killing experiences than those without SI or endorsed SA. In fully adjusted model, more killing experiences was associated with twice the odds of SI compared with no or low killing experiences	4 researcher-generated killing experiences questions

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Tripp et al. [30]	US veterans	68	Bivariate correlations and logistic regression	Composite variable of firing weapon at enemy and killing someone was significantly associated with SI. Association between killing in combat and SI approached significance	DDRI Combat Experiences Scale
	Cross-sectional survey data	Williamson et al. [31]	U.K. veterans	204	Chi Square and Fisher's Exact Tests and logistic regression	Those with exposure to MI and mixed event were significantly more likely to report SI than those with non-MI events. Those with exposure to mixed events were significantly more likely to report SI than those reporting exposure to MI event	Asked "Did you ever experience an event during service that challenged sense of who you are, your sense of the world, or your sense of right and wrong?" Researchers classified as MI, non-MI, or mixed event
	Cross-sectional interview data and longitudinal survey data	Kline et al. [32]	US veterans	Cross-sectional N=1665, longitudinal N=922	Multiple logistic regression	Combat-related killing was associated with double the risk for SI in both samples	Killing in combat items adapted from prior study (Hoge et al., 2004)
	Cross-sectional survey data	Hagerty and Williams [33]	US healthcare workers	1122	Bivariate correlations and multiple linear regression	Total score significantly positively associated with SI	MIES

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Bravo et al. [34]	US veterans	180	Bivariate correlation and path analysis	Self- and other-directed MI significantly positively associated with SI. Significant direct, but not indirect via rumination, effect of self-directed MI and SI. Direct and indirect effects of other-directed MI were not significant	EMIS-M
	Cross-sectional survey data	Hoffman et al. [35]	Refugees and asylum seekers in Australia	221	Latent profile analysis and logistic regression	Individuals in the MI-self and others profiles had significantly higher SI than those in the no-MI profile	MIAS
	Cross-sectional survey data	Nieuwsma et al. [36]	US veterans	315	Exploratory factor analysis, one-way ANOVA, bivariate correlations, multiple regressions	SI was significantly higher in those reporting any kind of PMIE (witnessing, commission, omission) versus those reporting no PMIE. MIQ-M and BMIS, but not MIES, were significantly associated with higher SI	MIES, MIQ-M, and "Brief Moral Injury Screen (BMIS)" Event and Sequelae Subscales developed by researchers
	Cross-sectional retrospective survey data	Nichter et al. [37•]	US combat veterans	1321	Multivariate logistic regression	Transgression by self, by other, and betrayal were significantly associated with SI, even after adjustment. Total score was not significantly associated with SI	MIES

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Longitudinal interview and survey data	Presseau et al. [38]	US active duty	789	Path analyses	Neither MI by self or other were significantly associated with SI	SCID-IV PTSD section, Criterion A trauma coded by raters as MI by self, MI by other
	Cross-sectional survey data	Schwartz et al. [39]	Israeli combat veterans	336	Bivariate correlations, mediated moderation analysis	All three subscales were significantly associated with current SI. Indirect effect of transgression by self on current SI through trauma-related shame was significant at all levels of collective hatred	MIES
	Cross-sectional survey data	Shapiro et al. [40•]	Female US National Guard members	151	Bivariate correlations, meditation analysis	Total score was not significantly associated with SI. Direct effect of MI on SI was not significant. The indirect effect of MI on SI via thwarted belongingness and perceived burdensomeness were significant	MIES
	Longitudinal follow-up survey data	Thoresen and Mehlum [41]	Norwegian male peacekeepers	1172	Multiple logistic regression	+Killing, witnessing atrocities and massacres	Combat exposure measure

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross sectional interview and survey data	Sareen et al. [42]	US active duty	8441	Multiple logistic regression	Witnessing atrocities and massacres was significantly associated with increased SI	3 researcher-generated questions assessing deployment-related traumatic experiences
	Cross-sectional survey data	McLean et al. [43]	US active duty	366	Structural equation modeling	Exposure to killing and aftermath of battle were not directly or indirectly related to SI	DRRI CES and Aftermath of Battle Subscales
	Longitudinal survey data	Krauss et al. [44•]	US active duty	402	Multilevel linear regression (fully adjusted results)	Killing enemy combatants was not significantly related to baseline and Year 1 SI. Unjust war events was significantly associated with SI at baseline, but not Year 1	Killing in combat items adapted from prior study (Hoge et al., [45]. Researchers divided into 3 categories
Suicidality*	Retrospective longitudinal data from VA electronic medical record	Parry et al. [46]	US Veterans	1545	Multivariate logistic regression	Total score significantly associated with increases in suicidality across period of 18 months among veterans with PTSD	MIES **suicidality based on ICD codes*

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Zerach and Levi-Belz [47]	Israeli combat veterans	191	Multivariate analysis of covariance, bivariate correlations, hierarchical regressions	Veterans with SI or suicidal behaviors report significantly higher transgressions by self and others, but not betrayal. MI Causes was significantly associated with suicidality, controlling for PTSD and depression	MIES and MIQ-Causes
	Cross-sectional survey data	Levi-Belz and Zerach [48]	Israeli combat veterans	191	Multivariate analysis of covariance, bivariate correlations, structural equation modeling	Suicidality endorsement was significantly higher in those endorsing transgressions by self and others, but not betrayal. Correlations between suicidality and all MIES subscales were significant. Direct path from transgression by self, but not by others or betrayal, was significantly associated with SIB. Indirect paths from transgression by self and betrayal, but not by others, to suicidality via entrapment and depression was significant	MIES
	Cross-sectional survey data	Kelley et al. [49]	US veterans, National Guard and Reservists, and active duty	256	Multiple linear regressions	MI (events and their reactions) was significantly associated with suicidality. Sex and MI interaction was not significant	MIQ-M, adapted to assess both events and reactions

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Kelley et al. [49]	US combat veterans	189	Correlations and series of moderation models	Self-directed and other-directed MI significantly positively associated with suicidality. Association of Self-directed MI and suicidality strengthened at higher levels of overidentification. Other-directed MI and suicidality weakened at higher levels of mindfulness and social connectedness	EMIS-M
	Cross-sectional survey data	Currier et al. [50]	US veterans	125	Multivariate logistic regression (full model reported)	MI experiences was not significantly associated with suicidality (defined as history of SA or likelihood of SA)	MIQ-M
	Cross-sectional survey data	Currier et al. [51]	US veterans	213	Bivariate correlation and multivariate regression	Correlations were not significant, but regression showed significant association between suicidality and MI	MIQ-M
	Cross-sectional survey data	Currier et al. [51]	US veterans	131	Structural equation modeling	Direct and indirect effect via meaning making of moral injury were significantly associated with suicide risk	MIQ-M
	Cross-sectional retrospective survey data	Nichter et al. [37•]	US combat veterans	1321	Multivariate logistic regression	Lifetime suicidal plans was associated with total score, transgression by self, by other, and betrayal, even after adjustment	MIES

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Battles et al. [52]	US veterans	244	Correlations and Multiple mediation models	Atrocities of war, their psychological consequences, and MI, but not leadership failure/betrayal were significantly associated with suicidality. Direct path from atrocities to suicidality was significant. PTSD mediated effects of atrocities and betrayal on suicidality	MIQ-M, modified to derive a MI score and 3 scores assessing exposure to types of MI events
	Longitudinal survey data	Levi-Belz et al. [24]	Israeli active duty service members	335	Bivariate correlations, hierarchical linear regression (full model reported), ordinary least squares regression	All three subscales significantly correlated with post-deployment suicidality. Transgression by other as well as the interaction of betrayal with aggression and emotion regulation were significantly associated with suicidality. Transgression by self and the interactions were not significant	MIES
	Cross-sectional survey data	Hamrick et al. [53]	US veterans	285	Meditation and moderated meditation models	MI mediated association between PMIEs and suicidality	EMIS-M

Table 1. (continued)

Suicide-related outcome	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Ames et al. [54]	US veterans	570	Stepwise general linear regression	MI total score and subscales (loss of trust, self-condemnation, shame, betrayal, loss of religious faith) were significantly associated with suicide risk*	MISS-M **suicide risk was defined as comprised of known risk factors such as white race, PTSD,* etc. *The variable included no actual measures of suicidality*

*Suicidality is a composite variable used by studies and includes varying combinations of past and/or current SI and SA, frequency of SI, suicide plan, and likelihood of future suicidal behavior. Studies either explicitly used the term suicidality to describe their specific composite variable or used the term "suicidal related thoughts and behaviors" and for organizational purposes and because the majority did use the term suicidality, these composites are presented under the term "suicidality" in this table. *PMIEs* potentially morally injurious events; *MI* moral injury; *MIES* Moral Injury Events Scale; *CES* Combat Exposure Scale; *DDRI* Deployment Risk and Resilience Inventory; *DDRI-2* Deployment Risk and Resilience Inventory, Version 2; *MIQ* Moral Injury Questionnaire–Military version; *EMIS-M* Expressions of Moral Injury Scale–Military version; *PHQ-9* Patient Health Questionnaire-9; *DES-IV* Differential Emotions Scale-IV; *ISI* Insomnia Severity Index; *AUDIT-C* Alcohol Use Disorders Identification Test Screener; *NDC* Nightmare Disorder Checklist; *MISS-M* Moral Injury Symptoms Scale–Military Version; *VESI* Vietnam Era Stress Inventory; *CES* Combat Exposure Scale; *TRGI* Trauma-Related Guilt Inventory; *MIAS* Moral Injury Appraisals Scale

Table 2. Associations between moral injury (MI) and suicide attempts

Suicide attempt	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey data	Wisco et al. [17]	US veterans	564	Multivariate logistic regression	Betrayal, but not transgression by self or others or total score, was significantly associated with post-deployment SA	MIES
	Cross-sectional survey data	Maguen et al. [55••]	US veterans	14,057	Bivariate associations and weighted multiple logistic regressions	In fully adjusted models, males who endorsed transgression by self were 2–3 times more as likely to have SA during and after military service. Betrayal was associated with SA during, but not after service. Association with transgression by other and SA was not significant. In females, betrayal, but not transgressions by self or others, was significantly associated with SA during and after service	MIES

Table 2. (continued)

Suicide attempt	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional retrospective survey data	Nichter et al. [37•]	US combat veterans	1321	Multivariate logistic regression	Transgression by self, by other, and betrayal were significantly associated with SA, even after adjustment. Total score was not significantly associated with SA	MIES
	Cross-sectional survey data	Bryan et al. [20]	US active duty	151	Multivariate logistic regression	Scores on transgression by self and others were significantly higher for those with versus without past SA. Scores also higher on these two scales among those with SA attempt versus those with SI only	MIES
	Cross-sectional survey data	Fani et al. [56••]	Trauma exposed US civilians	81	Analyses of covariance	Adjusting for PTSD and depression, MI exposure, but not distress, was significantly higher in individuals who had SA	MIES adapted to "Moral Injury Exposure and Symptom Sclae-Civilian (MIESS-C)"
	Cross-sectional survey data	Bryan et al. [25]	National Guard personnel	930	Exploratory structural equation modeling	Interaction of PTSD and moral injury increased risk for SA; PTSD increased risk for SA only among those with high MI	PHQ-9, DES-IV, ISI, AUDIT-C, NDC, DRRI-2 Unit Social Support

Table 2. (continued)

Suicide attempt	Design	Author	Population	*N*	Analysis	Results	MI measure
	Cross-sectional survey and interview data	Maguen et al. [29]	US veterans	259	Logistic regression	In fully adjusted model, killing experiences was not significantly associated with SA	4 researcher-generated killing experiences questions
	Cross-sectional interview data	Fontana et al. [57]	US veterans	1709	Multiple regression	Killing and failing to prevent death were more strongly associated with number of lifetime SA than other war zone stressors	War Stress Interview, Revised Combat Scale
	Electronic data system and longitudinal survey data collected from military	Griffith and Vaitkus [58]	US Army National Guard	4293	Multivariate logistic regression	Post-deployment SA was significantly associated killing in combat	Combat experiences were assessed by asking about exposure to 5 war stressors

PMIEs potentially morally injurious events; *MIES* Moral Injury Events Scale; *CES* Combat Exposure Scale; *DDRI* Deployment Risk and Resilience Inventory; *DDRI-2* Deployment Risk and Resilience Inventory, Version 2; *MIQ* Moral Injury Questionnaire–Military version; *EMIS-M* Expressions of Moral Injury Scale–Military version; *PHQ-9* Patient Health Questionnaire-9; *DES-IV* Differential Emotions Scale-IV; *ISI* Insomnia Severity Index; *AUDIT-C* Alcohol Use Disorders Identification Test Screener; *NDC* Nightmare Disorder Checklist; *MISS-M* Moral Injury Symptoms Scale–Military Version; *VESI* Vietnam Era Stress Inventory; *CES* Combat Exposure Scale; *TRGI* Trauma-Related Guilt Inventory; *MIAS* Moral Injury Appraisals Scale

stronger trend for an association between suicidal ideation and moral injury related to participating in the PMIE by what one did or failed to do (transgression by self) versus witnessing others wrongful actions (transgression by others) or feeling betrayed by leaders, peers, or institutions (betrayal). There was also heterogeneity in whether moral injury was directly or indirectly related to suicidal ideation, with some studies reporting direct effects controlling for posttraumatic stress disorder (PTSD) and depression [e.g., 17, 22•, 27 and others reporting only indirect effects [e.g.,21, 40•]. The remaining four studies, including a longitudinal study, found no significant associations between moral injury or PMIE exposure and suicidal ideation [15, 23, 38, 43]. These discrepancies may reflect the effect of measurement differences. The majority of these studies (75%) assessed PMIE exposure rather than symptoms of moral injury and used either atypical or a combination of scales to assess PMIE. The one study that did use a standard moral injury measure used a single-item to assess SI, which may have impacted the ability to accurately detect a signal.

Associations Between Moral Injury and Suicidal Attempts

A total of nine studies (19.0%) investigated the association between moral injury and suicide attempt(s) (see Table 2). Of these, eight (88.9%; including a longitudinal study and a study in civilians) found at least one significant positive association between moral injury and suicidal attempts. Similar to suicidal ideation, the association between moral injury related to transgression by self and suicide attempts was more reliably significant than transgression by others and betrayal. The majority of studies did not further unpack the difference between commissions and omissions, but one study did report both commission and omission were related to lifetime suicide attempt [57]. The remaining study found killing experiences was not significantly associated with suicide attempts [29]. This study assessed PMIEs via four questions generated by the researcher; therefore, this finding may be the result of not using a standardized measure to assess PMIE.

Associations Between Moral Injury and Death by Suicide

There have been no studies to date that have examined the association between moral injury and death by suicide.

Associations Between Moral Injury and Other Suicide-related Outcomes

A total of 13 studies (27.7%) examined the association between moral injury and suicide-related outcomes (see Table 1). Of these, 12 studies (92.3%) including two longitudinal studies, found at least one significant positive association between moral injury and suicide-related outcomes. The trend

of transgression by self being more consistently significantly related to suicide-related outcomes was consistent. However, it is worth noting that the inverse seemed to be true for the studies in Israeli veterans and service members; transgression by others and betrayal were more reliably related to suicide-related outcomes than transgression by self. This may imply important differences in both culture and the unique nature of conflicts (i.e., Iraq war versus Palestine and Israel conflict) that affect the relationship between moral injury and suicide-related outcomes. This may reflect the impact of both mandatory service and local warfare set in an urban, civilian setting compared to voluntary service and non-local warfare typical of US military service. The remaining study found no significant association between moral injury and suicide-related outcomes [50]. This null finding may be the result of the inclusion of a covariate, negative religious coping, in the model that captures specific qualities of moral injury. Specifically, negative religious coping refers to spiritual struggle with oneself, others, and higher powers with regards to traumatic events and was uniquely significantly associated with suicide-related outcome risk. Therefore, this finding may in fact reflect that the spiritual struggle dimension of moral injury is associated with suicide-related outcomes.

Moderator and Mediator Variables

Several studies investigated potential moderator and mediator variables that may impact the association between moral injury and suicide-related outcomes. Trauma-related shame mediated the association of transgression by self and suicidal ideation [39]. Similarly, overidentification with negative thoughts and emotions moderated the association between self-directed moral injury and suicide-related outcomes [49], with more overidentification strengthening the association. Self-disclosure of PMIE moderated the effect of transgression by self on suicidal ideation, with less disclosure strengthening the association [24]. In the same sample, perceived social support moderated the effect of transgression by self and other on suicidal ideation, with lower levels strengthening the associations [28•]. Further exploration of protective factors in another study revealed high levels of mindfulness and social connectedness reduced the association between moral injury and suicide-related outcomes [49]. Finally, meaning making and a sense of meaning were implicated as mediators and moderators of the relationship between moral injury and suicidal ideation and risk, respectively [19, 62]. Collectively, these findings point to potential moral injury treatment targets that may have the added benefit of reducing suicide-related outcomes.

Spiritual distress, self-punishment, and guilt are particularly challenging components of moral injury. Several studies investigated the relationship of these concepts to suicide-related outcomes. For example, a dispositional tendency toward self-forgiveness significantly differentiated military personnel and veterans who had attempted suicide from those who had only considered suicide [63], with those having lower self-forgiveness being at

higher risk of making an attempt. A composite measure of difficulty forgiving oneself, forgiving others, and receiving divine forgiveness and negative religious coping were uniquely significantly associated with suicide risk, even adjusting for PTSD [64]. In fact, one study in post 9/11 veterans found belief that one was being punished by God was significantly associated with having attempted suicide [65]. It should be noted that punishment was not indexed to a specific experience. Indeed, divine struggles and concerns about the presence of meaning in life are significantly related to suicide risk even after controlling for PTSD in veterans [66]. Also worth noting, several studies have found associations with moral injury and suicide-related constructs including those posited by Joiner's [67] interpersonal theory of suicide such as thwarted belongingness and perceived burdensomeness [e.g., 40•, 68, 69]. These findings highlight the importance of specifically addressing paths to forgiveness and community and spiritual integration as part of the meaning making process. Finally, there may be additional studies that examined the associations of suicide-related constructs with moral injury-related phenomenon prior to the formation of moral injury as a concept.

Treatment Studies

To date, the body of evidence examining psychotherapeutic interventions for moral injury is still in its infancy. Of the interventions designed to specifically treat moral injury, surprisingly, no known studies have reported on any suicide-related outcomes. Adaptive Disclosure and the Impact of Killing have both demonstrated efficacy in reducing psychiatric symptoms and posttraumatic stress, but suicide-related outcomes were not assessed [70, 71•, 72]. Other moral injury interventions include Building Spiritual Strength (BBS) [73], Trauma Informed Guilt Reduction Therapy (TrIGR) [74], Acceptance and Commitment Therapy (ACT) for Moral Injury group [75], and a Moral Injury Group (MIG) intervention led by chaplain and psychologist [76]. All of these reported benefits including decreases in trauma-related guilt to spiritual distress, components of moral injury. However, none of these assessed suicide-related outcomes. Three case studies reported using either Prolonged Exposure or Cognitive Processing Therapy (CPT) to treat moral injury-based PTSD in veterans [77, 78] and one case study used Cognitive Therapy to treat moral injury-based PTSD a healthcare worker [79]. None of these assessed suicide-related outcomes. Spiritually-Integrated CPT purports to target moral injury, as is demonstrated in a case study, but no data is reported on suicide-related outcomes [80].

The only preliminary anecdotal information available about the impact of moral injury-focused treatment on suicide-related outcomes is through case reports. One case study reported on the effectiveness of MIG in a veteran who endorsed active suicidal ideation and had a previous suicide attempt [81]. In addition to individual sessions, MIG includes the novel approach of communal intervention, whereby veterans participated in a public ceremony with civilians and other community members. This ceremony includes various rituals; for example, honoring the dead, testifying to the community, and

having the community acknowledge and grieve their share in the responsibility of the consequences of war. Although suicide-related outcomes were not quantitatively measured across time, at the end of the 11-week intervention, the veteran reported, "growing in his capacity to live a sound life, gain a sense of belonging to community" and a desire to explore a relationship to a higher power.

Another case study reported on the effectiveness of ACT for moral injury. Borges [82•] reports on a service member who was referred for telehealth ACT for moral injury following a suicide prevention consultation during which he endorsed active suicidal ideation and a history of attempting suicide to avoid moral emotions like guilt and shame. Borges reports that the service member attributed his suicidal ideation to military-related morally injurious events. At the first session, he endorsed passive suicidal ideation. Across the entirety of the 12 weeks of treatment, he continued to endorse suicidal thoughts; however, his relationship to these thoughts changed as he practiced nonjudgmentally observing.

Discussion

Our review suggests that PMIE exposure associated with increased moral injury symptom severity confers risk for suicidal thoughts and attempts beyond the impact of formalized psychiatric diagnoses (e.g., PTSD) in military, veteran, and civilian samples. However, the strength of the association varies by population assessed, measurement approach, and type of exposure. For example, the association between moral injury symptom severity and suicide-related thoughts and behaviors appears to be particularly strong for individuals who feel complicit in the PMIE because of what they did or failed to do. For the few studies that teased apart commission and omission, there were mixed findings as to which were significantly associated with suicide-related outcomes, suggesting areas for future research.

One explanation for this observation is that the feelings of guilt, shame, and worthlessness endemic to moral injury may increase the risk of suicidal behavior. Moral injury may also lead to the loss of meaning and purpose in life, which can increase the risk of suicidal behavior [62]. Relatedly, the relationship of transgressions by self with hopelessness, shame, pessimism, and anger, all of which are well-established risk factors for suicide [83], may explain why this type of moral injury is more strongly associated with suicide-related outcomes than other PMIE exposure types. Finally, moral injury may contribute to the development or maintenance of mental health disorders, such as depression and posttraumatic stress disorder, which are known risk factors for suicidal behavior [84•].

Although these findings indicate the need to include suicide-related outcomes in effectiveness trials of moral injury intervention, no clinical trial for moral injury has assessed suicide-related outcomes to date. In the interim, we encourage providers to draw from the research reported here that highlights mediating and moderating factors that mitigate the likelihood of suicide-related outcomes in those with moral injury. In the clinical experience of

the authors, there are several key intervention ingredients that are particularly beneficial in treating moral injury that may reduce suicide-related outcomes. As moral injury is an inherently social wound, being able to process these experiences with a therapist or other trusted other is key. Psychoeducation about moral injury and for military/veterans, the physiological effects of killing, can help reduce isolation and provide a platform for discussion of related thoughts, emotions, and behaviors associated with moral injury. Mindfulness and diffusion practices can help build out people's capacity to tolerate exploring moral emotions (e.g., disgust, shame, regret, guilt), all of which are psychological risk factors for suicide. Regardless of PMIE (e.g., war, healthcare failures), unpacking the factors that lead to the PMIE occurring can help redistribute the sense of responsibility and implacability. This process requires patient accompaniment on the provider's part and acknowledging and possibly even sharing in the responsibility of the PMIE (e.g., in the case of war). Ultimately, this process may help alleviate potential senses of thwarted belongingness that may increase suicide risk.

We encourage providers to explore the moral beliefs and expectations that were violated as part of the PMIE, which affords people the opportunity to meaningfully interpret their transgression-related emotions and reaffirm their violated values. Joining with people in exploring ways they can embody and live out those values in the present is an important part of the meaning making process. This may also help with perceived burdensomeness by creating more intentionally, purpose/mission, and a sense of action. Supporting the unfolding process of self-forgiveness, including acknowledging the potential harm caused, can assist with authentic self-forgiveness. Self-compassion and self-forgiveness needs to be approached with attuned curiosity rather than expectation or agenda. Additionally, it is important to address the social and spiritual disconnections that may be present. Both of these facets are significant pathways to elevated suicide risk [e.g., isolation, perceived support, loss of faith, spiritual distress]. Providers are encouraged to help people bolster social connectedness through intentionally engaging with support systems and exploring sharing about the PMIE to those for whom it would be important to the person. Similarly, reconnecting (or connecting for the first time, if desired) to spiritual communities and exploring and drawing on spiritual practices can help with integrating moral injury.

Limitations

Despite the growing body of literature on moral injury and suicide, there are several limitations that must be addressed in future research. First, there is considerable heterogeneity in the conceptualization and operationalization of moral injury across studies, making it difficult to compare findings across studies. The lack of consensus regarding the definition of moral injury and the use of various assessment tools highlights the need for standardized measures of both PMIE exposure and moral injury symptom severity. The field needs a measurement that is also applicable to a variety of populations (e.g., military, civilian) and can distinguish PMIE exposure from other occupational hazards.

These measurement issues must be prioritized by the field if we are to better understand the unique contributions of PMIE exposure and moral injury to risk of suicide-related outcomes. Second, most studies to date have been cross-sectional, precluding the ability to draw conclusions about causality or the direction of the association between moral injury and suicide-related outcomes. Longitudinal studies that track individuals over time are needed to better understand the temporal relationship between moral injury symptom severity and suicidal outcomes, as well as the mechanisms underlying these associations. Third, much of the existing research has been conducted with US military and veteran samples, limiting the generalizability of the findings to civilians in high-risk occupations (e.g., healthcare workers, first responders, etc.) and populations outside of the USA. There also is a need for increased racial and gender diversity in moral injury research, as well as inclusiveness of other minority groups, especially given their risk of suicide-related outcomes and the documented differences in suicide-related behavior between genders. Fourth, while treatment studies are underway, research should focus efforts to examining the role of protective factors, such as social support, resilience, and posttraumatic growth, in mitigating the risk for suicidal outcomes among individuals with moral injury. This research could inform the development of interventions that promote resilience and facilitate posttraumatic growth among individuals with moral injury.

Finally, there is a need for research that examines the efficacy of interventions designed to specifically prevent or mitigate the risk of suicidal outcomes among individuals with moral injury. Existing interventions have shown promise in reducing symptoms of moral injury and related mental health problems, but investigators have yet to assess suicide-related outcomes as a treatment outcome in published studies. More research is needed to determine the most effective interventions for individuals with moral injury who are at risk for suicidal outcomes.

Conclusion

The literature on the relationship between PMIE exposure, moral injury symptom severity, and suicide-related outcomes is complex and evolving. Overall, recent studies suggest that PMIE exposure and moral injury symptom severity are risk factors for suicidal thoughts and behavior, even after controlling for comorbid mental health disorders. These findings suggest that moral injury is a unique risk factor for suicide-related outcomes. While the majority of studies reviewed reported significant associations between moral injury and suicidal ideation or attempt(s), some did not find significant associations. This suggests the presence of moderating variables, such as individual or contextual factors that mitigate or bolster the association between moral injury and suicide-related outcomes. Furthermore, the associations between PMIE exposure and suicidal behavior may be due to the putative indicators of moral injury symptom severity including guilt, shame, worthlessness, meaning, and spiritual distress, as well as the development of mental health

disorders. Further research is needed to better understand the associations between moral injury and suicidal behavior and to develop effective prevention and treatment interventions for individuals who experience moral injury.

Despite these challenges, it is clear that moral injury is an important construct to consider when examining suicide-related outcomes across military, veteran, and civilian populations. The findings also suggest that screening for PMIE exposure and moral injury symptoms may help clinicians to identify individuals at increased risk for suicide-related outcomes. Interventions aimed at treating moral injury should target known mediators and moderators such as disclosure, self-forgiveness, mindfulness, meaning making, and perceived social support. Such interventions may help to reduce the risk of suicide and improve the quality of life for those who are struggling with the aftermath of moral injury.

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Conflict of Interest

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Human and Animal Rights and Informed Consent

This article does not contain any studies with human or animal subjects performed by any of the authors.

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Studies examining the association between moral injury and suicide attempts.

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