Moral Injury and Mental Health Among US Military Service Members and Veterans

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PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to conduct timely, rigorous, and independent systematic reviews to support VA clinicians, program leadership, and policymakers improve the health of Veterans. ESP reviews have been used to develop evidence-informed clinical policies, practice guidelines, and performance measures; to guide implementation of programs and services that improve Veterans' health and wellbeing; and to set the direction of research to close important evidence gaps. Four ESP Centers are located across the US. Centers are led by recognized experts in evidence synthesis, often with roles as practicing VA clinicians. The Coordinating Center, located in Portland, Oregon, manages program operations, ensures methodological consistency and quality of products, engages with stakeholders, and addresses urgent evidence synthesis needs.

Nominations of review topics are solicited several times each year and submitted via the ESP website. Topics are selected based on the availability of relevant evidence and the likelihood that a review on the topic would be feasible and have broad utility across the VA system. If selected, topics are refined with input from Operational Partners (below), ESP staff, and additional subject matter experts. Draft ESP reviews undergo external peer review to ensure they are methodologically sound, unbiased, and include all important evidence on the topic. Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. In seeking broad expertise and perspectives during review development, conflicting viewpoints are common and often result in productive scientific discourse that improves the relevance and rigor of the review. The ESP works to balance divergent views and to manage or mitigate potential conflicts of interest.

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Operational Partners

Operational partners are system-level stakeholders who help ensure relevance of the review topic to the VA, contribute to the development of and approve final project scope and timeframe for completion, provide feedback on the draft report, and provide consultation on strategies for dissemination of the report to the field and relevant groups.

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Disclosures

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The findings and conclusions in this document are those of the author(s) who are responsible for its contents and do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. The final research questions, methodology, and/or conclusions may not necessarily represent the views of contributing operational and content experts. No investigators have affiliations or financial involvement (*eg*, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

Executive Summary

KEY FINDINGS

- About half of studies on potentially morally injurious events (PMIE) or moral injury (MI) published to date have been conducted in the US and about half of all studies have been conducted among Veterans or military service members. Nearly 60% of US studies that reported participants' service era were conducted exclusively among recent era (*ie*, post-9/11 or Operation Iraqi Freedom/Operation Enduring Freedom/Operation New Dawn) Veterans or military service members.
- The pace of new research on MI among Veterans and military service members has been accelerating, and the concept of MI is increasingly applied to non-military populations. The number of studies focused on MI among health care workers has increased every year since the onset of the COVID-19 pandemic.
- For PTSD, depression, and anxiety, MI symptoms are likely correlated with greater symptom severity (*moderate strength of evidence [SOE]*) and PMIE exposure may be correlated with greater symptom severity (*low SOE*).
- MI symptoms and PMIE exposures may be correlated with increased suicidal thoughts and behaviors and with greater substance use (*low SOE*).
- MI symptoms and PMIE exposures may be correlated with poorer relationship functioning and social engagement (*low SOE*).
- Future research on the associations between PMIE exposures, MI, and adverse mental health outcomes using recently developed, improved measures to assess PMIE exposure and MI symptoms will further clarify these associations.
- Future longitudinal research is needed to clarify the causal pathway between PMIE exposures, the development of MI, and adverse mental health outcomes. As PMIE and MI constructs are better understood in relation to established diagnoses such as PTSD, a focus of future research should also be developing and evaluating treatment interventions.

Military service members may be exposed to unanticipated, ambiguous, and stressful situations in which their own actions or the actions of others conflict with deeply held values. Moral injury (MI) describes a uniquely intense and distressing response to such exposures, which are referred to as potentially morally injurious events (PMIEs). MI is characterized by feelings of guilt and shame, loss of trust, and loss of meaning or purpose. MI-related constructs have been linked to adverse psychosocial outcomes among Veterans and military service members. Clinical and research interest in the impacts of morally injurious events has increased over the past 2 decades. In recent years, the concept of MI has been increasingly applied to other populations exposed to morally ambiguous situations, in particular health care workers during the COVID-19 pandemic. Within VA, there is ongoing interest in better understanding the relationship of MI-related constructs with adverse psychosocial outcomes.

CURRENT REVIEW

This report was requested by the Integrative Mental Health (IMH) initiative, supported by the VHA Office of Mental Health and Suicide Prevention (OMHSP), to characterize published literature on moral injury broadly across populations and to synthesize available evidence on the relationship

between PMIE and MI and mental health outcomes among US Veterans and military service members. IMH's Understanding Moral Injury project is working to address Section 506a of the STRONG Veterans Act (H.R. 6411), which directs VA to conduct research on how MI relates to the mental health needs of Veterans who served in the Armed Forces after September 11, 2001, and to identify best practices for mental health treatment among these Veterans. Findings from this review will inform these efforts and help guide future VA research on PMIE and MI.

The following key questions were the focus of this review:

Key Question 1	What are the characteristics of evidence on MI with regards to: • The distribution of studies over time across populations • Measures used to assess MI • Characteristics of interventions to address MI
Key Question 2	What is the association between PMIE and MI and suicidal thoughts and behaviors (STBs) and other mental health outcomes among Veterans and US military service members?

To identify articles relevant to the key questions, a research librarian searched MEDLINE and PsycINFO through February 2024 using terms for *moral injury*. A single investigator screened English-language titles, abstracts, and full-text articles for studies addressing KQ1. For KQ2, titles, abstracts, and full-text articles of studies included from the initial screening step were independently reviewed by 2 investigators for inclusion. The risk of bias of each study included for KQ2 was evaluated, and all data abstraction and risk of bias ratings were first completed by 1 investigator and then checked by another. Characteristics of available research on moral injury (KQ1) were described narratively and summarized using visualizations. When 3 or more sufficiently comparable studies reported associations between PMIE exposures or MI symptoms and an eligible mental health outcome among US Veterans and service members (KQ2), study results were synthesized with meta-analysis. We differentiated between measures primarily assessing PMIE exposures and measures primarily assessing MI symptoms or outcomes in our analyses. We rated the strength of evidence for each outcome based on the methodology and risk of bias of available studies, the consistency and certainty of findings, and the directness of outcomes.

We found that about half of studies on PMIEs or MI published to date have been conducted in the US and about half of all studies have been conducted among Veterans or military service members. Nearly 60% of US studies that reported participants' service era were conducted exclusively among recent era (*ie*, post-9/11 or Operation Iraqi Freedom/Operation Enduring Freedom/Operation New Dawn [OIF/OEF/OND]) Veterans or military service members. The pace of new research on MI among Veterans and military service members has been accelerating in recent years, and the concept of MI is increasingly applied to non-military populations. In particular, the number of studies focused on MI among health care workers has increased every year since the onset of the COVID-19 pandemic.

Characteristics of the current literature base reflect that MI is still an evolving construct. Most studies to date examined associations between PMIEs or MI and other variables, such as mental health symptoms, or described the development or validation of a PMIE/MI measure. Relatively fewer studies have reported on development or evaluation of MI-specific interventions. Few studies have evaluated the efficacy of MI-specific interventions in randomized controlled trials (RCTs).

Studies reporting associations between mental health symptoms and PMIEs or MI symptoms in US Veterans or military service members have most often examined PTSD, followed by depression, STBs,

substance use, anxiety, and functioning. Meta-analysis results and overall findings are shown in the ES Table below. For PTSD, depression, and anxiety, we found moderate-strength evidence that MI symptoms are correlated with greater symptom severity and low-strength evidence of this correlation for PMIE exposures. We found low-strength evidence of correlations between MI symptoms and PMIE exposures for STBs and substance use outcomes, for which the evidence base is smaller, less consistent, and less precise. We also found low-strength evidence of a correlation between MI symptoms and PMIE exposures and relationship functioning and social engagement. Pooled correlations between MI symptoms and PMIE exposures and mental health outcomes were all statistically significant ($p < .05$) with the exception of relationship functioning and social engagement outcomes. Correlations were generally larger and more consistent between MI symptoms and mental health outcomes compared with correlations between PMIE exposures and these outcomes.

ES Table. Pooled Correlations of PMIE Exposures and MI Symptoms With Mental Health and Functioning Outcomes in US Veterans and Military Service Members

	Total N	Samples *Estimates*	Pooled Correlation ***Overall Finding (Strength of Evidence)***
Suicidal Thoughts and Behaviors			
PMIE	1933	10 *16*	0.19, 95% CI [0.05, 0.31], 95% PI [-0.23, 0.54] PMIE exposure may be positively correlated with increases in suicidal thoughts and behaviors (*low SOE*).
MI	4161	9 *12*	0.27, 95% CI [0.10, 0.43], 95% PI [-0.29, 0.69] MI symptoms may be positively correlated with increases in suicidal thoughts and behaviors (*low SOE*).
PTSD			
PMIE	14462	26 *60*	0.36, 95% CI [0.28, 0.44], 95% PI [-0.11, 0.70] PMIE exposure may be positively correlated with greater PTSD symptom severity (*low SOE*).
MI	4210	13 *15*	0.57, 95% CI [0.46, 0.66], 95% PI [0.12, 0.83] MI symptoms may be positively correlated with greater PTSD symptom severity (*moderate SOE*).
Depression			
PMIE	12937	20 *36*	0.29, 95% CI [0.19, 0.38], 95% PI [-0.14, 0.63] PMIE exposure may be positively correlated with greater depression symptom severity (*low SOE*).
MI	2319	8 *9*	0.45, 95% CI [0.23, 0.63], 95% PI [-0.25, 0.84] MI symptoms may be positively correlated with greater depression symptom severity (*moderate SOE*).
Anxiety			
PMIE	4018	8 *13*	0.25, 95% CI [0.08, 0.41], 95% PI [-0.26, 0.66] PMIE exposure may be positively correlated with greater anxiety symptom severity (*low SOE*).
MI	1347	5 *6*	0.48, 95% CI [0.27, 0.65], 95% PI [-0.07, 0.81] MI symptoms may be positively correlated with greater anxiety symptom severity (*moderate SOE*).
Substance Use			
PMIE	2281	7	0.29, 95% CI [0.08, 0.47], 95% PI [-0.31, 0.72]

	Total N	Samples *Estimates*	Pooled Correlation *Overall Finding (Strength of Evidence)*
		15	PMIE exposure may be positively correlated with substance use (*low SOE*).
MI	3558	7	0.18, 95% CI [0.08, 0.29], 95% PI [-0.13, 0.46]
		9	MI symptoms may be positively correlated with substance use (*low SOE*).
Relationship Functioning/Social Engagement			
PMIE/MI	7679	3	-0.31, 95% CI [-0.70, 0.22], 95% PI [-0.89, 0.64]
		7	PMIE exposure/MI symptoms may be negatively correlated with relationship functioning and social engagement (*low SOE*).

Note. All pooled correlations are statistically significant (*ie*, $p < .05$) with the exception of Relationship Functioning/Social Engagement.

Abbreviations. PI=95% prediction interval; SOE=strength of evidence.

CONCLUSIONS

The pace of new research on MI among Veterans and military service members has been accelerating since a definition and conceptual model for MI was first proposed in 2009. About half of all published literature on PMIEs or MI has been conducted in the US and about half of all studies have been conducted among Veterans or military service members. The concept of MI is also increasingly being applied to non-military populations including health care workers. Characteristics of the current literature reflect that MI is still an evolving construct. Most studies to date have examined associations between PMIE exposures or MI symptoms and other variables, such as mental health symptoms, or described the development or validation of a PMIE/MI measure. Fewer studies have reported on the development or evaluation of MI-specific interventions. Studies reporting associations between mental health symptoms and PMIE exposures or MI symptoms in US Veterans or military service members have most often examined PTSD, followed by depression, suicidality, substance use, anxiety, and functioning.

For PTSD, depression, and anxiety, we found moderate-strength evidence that MI symptoms are correlated with greater symptom severity and low-strength evidence of this correlation for PMIE exposures in US Veterans and military service members. We found low-strength evidence of positive correlations between MI symptoms and PMIE exposures for STBs and substance use outcomes, for which the evidence base is smaller, less consistent, and less precise. We also found low-strength evidence of a correlation between PMIE exposures and MI symptoms and poorer relationship functioning and social engagement. Future research on the associations between PMIE exposures, MI, and adverse mental health outcomes using recently developed, improved measures to assess PMIE exposure and MI symptoms will further clarify these associations. Importantly, these findings do not provide insight into the causal nature of the relationship between MI and mental health symptoms. Future longitudinal research is needed to clarify the causal pathway between PMIE exposures, the development of MI, and adverse mental health outcomes. As PMIE and MI constructs are better understood in relation to established diagnoses such as PTSD, a focus of future research should also be developing and evaluating treatment interventions.