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

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Appendix

SEARCH STRATEGIES

Search Date: 02/12/24		Search Statement	Results
MEDLINE Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily 1946 to February 09, 2024	1	(moral adj3 injur*).ti,ab,kf	790
	2	limit 1 to English language	779
	3	limit 2 to year="2009-Current"	775
APA PsycInfo 1967 to February Week 2 2024	1	(moral adj3 injur*).ti,ab	764
	2	limit 1 to English language	716
	3	limit 2 to year="2009-Current"	711
		Total	1486
		Total after deduplication	1179

STUDIES EXCLUDED DURING FULL-TEXT SCREENING

Citation	Exclude Reason
Benfer N, Vannini MBN, Grunthal B, et al. Moral injury symptoms and related problems among service members and Veterans: A network analysis. Journal of Military, Veteran and Family Health. 2023;9(2):52-71. doi:10.3138/jmvfh-2022-0040	Ineligible setting
Biscoe N, Bonson A, Nickerson A, Murphy D. Factors associated with exposure to potentially morally injurious events (PMIEs) and moral injury in a clinical sample of veterans. European Journal of Trauma & Dissociation. 2023;7(3). doi:10.1016/j.ejtd.2023.100343	Ineligible setting
Houtsma C, Khazem LR, Green BA, Anestis MD. Isolating effects of moral injury and low post-deployment support within the U.S. military. Psychiatry research. 2017;247(qc4, 7911385):194-199. doi:10.1016/j.psychres.2016.11.031	Ineligible outcome
Martin RL, Houtsma C, Bryan AO, Bryan CJ, Green BA, Anestis MD. The impact of aggression on the relationship between betrayal and belongingness among U.S. military personnel. Military Psychology. 2017;29(4):271-282. doi:10.1037/mil0000160	Ineligible outcome
Mensink B, van Schagen A, van der Aa N, Ter Heide FJJ. Moral Injury in Trauma-Exposed, Treatment-Seeking Police Officers and Military Veterans: Latent Class Analysis. Frontiers in psychiatry. 2022;13(101545006):904659. doi:10.3389/fpsyt.2022.904659	Ineligible population
Morgan L, Beattie D, Irons C, Ononaiye M. The role of compassion in moral injury among military veterans: Implications for treatment. Psychological trauma : theory, research, practice and policy. 2024;(101495376). doi:10.1037/tra0001646	Ineligible setting
Murphy D, Karatzias T, Busuttil W, Greenberg N, Shevlin M. ICD-11 posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) in treatment seeking veterans: risk factors and comorbidity. Social psychiatry and psychiatric epidemiology. 2021;56(7):1289-1298. doi:10.1007/s00127-021-02028-6	Ineligible setting
Russell B, Mussap AJ. Rumination and threat-biased interpretation mediate posttraumatic stress and growth responses to military stressors. Military psychology : the official journal of the Division of Military Psychology, American Psychological Association. 2023;35(5):451-466. doi:10.1080/08995605.2022.2127618	Ineligible setting
Smigelsky MA, Malott JD, Veazey Morris K, Berlin KS, Neimeyer RA. Latent profile analysis exploring potential moral injury and posttraumatic stress disorder among military veterans. Journal of clinical psychology. 2019;75(3):499-519. doi:10.1002/jclp.22714	Ineligible outcome
Smith-MacDonald L, Jones C, Brown MRG, et al. Moving Forward from Moral Injury: A Mixed Methods Study Investigating the Use of 3MDR for Treatment-Resistant PTSD. International journal of environmental research and public health. 2023;20(7). doi:10.3390/ijerph20075415	Ineligible setting
Williamson V, Murphy D, Stevelink SA, Jones E, Allen S, Greenberg N. Family and occupational functioning following military trauma exposure and moral injury. BMJ military health. 2023;169(3):205-211. doi:10.1136/bmjmilitary-2020-001770	Ineligible setting

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CHARACTERISTICS OF INCLUDED STUDIES FOR KQ2

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
Battles 2019 Battles 2018 Braitman 2018 Davies 2019 Hamrick 2020	N=380	Veterans and ADSMs Mean age: 35 % male: 68 % Black: NR % White: 69 % Hispanic/Latinx: NR	100	100	PMIE exposure and MI symptoms *MIQ-M*	PTSD symptoms, depressive symptoms, anxiety symptoms, suicidality, drug use, total alcohol use, alcohol consumption, alcohol dependence, alcohol problems
Boscarino 2022	N=1032	Veteran outpatients Mean age: 62 % male: 95 % Black: NR % White: NR % Hispanic/Latinx: NR	NR	100	MI[b] *MIES*	Alcohol dependence, opioid use disorder, lifetime marijuana use
Bravo 2020 Kelley 2019	N=189	Combat-wounded Veterans Mean age: 43 % male: 97 % Black: NR % White: 74 % Hispanic/Latinx: NR	86	100	MI *EMIS-M*	Depression symptoms, anxiety symptoms, suicidality, PTSD symptoms
Bryan 2014 Bryan 2016 Study 1	N=151	ADSM outpatients Mean age: 34 % male: 64 % Black: 21 % White: 68 % Hispanic/Latinx: 10	100	57	MI *MIES*	PTSD symptoms, depression symptoms, current suicide ideation
Bryan 2016 Study 2	N=1086	ADSMs Mean age: 34 % male: 64 % Black: 21 % White: 67 % Hispanic/Latinx: NR	100	67	PMIE exposure *MIES*	PTSD symptoms, depression symptoms
Bryan 2018	N=930	ADSMs Mean age: NR % male: 87 % Black: 2 % White: 89	100	58	MI symptoms sorrow, regret, shame, alienation *Items from DES-IV; DRRI-2*	Suicide ideation, suicide attempts, PTSD symptoms

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
		% Hispanic/Latinx: 7				
Cameron 2021	N=40	Veteran inpatients with SUD and suicidal ideation Mean age: 48 % male: 92 % Black: 13 % White: 79 % Hispanic/Latinx: NR	NR	NR	MIE exposure *MIES*	Depression symptoms, suicide ideation, PTSD diagnosis
Currier 2015 Currier 2015	N=131	Veterans Mean age: 28 % male: 88 % Black: 16 % White: 26 % Hispanic/Latinx: 42	100	100	MIEs *MIQ-M*	PTSD symptoms, depression, suicide risk
Currier 2018 Study 1 Currier 2019	N=286	Veterans endorsing MI Mean age: NR % female: 32 % Black: 16 % White: 68 % Hispanic/Latinx: 5	NR	100	Expression of MI *EMIS-M*	PTSD symptoms, depression symptoms, alcohol misuse
Currier 2018 Study 2 Currier 2020 Study 1	N=624	Veterans Mean age: NR % female: 19 % Black: 11 % White: 80 % Hispanic/Latinx: 7	NR	100	Expression of MI *EMIS-M*	PTSD symptoms, depression symptoms, alcohol misuse
Currier 2020 Study 2	N=316	Veterans Mean age: NR % female: 25 % Black: 19 % White: 70 % Hispanic/Latinx: 17	100	100	MI expression *EMIS-M; EMIS-M-SF*	PTSD symptoms
Evans 2018	N=155	Veteran outpatients with religion/spirituality struggles Mean age: 51 % male: 86 % Black: 60 % White: 26	23	55	PMIE exposure *MIES*	PTSD symptoms, depression symptoms, anxiety symptoms

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
		% Hispanic/Latinx: 12				
Fernandez 2023	N=65	Veteran outpatients Mean age: 46 % male: 92 % Black: 8 % White: 66 % Hispanic/Latinx: 22	NR	100	MI outcomes *EMIS-M*	PTSD symptoms, intimate relationship functioning
Forkus 2019	N=203	Veterans Mean age: 35 % male: 77 % Black: NR % White: 70 % Hispanic/Latinx: NR	NR	100	PMIE exposure *MIES*	PTSD, depression, alcohol misuse, drug misuse
Frankfurt 2017	N=65	Veteran outpatients Mean age: 55 % male: 100 % Black: 1 % White: 96 % Hispanic/Latinx: NR	31	100	Transgressive acts *None*[c]	PTSD symptoms, suicidality
Frankfurt 2018	N=310	Veteran outpatients Mean age: 41 % male: 76 % Black: 32 % White: 96 % Hispanic/Latinx: 19	100	NR[d]	Exposure to betrayal or perpetration *MIES*	Depression symptoms, PTSD symptoms
Hamrick 2022	N=154	Veterans and ADSMs Mean age: 37 % male: 0 % Black: 9 % White: 72 % Hispanic/Latinx: 16	NR	NR	Other-directed MI *EMIS-M*	Depression, anxiety, suicidal ideation, and substance use
Held 2017	N=121	Veteran outpatients with PTSD Mean age: 39 % male: 66 % Black: NR % White: 67 % Hispanic/Latinx: 25	88.4	NR	PMIE exposure *MIES*	PTSD symptoms, depression symptoms

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
Held 2021	N=161	Veterans and ADSM outpatients with PTSD Mean age: 40 % male: 91 % Black: 16 % White: 71 % Hispanic/Latinx: 22	96	NR	PMIE exposure *MIES*	PTSD symptoms, depression symptoms
Jinkerson 2019	N=72	Veterans Mean age: NR[e] % male: 88 % Black: 47 % White: 46 % Hispanic/Latinx: 22	NR	100	PMIE exposure *MIQ-M*	Depression symptoms, anxiety symptoms, PTSD symptoms
Jordan 2017 Nash 2013	N=867	ADSMs Mean age: NR % male: NR % Black: NR % White: NR % Hispanic/Latinx: NR	100	NR	PMIE exposure *MIES*	PTSD symptoms, depression symptoms, anxiety symptoms
Keenan 2023	N=180	Justice-involved Veterans Mean age: 36 % male: 93 % Black: 17 % White: 57 % Hispanic/Latinx: 21	NR	NR	MI *MIS*	PTSD symptoms
Kelley 2019	N=256	Veterans and ADSMs Mean age: 33 % male: 61 % Black: NR % White: 68 % Hispanic/Latinx: NR	100	100	MIE exposure and MI *MIQ-M*	PTSD symptoms, depression symptoms, anxiety symptoms, suicidality, hazardous alcohol use, drug abuse
Kelley 2021 (own soul's warning)	N=269	Veterans and ADSMs Mean age: 37 % male: 50 % Black: 10 % White: 74 % Hispanic/Latinx: 12	NR	100	MI *EMIS-M*	Suicidal ideation, PTSD diagnosis

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
Kelley 2021	N=277	USAF ISR personnel who experienced graphic work-related media exposure Mean age: NR % male: 72 % Black: NR % White: NR % Hispanic/Latinx: NR	100	NR	PMIE exposure *MIES*	PTSD symptoms
Kinney 2023	N=145	Veteran outpatients with mTBI Mean age: 33 % male: 92 % Black: NR % White: NR % Hispanic/Latinx: NR	100	100	PMIE exposure *MIES*	PTSD symptoms
Koenig 2020 Koenig 2018 Koenig 2018 Koenig 2018 Ames 2018 Volk 2019	N=591	Veterans and ADSMs with PTSD symptoms Mean age: 51 % male: 86 % Black: 44 % White: 41 % Hispanic/Latinx: NR	NR	100	MI symptoms *MISS-M; MISS-M-SF*	PTSD symptoms, PTSD diagnosis, depression symptoms, anxiety symptoms, current use of alcohol, relationship quality, involvement in community activities, physical disability, suicide risk
LaFrance 2019	N=82	Veteran outpatients with psychogenic nonepileptic seizures Mean age: NR % male: 79 % Black: NR % White: NR % Hispanic/Latinx: NR	NR	NR	PMIE exposure *None*[f]	PTSD diagnosis, mood disorder diagnosis, current substance abuse, suicide ideation, depression symptoms
Lancaster 2018	N=161	Veterans and ADSMs Mean age: 35 % male: 71 % Black: 12 % White: 74 % Hispanic/Latinx: 5	100	100	PMIE exposure *MIES*[g]	PTSD symptoms, depression symptoms
Lancaster 2018 (measures)	N=182	Veterans Mean age: 34 % male: 80 % Black: 9 % White: 78	100	100	PMIE exposure *MIES; MIQ-M*	PTSD symptoms, depression symptoms, hazardous alcohol use

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
		% Hispanic/Latinx: 8				
Litz 2018	N=999	ADSMs who experienced a Criterion A event Mean age: 33 % male: 91 % Black: 25 % White: 56 % Hispanic/Latinx: 20	100	100	PMIE exposure *None*[h]	PTSD symptoms
Maguen 2020 Chesnut 2020 Nillni 2020 Maguen 2022	N=7200	Veterans Mean age: 34 % male: 82 % Black: NR % White: 66 % Hispanic/Latinx: NR	100	71	PMIE exposure *MIES*	PTSD, depression, anxiety, hazardous drinking, impaired work functioning, impaired educational functioning, impaired financial functioning, impaired health functioning, impaired relationship functioning, impaired parental functioning, impaired broad social functioning, postpartum depression/anxiety
Maguen 2023	N=14057	Veterans Mean age: NR % male: 82 % Black: 13 % White: 66 % Hispanic/Latinx: 11	100	57	Exposure to and subjective distress stemming from PMIEs *MIES*	Suicidal self-directed violence
McDaniel 2023	N=1487	Veterans Mean age: 50 % male: 68 % Black: 15 % White: 76 % Hispanic/Latinx: NR	NR	NR	MI *MISS-M-SF*	Substance use, suicide risk
Nichter 2021 Norman 2022 Maguen 2023	N=1321	Veterans Mean age: 59 % male: 94 % Black: 12 % White: 75 % Hispanic/Latinx: 8	33	100	PMIE exposure *MIES*	Current suicide ideation, lifetime suicide plans, lifetime suicide attempts, past-year and lifetime AUD, DUD, SUD, probable PTSD or subthreshold PTSD, probable depression
Nieuwsma 2022 Nieuwsma 2021	N=618	Veterans Mean age: 47 % male: 84 % Black: 41 % White: 51 % Hispanic/Latinx: 5	100	100	PMIE exposure and ongoing sequela *MIES, MIQ-M, BMIS*	PTSD symptoms, depression symptoms, suicidality, hazardous alcohol use, drug abuse

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
Ogle 2018	N=356	USAF ISR personnel with MI symptoms Mean age: NR % male: 70 % Black: NR % White: NR % Hispanic/Latinx: NR	100	17	MI symptoms *MIES*	PTSD symptoms
Paige 2019 Bhalla 2018	N=600	Veterans and ADSMs Mean age: 31 % male: 100 % Black: 7 % White: 76 % Hispanic/Latinx: 11	100	100	Frequency of PMIEs; PMIE exposure *MIES; None*[i]	PTSD symptoms, sexual anxiety
Parry 2023	N=1545	Veteran outpatients Mean age: 46 % male: 70 % Black: NR % White: NR % Hispanic/Latinx: NR	NR	NR	MI *MIES*	Suicidality
Presseau 2019	N=789	ADSMs Mean age: 27 % male: 89 % Black: NR % White: 64 % Hispanic/Latinx: 21	100	100	Criterion A trauma type categorized as MI-self or MI-other *SCID*	PTSD symptoms, PTSD symptom burden, hazardous alcohol use, anxiety symptoms, depression symptoms, suicidality
Richardson 2022	N=62	Veterans Mean age: NR % male: NR % Black: NR % White: NR % Hispanic/Latinx: NR	NR	NR	PMIE exposure and association symptoms *MIES; MISS-M*	PTSD, depression symptoms, history of suicidal ideation
Saba 2022	N=1005	Veterans Mean age: 35 % male: 91 % Black: 5 % White: 85 % Hispanic/Latinx: 9	100	NR	PMIE exposure *MIES*	PTSD symptoms, depression symptoms, anxiety symptoms
Shapiro 2022	N=151	ADSMs	100	60	PMIE exposure	Suicidal ideation

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
		Mean age: 28 % male: 0 % Black: 49 % White: 42 % Hispanic/Latinx: 4			*MIES*	
Stein 2012	N=127	ADSM outpatients with PTSD symptoms Mean age: NR % male: NR % Black: NR % White: NR % Hispanic/Latinx: NR	NR	NR	PMIE exposure *None*[i]	PTSD symptoms
Thomas 2022	N=496	Veterans Mean age: 38 % male: 71 % Black: 22 % White: 71 % Hispanic/Latinx: 23	NR	NR	PMIE exposure *MIES*	Hazardous alcohol use
Tripp 2016	N=68	Veteran outpatients with hazardous alcohol use Mean age: 32 % male: 91 % Black: 28 % White: 65 % Hispanic/Latinx: NR	100	100	Firing a weapon/killing in combat (Firing/Killing) and killing in combat (Killing) alone *None*	PTSD symptoms, depression symptoms, suicide ideation
Usset 2019	N=212	Veterans receiving VA PTSD care Mean age: 58 % male: 81 % Black: 5 % White: 88 % Hispanic/Latinx: 2	100	100	PMIE exposure *MIES; MIQ-M*	PTSD symptoms
Williams 2019	N=50	Veterans Mean age: 33 % female: 8 % Black: 22 % White: 71 % Hispanic/Latinx: 23	100	100	Exposure to acts of commission and omission *MIES*	PTSD symptoms, depression symptoms, suicidality, alcohol use

Study Secondary Publications	Sample Size	Population[a]	% Post-9/11	% Deployed	Exposure Detail *MI/PMIE Measure*	Associations
Wisco 2017; Corona 2019	N=564	Veterans Mean age: NR[k] % female: 7 % Black: 6 % White: 74 % Hispanic/Latinx: 8	NR	100	PMIE exposure *MIES*	Current mental disorder (depression, anxiety, PTSD), suicidal ideation, suicide attempts
Youssef 2018	N=120	Veteran outpatients with PTSD symptoms and/or symptoms of inner conflict Mean age: 57 % male: 86 % Black: 63 % White: 30 % Hispanic/Latinx: NR	NR	100	MI symptoms *MISS*	PTSD symptoms

Notes. [a]ADSMs may include National Guard/Reserve members; [b]Dichotomized into low or high; [c]Trauma narratives were coded for 8 transgressive acts; [d]99% with combat exposure; [e]89% 36 years or older; [f]Identified by chart review; [g]Also used ad hoc items to assess exposure to transgressive acts; [h]Moral injury-self and moral injury-other were Criterion A event types; [i]Assessed frequency of traumatic incidents including moral injury-self and moral injury-other; [j]Developed scheme to categorize index events, including MI-Self and MI-Other; [k]58.5% 60 years or older.

Abbreviations. ADSMs=active-duty service members; AUD=alcohol use disorder; BMIS=Brief Moral Injury Screen; DES-IV=Differential Emotions Scale; DRRI-2=Deployment Risk and Resilience Inventory; DUD=drug use disorder; EMIS-M; Expressions of Moral Injury Scale - Military; ISR=intelligence, surveillance, and reconnaissance; MI=moral injury; MIE=moral injury exposure; MIES=Moral Injury Events Scale; MIQ-M=Moral Injury Questionnaire – Military; MIS=Moral Injury Scale; MISS-M=Moral Injury Symptom Scale – Military; MISS-M-SF=Moral Injury Symptom Scale – Military – short form; mTBI=mild traumatic brain injury; NR=not reported; PMIE=potentially morally injurious experience; SCID=Structured Clinical Interview for DSM-V; SUD=substance use disorder; USAF=US Air Force.

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RISK OF BIAS ASSESSMENTS

OBSERVATIONAL STUDIES (QUIPS)

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
Battles 2019 Battles 2018 Braitman 2018 Davies 2019 Hamrick 2020	Moderate Potential participants were identified from a university setting (86% students). Participants were volunteers. % race/ethnicity other than White not reported.	Low Cross-sectional study. No attrition reported.	Moderate Modified MIQ-M (12/20 items were included) was used to assess PMIE exposure for all participants. Little missing data on MIQ-M items (0.3%). Maximum likelihood estimation used to address data which were determined to be missing at random.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Adjusted for gender, military status, years in the military, and branch of service. Other potential confounders not considered.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Boscarino 2022	Moderate Random sample of Veteran outpatients selected from a registry of patients of a private clinic. 55% of eligible Veterans completed the study. Responders tended to be younger and more often married.	Moderate Survey was conducted across 2 time points, and it is unclear whether attrition occurred. Appears to only include participants who completed the 2nd survey.	Moderate MIES was used to assess MI for all participants. No information on missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Control variables included age, gender, race, warzone deployments, being drafted, concussion history, Guard/Reserve status, and combat exposure. Other potential confounders not considered.	Moderate Do not describe how missing data were addressed. Report indicates that some results are available from the authors upon request	Moderate
Bravo 2020 Kelley 2019	Moderate Potential participants were members of the Combat Wounded Coalition. An email was sent inviting members to participate (8.5% participation rate after excluding individuals without deployment).	Low Cross-sectional study. No attrition reported.	Moderate EMIS-M was used to assess MI in the same manner for all participants. No information on degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Years served in the military and number of deployments (in months) were modeled as predictors. Other potential confounders not accounted for.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Bryan 2014 Bryan 2016 Study 1	Moderate Recruited from outpatient clinics.	Low Cross-sectional study. No attrition reported.	Moderate MIES was used to assess MI for all	Low Mental health correlates assessed	Moderate Gender, age, posttraumatic stress	Moderate Do not describe how missing data	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	Unclear whether participants were approached consecutively for participation.		participants. No information on missing data.	with validated measures in the same manner for all participants.	symptoms, depression, and hopelessness included as covariates. Other potential confounders not considered.	were addressed. No evidence of selective reporting.	
Bryan 2016 Study 2	Moderate Soldiers recruited from training. Unclear how many eligible individuals declined participation.	Moderate Data were missing for 27% of training camp participants due to competing demands of training.	Low MIES was used to assess PMIE exposure for all participants. No information on missing data for this measure, but MLE was used to account for missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses did not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Bryan 2018	Low Address to online survey was distributed to National Guard personnel. Do not report how many eligible individuals did not participate. Data were weighted to address gender and age discrepancies between sample and overall population.	Low Cross-sectional study. No attrition reported.	High Assessed the MI symptoms of sorrow, regret, shame, and alienation with items from 2 non-MI scales. Assessment was the same for all participants. Do not report extent of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Relevant analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	High
Cameron 2021	Moderate Inpatients enrolled in a larger study. Required diagnosis of active substance use and suicidal ideation at time of admission. Do not report whether consecutive patients were approached for participation.	Low Cross-sectional study. No attrition reported.	Moderate MIES was used to assess MI for all participants. No information on missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Controlled only for depression symptoms.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Currier 2015; Currier 2015	Moderate Participants were recruited over a 2-year period at a community college. Do not report how	Low Cross-sectional study. No attrition reported.	Low MIQ-M was used to assess PMIE exposure for all participants. Amount of missing data not	Low Mental health correlates assessed with validated measures in the	Moderate Controlled for age, ethnicity, gender, branch of service, number of deployments, months	Low Analyses were appropriate and no evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	many potential participants declined participation.		reported, but missing data were handled using multiple imputation.	same manner for all participants.	since most recent deployment, and exposure to traditional combat stressors. Other potential confounders not considered.		
Currier 2018 Study 1 Currier 2019	Moderate Invitations were mailed to all students from 2 universities utilizing GI Bill funding. 26.4% responded to the invitation. Included individuals with a deployment who endorsed MI.	High For Currier 2019, 65% of participants completed the follow-up assessment. Participants who did not complete the follow-up were not included in analyses. Completers and non-completers did not differ in their levels of MI-related outcomes or mental health symptoms at T1.	Low EMIS-M was used to assess MI for all participants in the same manner. Only included participants who completed measure and endorsed MI.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Baseline depression symptoms were included in the model as a covariate. Other potential confounders not considered.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Currier 2018 Study 2	Moderate Anonymous online survey was distributed by Qualtrics to 8,800 individuals with an indication of military experience in their profiles. 3,200 individuals responded affirming military service. Of these, 19.5% were included in the study.	Low Cross-sectional study. No attrition reported.	Low EMIS-M was used to assess MI in the same manner for all participants. No missing data on this measure due to forced responses in online survey.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses did not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Currier 2020 Study 2	Moderate Online survey distributed via Qualtrics. Limited to post-9/11 Veterans due to over-representation of older Veterans in initial sample. Included Veterans who served in a	Low Cross-sectional study. No attrition reported.	Low EMIS-M and EMIS-M-SF were used to assess MI in the same manner for all participants. No missing data on this measure due to forced responses in online survey.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses did not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	combat operational role during deployment.						
Evans 2018	Moderate Participants were from a larger study that recruited Veterans with religious/spiritual struggles from a VAMC. Participants were self-referred from advertisements. 23 participants without responses on the MIES were omitted from the study.	Low 2 participants were lost to follow-up.	Low MIES was used to assess PMIE exposure in the same manner for all participants. Participants included in the study had no missing data on scale or item levels.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Fernandez 2023	High Data from a baseline survey of Veterans prior to participation in a nonprofit-run retreat to Israel. Authors note that most participating Veterans have higher levels of distress than community samples. This study only included retreat participants who were married or in a domestic partnership (64%).	Low Cross-sectional study. No attrition reported.	Moderate EMIS-M was used to assess MI-related outcomes for all participants. No information on missing data provided.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	High
Forkus 2019	Moderate Online survey advertised via MTurk and conducted via Qualtrics. 29% of individuals who accessed the survey were ultimately included. Included Veterans who deployed to Iraq or Afghanistan.	Low Cross-sectional study. No attrition reported.	Moderate MIES was used to assess PMIE exposure in the same manner for all participants. No information on missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
Frankfurt 2017	Moderate Secondary analysis of data from a study that recruited Veterans at a VA hospital. From the parent study, selected only those who were male, had combat exposure, and had PTSD data. There were some differences between the sample for this study and the larger sample (race and war era).	Low Cross-sectional study. No attrition reported.	High A validated MI measure was not used. Instead, trauma narratives were coded for 8 transgressive acts. All included participants had trauma narratives.	Moderate PTSD symptoms were assessed with a validated measure in the same manner for all participants. Suicidality was assessed with a single item from a PTSD measure.	High Analyses do not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	High
Frankfurt 2018	Moderate Secondary analysis of data from a study that recruited Veterans at a VA hospital via posted advertisements, mailed letters, and referrals. Women and Veterans with PTSD or depression were oversampled with targeted mailings. If Veterans were in treatment, they were required to have stable regimens. Only included participants with data for DRRI and MIES.	Low Retention between 2 assessment time points was 87%.	Low MIES was used to assess betrayal and perpetration at time 2 only. Only participants with MIES data were included in the study.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Hamrick 2022	Moderate Women ADSMs and Veterans were recruited via online advertisements, word of mouth, flyers, and a university research pool. Data were collected over a 3-month period.	Low Cross-sectional study. No attrition reported.	Moderate EMIS-M was used to assess MI for all participants. Only the 'other-directed' subscale was used. 15% of data were missing. Missing data were handled with MLE.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Age, marital status, education, military status, military branch, and recruitment method were examined as possible covariates, but were not significant and thus not included in the model. Other	Low Analyses were appropriate and no evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
					potential confounders were not accounted for.		
Held 2017	High Data were collected as part of standard intake evaluation for Veterans seeking mental health treatment. Veterans were enrolled in an IOP and had a primary diagnosis of PTSD. Excluded 17 Veterans without CAPS data.	Low Cross-sectional study. No attrition reported.	Low MIES was used to assess PMIE exposure in the same manner for all participants. No missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Age and gender were examined as possible covariates but were nonsignificant and not included in final model. Other potential confounders were not accounted for.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Held 2021	High Participants were from the combat trauma track of an intensive PTSD treatment program. Data for the study were from assessments that occurred during routine clinical care.	Moderate Program completion rates not reported.	Moderate MIES was used to assess PMIE exposure and psychological response in the same manner for all participants. Degree and handling of missing data not reported.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Models adjusted for age and sex. Other potential confounders not accounted for.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Jinkerson 2019	Moderate Recruited from Veterans Service Organizations. 76% of eligible combat Veterans invited to participate agreed to participate.	Low Cross-sectional study. No attrition reported.	Moderate MIQ-M was used to assess PMIE exposure in the same manner for all participants. No information on degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Jordan 2017 Nash 2013	Moderate Sample drawn from a prospective study of active-duty Marines deploying to Iraq or Afghanistan. Current study used the final cohort which had the highest combat exposure and unit	Moderate PTSD assessed at 8-month follow-up. Attrition not reported.	Moderate MIES was used to assess PMIE exposure in the same manner for all participants. Not all MIES items were used for Jordan 2017. Extent of missing data not	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	losses during deployment.		reported, but MLE was used.				
Keenan 2023	Low Participants were justice-involved Veterans in Veterans Treatment Court. Appears that most VTC participants during the study period participated in the surveys.	Moderate 66% of participants who completed the MIS at baseline completed it at follow-up.	Moderate Validation study for the measure used to assess MI (MIS). MIS was used to assess MI for all participants either online or via a paper version. 3% of participants did not complete the MIS at baseline, but it's unclear whether data was missing for those who did complete the measure.	Low PTSD assessed with a validated measure in the same manner for all participants.	High Analyses do not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Kelley 2019	Moderate Participants were recruited from multiple sources among the community. No further details on recruitment provided. Sample was slightly younger, more likely to be female, married, and have attended college than the larger post-9/11 Veteran population.	Low Cross-sectional study. No attrition reported.	Moderate MIQ-M was used to assess PMIE exposure and was modified to also include items assessing MI symptoms. Assessment was conducted in the same manner for all participants. No information on degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Kelley 2021a	High Participants were US Air Force ISR personnel. Secondary analysis of a larger study limited to individuals who endorsed graphic media exposure and had data on gender, months working in ISR, combat	Low Cross-sectional study. No attrition reported.	Low MIES was used to assess PMIE exposure in the same manner for all participants. Small changes were made to the measure for applicability to ISR personnel. Appears that only individuals	Low PTSD assessed with a validated measure in the same manner for all participants.	Moderate Models included gender and months working in ISR as covariates. Other potential confounders not accounted for.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	exposure, MIEs, and PTSD symptoms.		with complete data were included.				
Kelley 2021b	Moderate Veterans recruited via online advertising. No further information on recruitment reported.	Low Cross-sectional study. No attrition reported.	Low EMIS-M was used to assess MI in the same manner for all participants. No information on degree of missing data, but missing data were handled using full information maximum likelihood.	Low Suicide ideation assessed with a single item from a validated measure in the same manner for all participants.	Moderate Models included Veteran status, age, and PTSD disability status as covariates. Other potential confounders not accounted for.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Kinney 2023	Moderate Veterans eligible for VA care recruited via flyers, referrals, and intake clinics. Required history of mTBI.	Low 98% of participants meeting inclusion criteria completed the study.	Low MIES was used to assess PMIE exposure in the same manner for all participants. Only included individuals who completed the study measures (145/147).	Low PTSD assessed with a validated measure in the same manner for all participants.	Moderate Models adjusted for age and gender. Other potential confounders not accounted for.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Koenig 2020 Koenig 2018a Koenig 2018b Koenig 2018c Ames 2018 Volk 2019	Moderate Majority of participants were Veterans recruited from outpatient clinics. Other participants recruited from a university or an online data collection platform. No further detail on sampling provided.	Low A sub-sample (15%) completed the questionnaire a second time at 1–2-week follow-up for test-retest reliability but data of interest was cross-sectional.	Moderate MISS-M was used to assess MI symptoms. Participants completed self-report measure either in person or online. Excluded data from participants missing > 50% of data for the subscales. For those whose data was included, missing data was handled with imputed means (1-7% for subscale items; 4% for missing subscales).	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Models controlled for demographic, military, and social characteristics. Other potential confounders not accounted for.	Moderate Missing data was addressed via imputed mean values for some analyses. No evidence of selective reporting.	Moderate
LaFrance 2019	Moderate Included consecutive patients seen by a	Low Cross-sectional study. No attrition reported.	High Did not use a validated measure of	Low Mental health correlates assessed	High Analyses do not	Moderate Do not describe how missing data	High

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	single provider at a VAMC between 2012 and 2019. Participants had to be diagnosed with psychogenic nonepileptic seizures. Excluded 10 patients without MI information.		MI. Patient files were retrospectively reviewed for evidence of MI by a trained independent reviewer based on MI categories.	with validated measures in the same manner for all participants.	account for potential confounders.	were addressed. No evidence of selective reporting.	
Lancaster 2018a	Moderate Online survey administered via Qualtrics software and posted on MTurk (paid for completing surveys). 32% of individuals who accessed the survey completed it.	Low Cross-sectional study. No attrition reported.	Moderate MIES and MIQ-M were used to assess PMIE exposure in the same manner for all participants. No information on degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Lancaster 2018b	Moderate Online survey administered via Qualtrics software and posted on MTurk (paid for completing surveys). 33% of individuals with military service who accessed the survey completed it.	Low Cross-sectional study. No attrition reported.	Moderate MIES was used to assess PMIE exposure in the same manner for all participants. Only self-transgressions and betrayals items were used. No information on degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Litz 2018	Moderate Included baseline data from 3 trials of ADSMs deployed to Iraq/Afghanistan. No other information on recruitment or selection reported. Required to describe an event that met DSM-IV Criterion A1 and A2 for inclusion.	Low Baseline data only.	High Did not use a validated PMIE/MI measure. Categorized Criterion A event types (inlcuding MI-self and MI-others). No missing data; only individuals reporting an event were included.	Low PTSD assessed with a validated measure in the same manner for all participants.	High Analyses do not account for potential confounders.	Low Missing data were minimal and handled via listwise deletion. Analyses were appropriate and no evidence of selective reporting.	High
Maguen 2020 Maguen 2022	Low Potential participants	Low Only participants who	Low MIES was used to	Low Mental health	Low Adjusted ORs	Low Analyses were	Low

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
Chesnut 2020 Nillni 2020	were drawn from a roster of all service members separating in fall of 2016. Multiple contacts were made by mail with a link to the online survey, with a 23% response rate (completion of the baseline survey). The sample was demographically like the sampling frame, and weighting was used to adjust for observed nonresponse bias.	had wave 2 data (79%) were included in analyses for this study (MI was not assessed at baseline).	assess PMIE exposure and subjective distress in the same manner for all participants. Missing data were handled using the Full Information Maximum Likelihood technique.	correlates assessed with validated measures in the same manner for all participants.	accounted for demographic and military characteristics including age, minority racial status, marital status, educational status, service branch, rank, military occupational specialty, number of deployments, combat exposure, military sexual trauma exposure, and premilitary trauma exposure.	appropriate and no evidence of selective reporting.	
Maguen 2023	Low Nationally representative sample of Veterans selected using a stratified, probability-based sampling frame from a dataset containing information on all separated Veterans between 2001 and 2015. Response rate to mailed invitations was 40%.	Low Cross-sectional study. No attrition reported.	Low MIES was used to assess PMIE exposure and subjective distress for all participants. Participants could complete the self-report measure online or by phone. Minimal missing data which were handled via multiple imputation.	Low Mental health correlates assessed with validated measures in the same manner (online or by phone) for all participants.	Low Adjusted models included age, race and ethnicity, sexual orientation, marital status, parental status, branch of service, rank, highest level of education, history of warzone deployment, MST, adverse childhood events, current mental health status (*ie*, traumatic stress, depression, anxiety, hazardous alcohol use), and pre-military history of suicidal ideation and suicidal self-directed violence.	Low All analyses were weighted to account for sampling methods used. Analyses were appropriate and no evidence of selective reporting.	Low
McDaniel 2023	Low Nationally representative sample of US Veterans (using Qualtrics to recruit and link participants to the study).	Low Cross-sectional study. No attrition reported.	Moderate The MISS-M-SF was used to assess MI in the same manner for all participants. No information on degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Models controlled for gender, race, age, region of the United States, branch of military service, marital status, length of military service, annual	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	Sampling was stratified to oversample women and African American Veterans.				income, military identity, daily stress, loneliness, and quality life. Other potential confounders not accounted for.		
Nichter 2021 Norman 2022 Maguen 2023	Low Nationally representative sample of Veterans (sample drawn from a probability-based, online survey panel of US adults). Inclusion limited to Veterans with combat exposure. Post-stratification weights used 2019 US census data.	Low Cross-sectional study. No attrition reported.	Low MIES was used to assess PMIE exposure in the same manner for all participants. <4.5% missing data on MIES, which were imputed using chained equations.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Low Models adjusted for sociodemographic characteristics, combat exposure severity, lifetime trauma burden, and lifetime PTSD, MDD, AUD, and DUD.	Low Analyses were appropriate and no evidence of selective reporting.	Low
Nieuwsma 2021 Nieuwsma 2022	Moderate Letters were mailed to Veterans identified from the VA Mid-Atlantic MIRECC's Post-Deployment Mental Health Repository (3,000 recent-era Veterans). 33% of potential participants returned valid survey packets.	Low Cross-sectional study (though some data were taken from original repository study). No attrition reported.	Moderate MIES and MIQ-M were used to assess PMIE exposure in the same manner for all participants. BMIS was also used to assess MI sequela (not previously validated). Scale scores were calculated only for participants with 75% of responses for the measure. Means were imputed for missing values. For 2022 study, only 2 items from MIES were used.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders in 2021 publication. In 2022 publication, model predictor variables included age, number of deployments, prior life stressors, combat experiences, post-battle experiences, gender, race, and highest rank.	Moderate Analyses used available data. Do not report extent of missing data, but scale scores were not included for participants with < 75% of responses for a given measure. When < 25% of responses were missing, means were imputed for missing values. No evidence of selective reporting.	Moderate
Ogle 2018	Moderate Participants were US Air Force ISR personnel assigned to 3 units. Survey was offered	Low Cross-sectional study. No attrition reported.	Moderate The MIES was used to assess MI in the same manner for all participants. The measure was	Low PTSD assessed with a validated measure in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	anonymously by an embedded psychologist. Do not report how many potential participants declined participation.		adapted slightly to match up with the experiences of remote combat. No information on degree or handling of missing data.			selective reporting.	
Paige 2019 Bhalla 2018	High Participants drawn from the baseline sample of a longitudinal online study of Army couples after deployment. Recruitment materials directed potential participants to the website. Participants had to be in a heterosexual couple (male soldier and civilian female). Of the couples meeting criteria and invited to complete the survey, 81% participated.	High For Bhalla publication, only soldiers with data at all 3 time points were included, and soldiers who were excluded for this reason had significantly more exposure to PMIEs (did not differ on other factors). Do not report how many were excluded.	High Paige publication did not use a validated measure to assess PMIE/MI. Instead, assessed the frequency of 4 categories of trauma types, including MI by self and MI by others. No not report degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders except for combat exposure in Bhalla publication.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	High
Parry 2023	Moderate Data were derived from a database of Veterans who completed a routine PTSD intake assessment at a VA clinic. Appears that all first assessments were included within a given timeframe (Dec 2014 - Sep 2019).	Low Retrospective review of health records. No attrition reported.	Low The MIES was included on the PTSD intake form for all participants. Don't report missing data for this measure, but overall data were missing for 3.8% of the cohort.	Low Suicidality was examined for an 18-month follow-up period after the intake assessment using ICD codes from CDW data for all participants.	Low Analyses adjusted for potential confounders identified through a literature review and consultation with experts: age, race, educational attainment, rurality, years of military service, depression diagnosis, TBI, tinnitus.	Low Individuals with missing data were excluded during modeling, but missing data was minimal. No evidence of selective reporting.	Moderate
Presseau 2019	Moderate ADSMs were recruited Nov 2010 - June 2011 at an Army Medical Center during soldier readiness processing	Low Cross-sectional study. Only participants who completed the follow-up were included in the study.	High Did not use a validated measure to assess PMIE/MI. Instead, trauma type from Criterion A segment of SCID	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not report extent of missing data but describe handling missing data using imputed means in	High

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	prior to deployment. Participants who returned for a follow-up assessment and provided sufficient information about their trauma to allow for categorization were included in this study. The final sample was older than those excluded from the initial sample.		was coded using a coding scheme, including MI by self and MI by others. All participants were required to have enough information for coding trauma types for inclusion.			models. When a measure for a given participant was missing more than 70% of the items, that score was treated as missing. No evidence of selective reporting.	
Richardson 2022	Moderate Recruited using purposeful sampling via social media sites, military listservs, and flyers/newsletters.	Low Cross-sectional study. No attrition reported.	Moderate The MISS-M-SF and MIES were used to assess PMIEs/MI in the same manner for all participants. No information on degree or handling of missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants, with the exception of self-harm/suicidal ideation, which were assessed with 2 ad hoc items.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. Potential for selective reporting; only significant associations between variables that provided additional empirical support for the qualitative findings were discussed.	Moderate
Saba 2022	Moderate Veterans recruited via advertisements on social media and military listservs. 32% of potential participants (clicked on the ads) completed the survey. 34% of respondents were excluded for not passing validation checks.	Moderate The present study included only participants who completed the 12-month follow-up (82%).	Low The MIES was used to assess PMIE exposure at 12-month follow-up only in the same manner for all participants. 4 participants had missing data and were excluded from analysis.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	High Analyses do not account for potential confounders.	Low Excluded 4 participants (0.4%) with missing data from analyses. Analyses were appropriate and no evidence of selective reporting.	Moderate
Shapiro 2022	Moderate Data were collected from a subsample of	Low Cross-sectional study. No attrition reported.	Moderate The MIES was used to assess PMIE	Low Suicide ideation assessed with a	High Analyses do not	High Listwise deletion was used to	High

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	female service members concurrently with a study of service members presenting for participation at a Joint Forces Training Center. Recruitment and sampling for that study are not described.		exposure in the same manner for all participants. Missing data not reported separately for this measure, but rates of missing data ranged from 8-39% across study variables.	validated measure in the same manner for all participants.	account for potential confounders.	handle missing data and about half of participants were excluded from models. No evidence of selective reporting.	
Stein 2012	Moderate Included ADSMs assessed as part of treatment for PTSD symptoms between August 2009 and December 2010. Participants were required to identify traumatic event currently causing the most distress and provide enough detail of the event for categorization.	Low Cross-sectional study. No attrition reported.	High Did not use a validated PMIE/MI measure. Categorized index event types (including MI-self and MI-others). No missing data - only participants with an index event were included.	Low PTSD assessed with a validated measure in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate No information on extent or handling of missing data. Only report data for significant results.	High
Thomas 2022	Moderate Recruited Veterans MTurk. Authors note that this is a reliable method of obtaining samples representing the US population but do not report evidence of this. Of the 2,644 responses obtained, 19% met inclusion criteria and passed validation checks.	Low Cross-sectional study. No attrition reported.	Low The MIES was used to assess PMIE exposure in the same manner for all participants. Missing item-level data ranged from 15-24 participants missing 1-12 items. Missing data values were imputed using multiple imputation.	Low Alcohol misuse was assessed with a validated measure in the same manner for all participants.	High Analyses do not account for potential confounders.	Low Analyses were appropriate and no evidence of selective reporting.	Moderate
Tripp 2016	Moderate Veterans were recruited from VAMC clinics for an alcohol intervention study. Inclusion criteria required prior	Low Data from baseline assessment of an alcohol intervention study.	High Did not use a validated measure to assess PMIE/MI. Instead, used the Combat Experiences scale of the DRRI	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Low Ethnicity/race, age, gender, alcohol use, and other types of combat were examined as potential covariates.	Moderate Mean substitution was used to handle missing data for any measure that was 80% or more	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	deployment and hazardous alcohol use.		and looked at killing in combat and firing a weapon. Any individual who did not answer the Killing item was excluded from analyses. Do not report degree of missing data.			complete. Any dichotomous variables that were missing were excluded from analyses, except for the Firing/Killing variable. Do not report degree of missing data. No evidence of selective reporting.	
Usset 2019	Moderate Potential participants were identified from a database of a Midwest VA health care system. Letters were mailed to a random sample of Veterans with a PTSD diagnosis enrolled in care. Do not report how many eligible individuals did not participate.	Low Cross-sectional study. No attrition reported.	Moderate The MIES and MIQ were used to assess PMIE exposure in the same manner for all participants. Do not report degree of missing data for this measure or how missing data were handled.	Low PTSD was assessed with a validated measure in the same manner for all participants.	High Analyses do not account for potential confounders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Williams 2019	Moderate Participants were recruited from VSOs and reported events that occurred during combat causing regret.	Low Cross-sectional study. No attrition reported.	High Two items modified from the MIES were used to assess acts of commission and omission in the same manner for all participants. No information on missing data.	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Moderate Partial correlations done to remove shared variance with age, gender, and combat/postcombat experience. Other potential confounders not considered in analyses.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate
Wisco 2017 Corona 2019	Low Data from the second baseline cohort of a study that surveyed a nationally representative sample of US Veterans. A random sample of Veterans	Low Cross-sectional study. No attrition reported.	Moderate The MIES was used to assess PMIE exposure in the same manner for all participants. Do not report degree of missing data for this measure or how	Low Mental health correlates assessed with validated measures in the same manner for all participants.	Low Included model that adjusted for demographics, combat severity, cumulative trauma burden, and lifetime mental disorders.	Moderate Do not describe how missing data were addressed. No evidence of selective reporting.	Moderate

Author Year	Study Participation	Study Attrition	Prognostic Factor Measurement	Outcome Measurement	Study Confounding	Statistical Analysis and Reporting	Overall Risk of Bias
	were sent a screening survey. 71% completed the screening survey; 93% of these individuals participated in the study. Post-stratification weights were applied based on demographic characteristics. The current study was limited to the 38% of participants with combat exposure.		missing data were handled.				
Youssef 2018	Moderate Veterans were recruited via advertisements and clinician referrals at a VAMC. Required that Veterans report prior deployment to a combat theater and presence of symptoms of PTSD and/or inner conflict for inclusion. No further detail on recruitment/sampling reported.	Low Cross-sectional study. No attrition reported.	Moderate The MISS-M was used to assess MI symptoms in the same manner for all participants. Entire subscales were missing in 7% of cases, in which case the average of completed subscale scores was imputed. Items were missing from subscales in 0-13% of cases, and the average of the answered subscale items was imputed in cases where <50% of items were missing.	Low PTSD was assessed with a validated measure in the same manner for all participants.	Low Models include demographic and military-related characteristics (including combat exposure and PTSD diagnosis), physical health/behaviors, and religious involvement as covariates.	Moderate Data were excluded from analyses for a scale if >50% of items were missing; do not report how often this occurred. For scales/subscales where <50% of data was missing, means were imputed. No evidence of selective reporting.	Moderate

Abbreviations. ADSM=active-duty service member; AUD=alcohol use disorder; BMIS=Brief Moral Injury Scale; CAPS=Clinician-Administered PTSD Scale; DRRI=Deployment Risk and Resilience Inventory; DUD=drug use disorder; EMIS-M=Expressions of Moral Injury Scale – military version; EMIS-M-SF=Expressions of Moral Injury Scale – military version – short form; IOP=Intensive Outpatient Program; ISR=intelligence, surveillance, and reconnaissance; MDD=major depressive disorder; MI=moral injury; MIES=Moral Injury Events Scale; MIQ-M=Moral Injury Questionnaire – military version; MIRECC=Mental Illness Research, Education, and Clinical Center; MIS=Moral Injury Scale; MISS-M=Moral Injury Symptom Scale – military version; MLE-maximum likelihood estimation; mTBI=mild traumatic brain injury; MTurk=Amazon Mechanical Turk; PMIE=potentially morally injurious event; VAMC=VA Medical Center; VTC=Veterans Treatment Court.

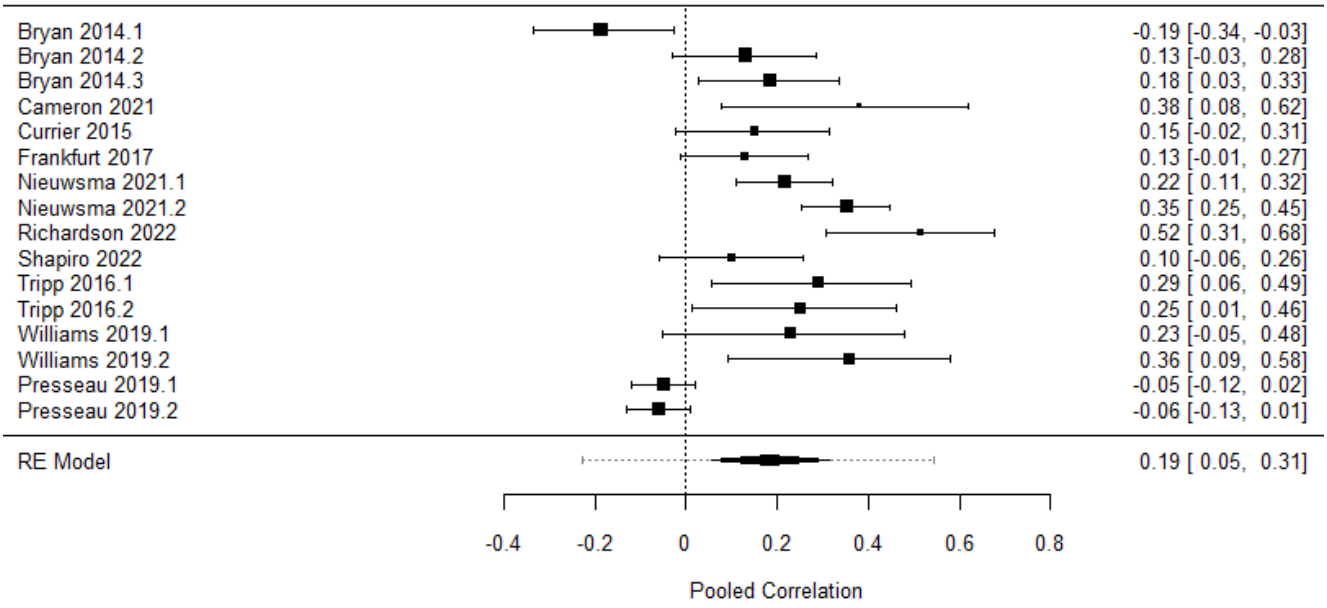
STRENGTH OF EVIDENCE ASSESSMENTS

Outcome	Exposure Type	Studies	Study Limitations	Directness	Consistency	Precision	Rating and Summary of Evidence
Suicidal thoughts and behaviors	PMIE	15	High to low	Direct	Inconsistent	Imprecise	Low PMIE exposure may be positively correlated with increases in suicidal thoughts and behaviors based on 15 studies.
	MI	9	High to moderate	Direct	Inconsistent	Imprecise	Low MI symptoms may be positively correlated with increases in suicidal thoughts and behaviors based on 9 studies.
PTSD	PMIE	29	High	Direct	Inconsistent	Imprecise	Low PMIE exposure may be positively correlated with greater PTSD symptom severity based on 29 studies.
	MI	12	High to moderate	Direct	Consistent	Precise	Moderate MI symptoms may be positively correlated with greater PTSD symptom severity based on 12 studies.
Depression	PMIE	22	High to low	Direct	Inconsistent	Imprecise	Low PMIE exposure may be positively correlated with greater depression symptom severity based on 22 studies
	MI	8	Moderate	Direct	Consistent	Precise	Moderate MI symptoms are likely positively correlated with greater depression symptom severity based on 8 studies.
Anxiety	PMIE	8	High to low	Direct	Inconsistent	Imprecise	Low PMIE exposure may be positively correlated with greater anxiety symptom severity based on 8 studies.
	MI	5	Moderate	Direct	Consistent	Precise	Moderate MI symptoms are likely positively correlated with greater anxiety symptom severity based on 5 studies.
Substance use	PMIE	11	High to low	Direct	Inconsistent	Imprecise	Low PMIE exposure may be positively correlated with greater substance use based on 11 studies.
	MI	7	Moderate	Direct	Inconsistent	Imprecise	Low MI symptoms may be positively correlated with greater substance use based on 7 studies.
Functioning	PMIE/MI	3	High to low	Direct	Consistent	Imprecise	Low PMIE exposure/MI symptoms may be positively correlated with greater impairment of relationship functioning and social engagement based on 3 studies.

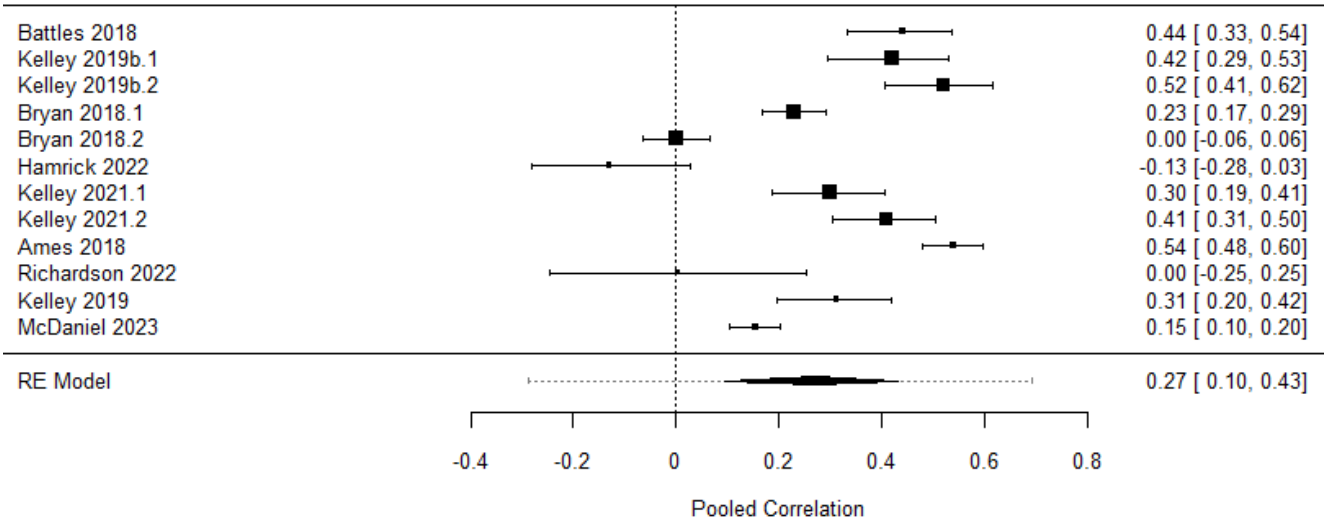
Abbreviations. MI=moral injury; PMIE=potentially morally injurious event.

FOREST PLOTS FOR INCLUDED META-ANALYSES

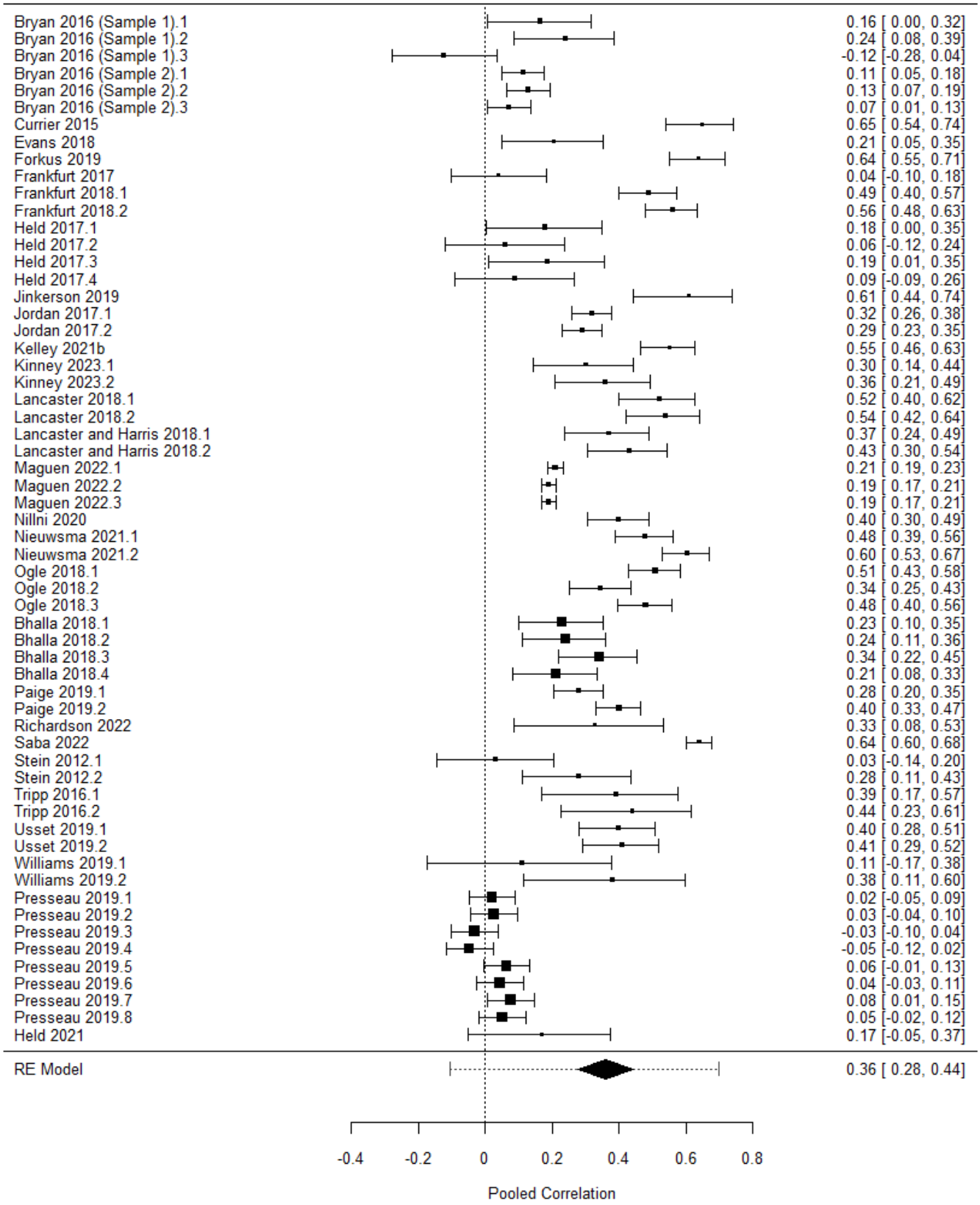
Suicidality (PMIE Exposure)



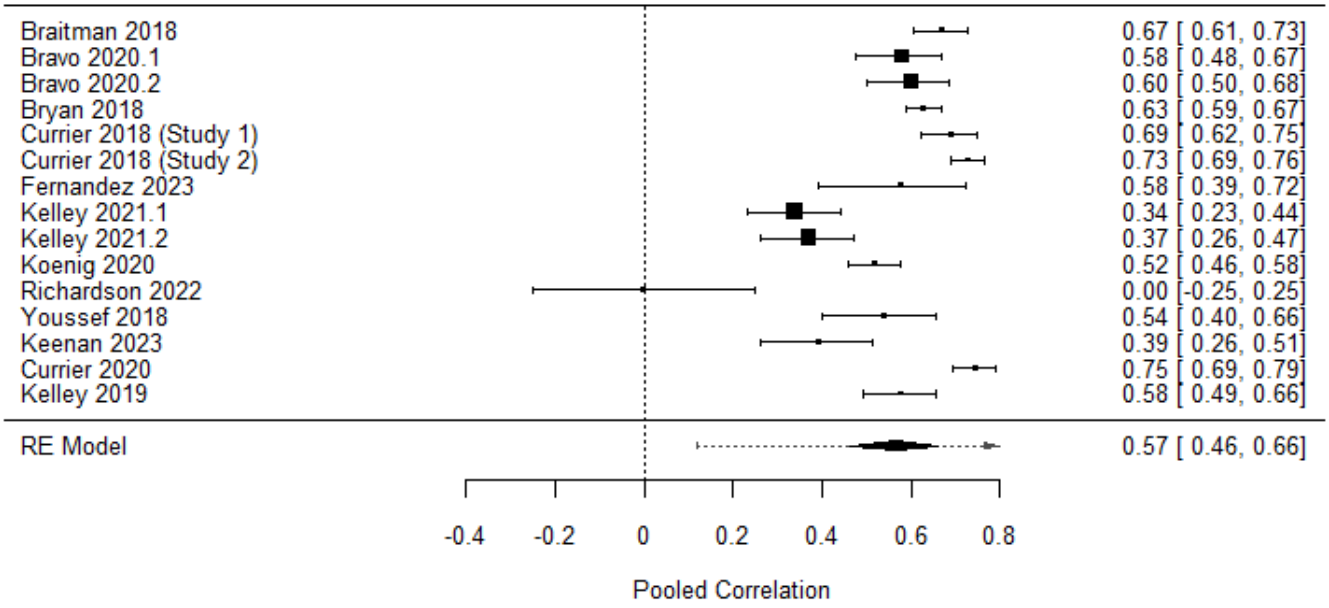
Suicidality (MI Symptoms)



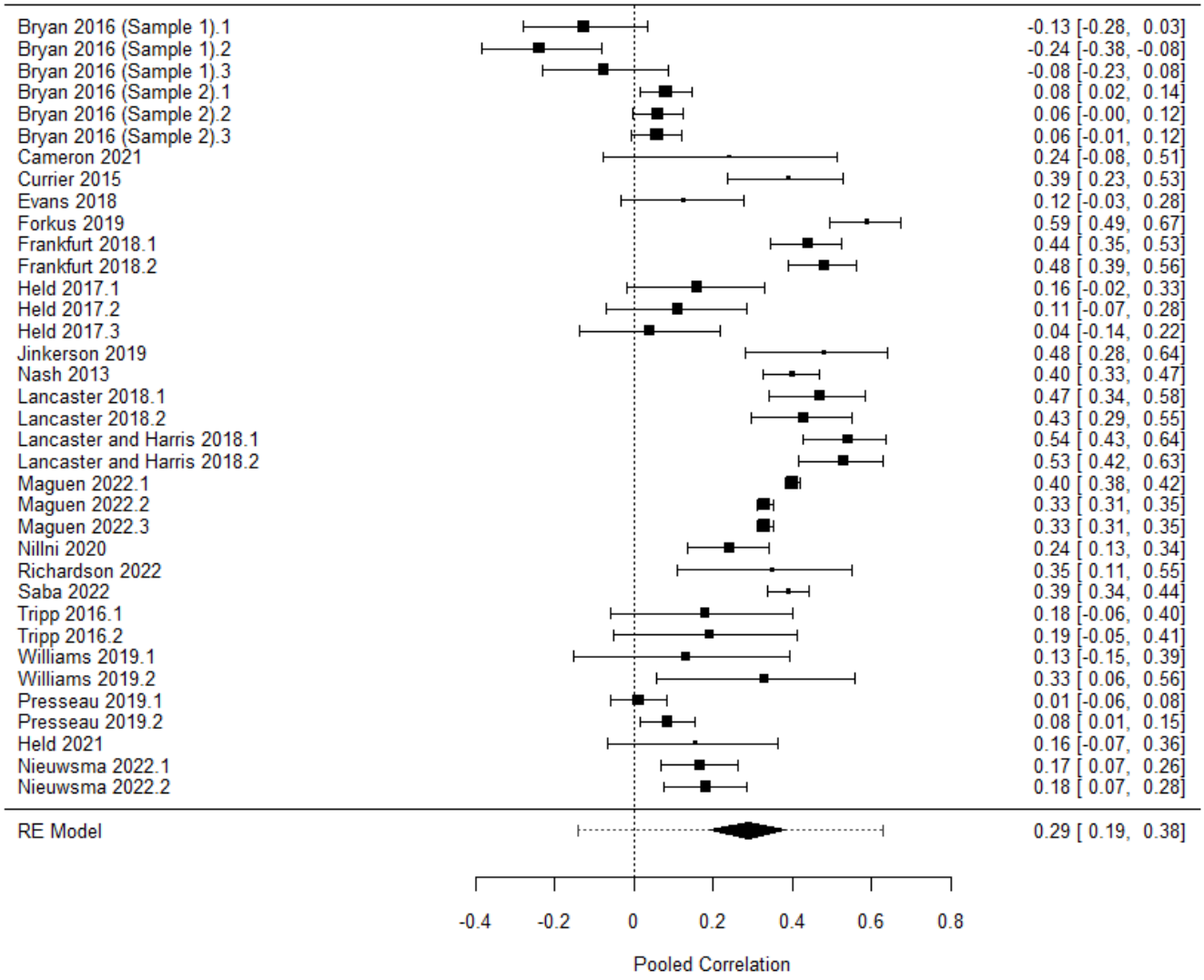
PTSD (PMIE Exposure)



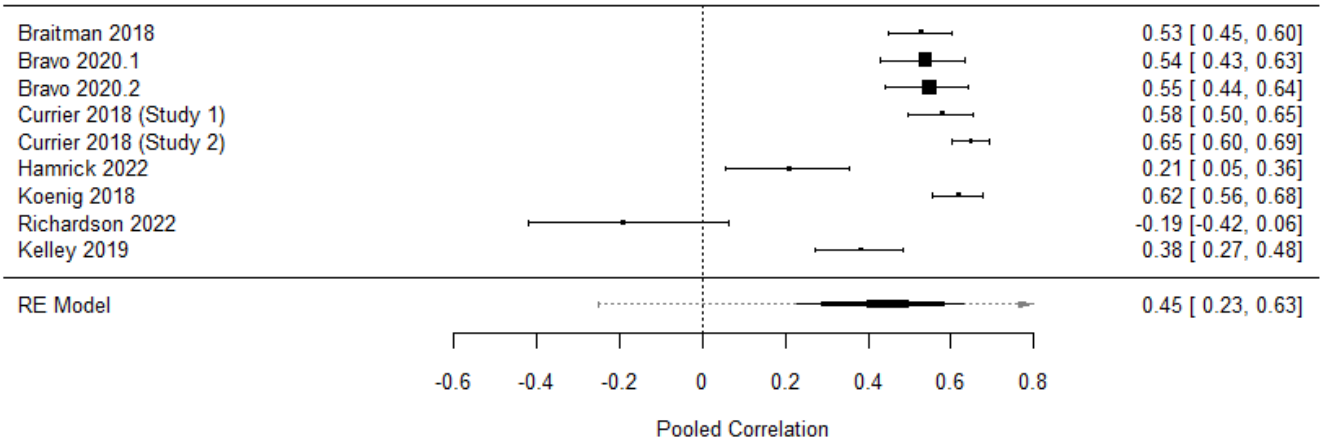
PTSD (MI Symptoms)



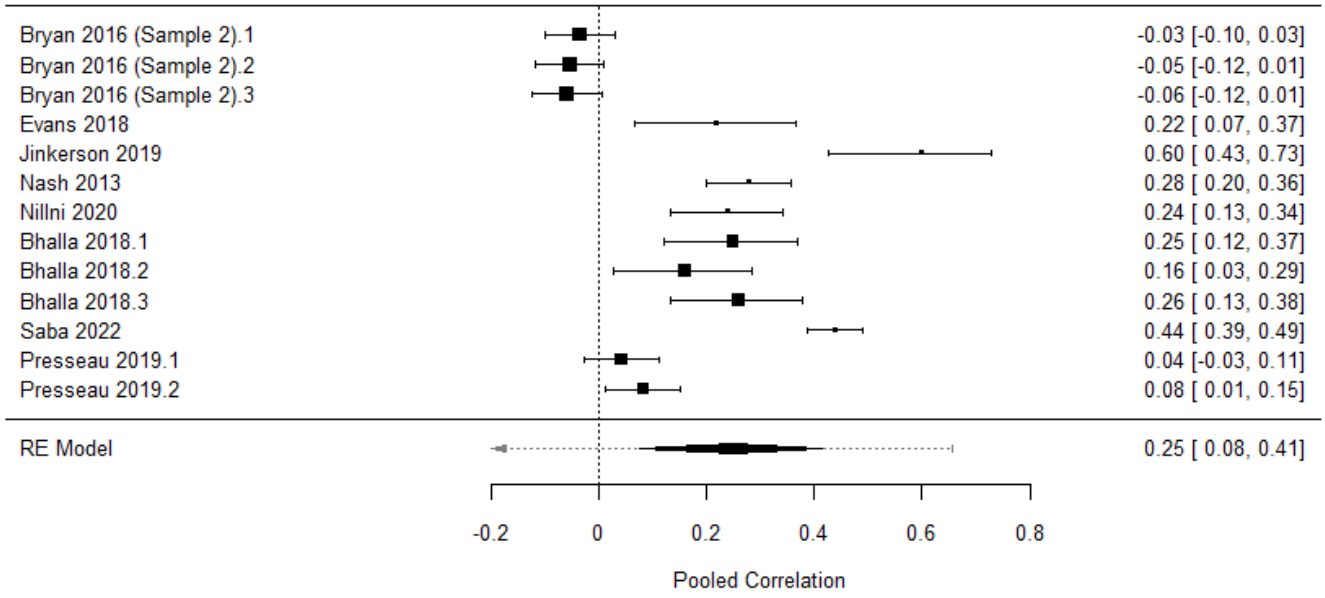
Depression (PMIE Exposure)



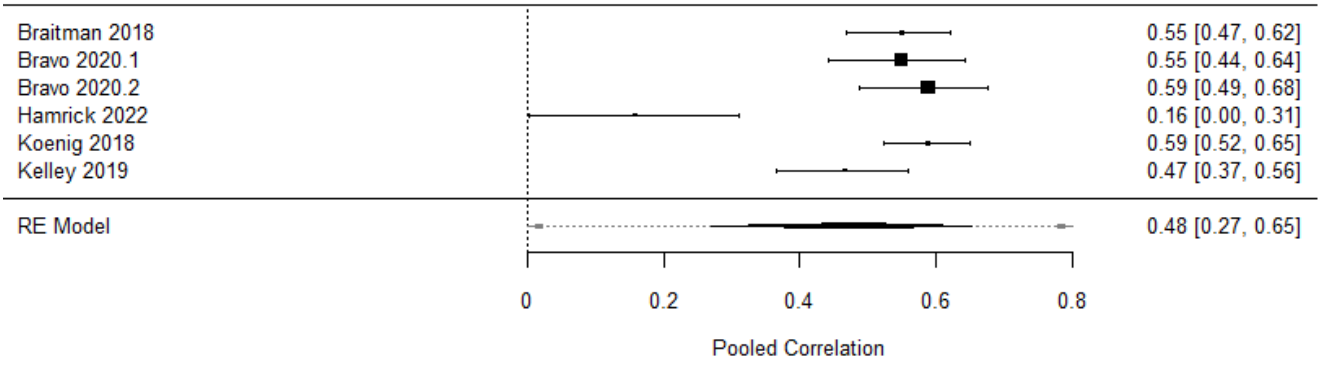
Depression (MI Symptoms)



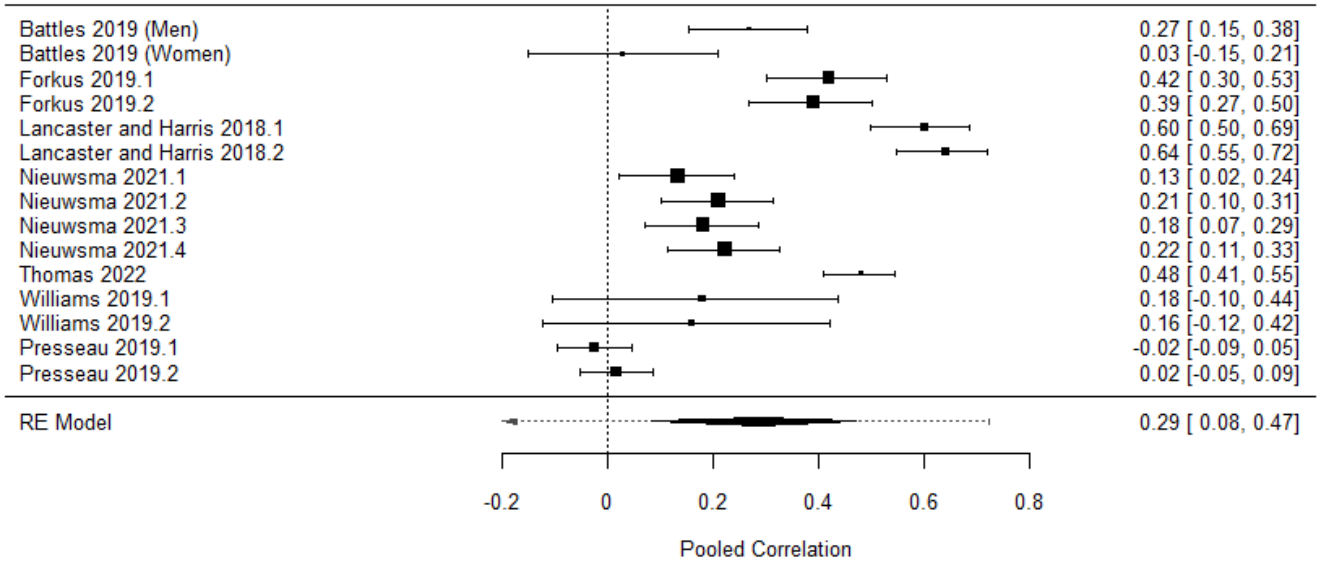
Anxiety (PMIE Exposure)



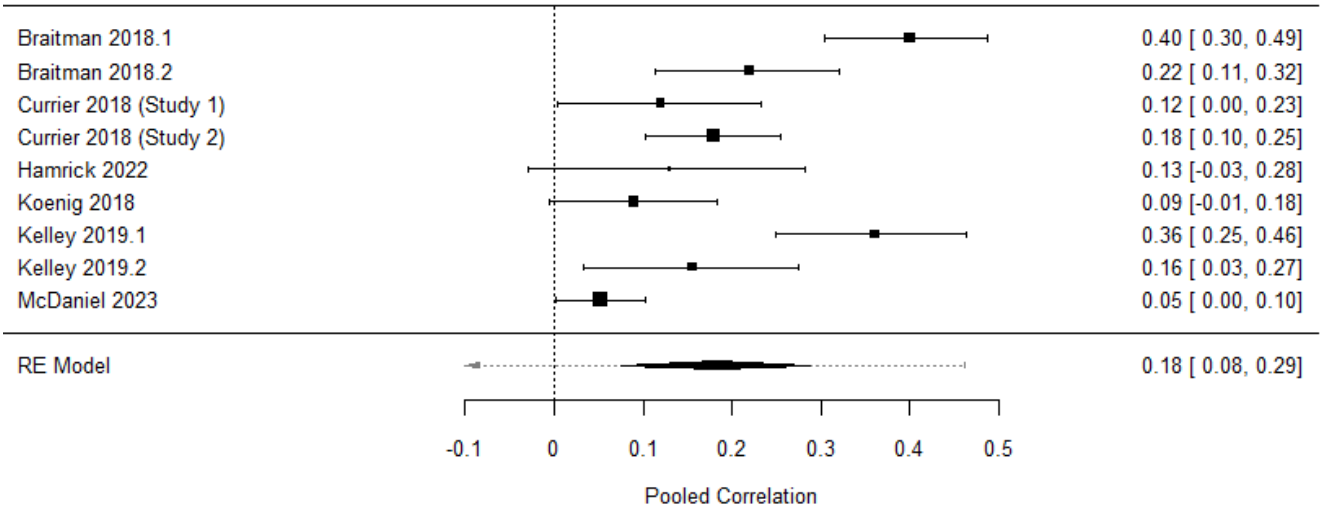
Anxiety (MI Symptoms)



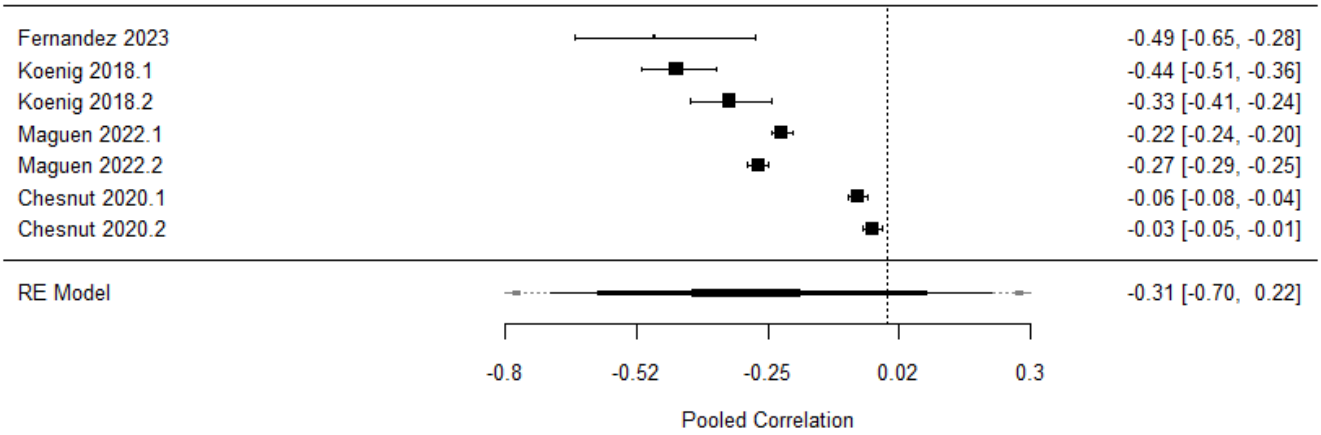
Substance Use (PMIE Exposure)



Substance Use (MI Symptoms)



Relationship/Social (PMIE Exposure & MI Symptoms)



PEER REVIEW COMMENTS AND RESPONSES

Comment #	Reviewer #	Comment	Author Response
Are the objectives, scope, and methods for this review clearly described?			
1	1	Yes	None
2	2	Yes	None
3	3	Yes	None
4	4	Yes	None
5	6	Yes	None
6	7	No - Overall, this is an important review that provides important information about the distinction of MI from traditional mental health diagnoses or challenging symptoms while showing that there are important correlations. The individual methods to address KQ1 and separately KQ2 are strong. However, there is room to clarify the rational for and potential impact of the significantly different inclusion/exclusion criteria for articles used to address the two key questions. There is also an opportunity to clarify the definition of MI and PMIE used to specifically screen articles for inclusion in the two key questions for the present review. This clarification is especially important for users of the review who may not have an in-depth familiarity with MI and PMIEs or who are utilizing the executive summary of the review as opposed to the entire review detail.	Thank you for this comment. The differences in eligibility criteria for the 2 Key Questions of the review are due to the differences in aim and scope of the Key Questions. The report has 2 distinct aims: 1) characterizing the literature on moral injury over time, broadly across populations; and 2) examining the association between MI/PMIE and mental health outcomes specifically in US Veterans/military service members. An examination of this association in other populations was outside of the scope of this review, which was developed in response to the needs of the Operational Partners. We have added some text to clarify the scope of the report. Because there is not wide consensus on the definitions of the concepts of PMIE/MI, we included any studies where PMIE/MI was the main focus of the study, as defined by the study authors. We did not include studies that solely used the term “moral distress,” or studies that included moral injury or PMIE exposure only as a secondary outcome. We have added some text to the methods section to further clarify our approach.
7	8	Yes	None
Is there any indication of bias in our synthesis of the evidence?			
8	1	Yes - The reviewers failed to take into account internal validity issues within studies, most notably, measurement problems, and	In our synthesis of the association between PMIEs/MI symptoms and mental health outcomes, we closely examined the measures used by each study (and how

Comment #	Reviewer #	Comment	Author Response
		specifically psychometric development and content validity problems (and misuse of scales that assess reports of exposure to potentially morally injurious events as indicators of moral injury as an outcome).	they were used) and differentiated between reports of PMIE exposures and MI outcomes in our narrative synthesis and quantitative analysis. We have added a table to the methods section that more explicitly describes this process. The aim of this report was to examine the relationship between PMIEs/MI and mental health symptoms; it was beyond the project's scope to evaluate the theoretical soundness or validity of individual PMIE or MI measures. Nonetheless, we discuss the variation in how individual measures/studies have conceptualized and operationalized these constructs and highlight potential limitations this inconsistency may produce. In addition, we note that despite this variability, findings are mostly consistent across studies, suggesting that the evidence is fairly robust despite measurement issues that may be present in available studies.
9	2	No	None
10	3	Yes - Table 2 reports characteristics of moral injury interventions for veterans and military service members. It seemed unusual to me that the Building Spiritual Strength (BSS) intervention was omitted. In fact, I believe there are more published RCTs of BSS than any other intervention designed to address moral injury (citations included below). I report the omission as a potential indication of bias because BSS is co-facilitated by a mental health provider and chaplain. BSS is therefore an alternative to approaches developed by the Integrative Mental Health team who commissioned the review that also are co-facilitated by a mental health clinician and chaplain. Harris, J. I., Usset, T., Voecks, C., Thuras, P., Currier, J., & Erbes, C. (2018). Spiritually integrated care for PTSD: A randomized controlled trial of "Building Spiritual Strength". Psychiatry Research, 267, 420-428. Harris, J. I., Erbes, C. R., Engdahl, B. E., Thuras, P., Murray-Swank, N., Grace, D., ... & Le, T. (2011). The effectiveness of a trauma focused spiritually integrated intervention for veterans	We screened and excluded the 2 empirical studies on the Building Spiritual Strength intervention cited here because it is described as an intervention for spiritual distress in individuals with PTSD and does not explicitly mention moral injury or include moral injury measures as outcomes. However, given that it is considered to be an intervention for MI and was mentioned by multiple peer reviewers, we have now included a mention of these studies in the intervention section even though they were not formally included according to our study eligibility criteria. We include other studies of interventions that were co-facilitated by a chaplain and mental health clinician that explicitly mention and assess moral injury.

Comment #	Reviewer #	Comment	Author Response
		exposed to trauma. Journal of clinical psychology, 67(4), 425-438. There are numerous non-empirical papers that describe BSS as well. Winkeljohn Black, S., & Klinger, K. (2022). Building Spiritual Strength: a Spiritually Integrated Approach to Treating Moral Injury. Current Treatment Options in Psychiatry, 9(4), 313-320.	
11	4	No	None
12	6	No	None
13	7	No	None
14	8	No	None
Are there any published or unpublished studies that we may have overlooked?			
15	1	Yes - You mischaracterized Adaptive Disclosure and you are missing the latest RCT that compared AD-Enhanced with present centered therapy: Litz, B. T., Yeterian, J., Berke, D., Lang, A. J., Gray, M. J., Nienow, T., Frankfurt, S., Harris, J. I., Maguen, S., & Rusowicz-Orazem, L. (2024). A controlled trial of adaptive disclosure-enhanced to improve functioning and treat posttraumatic stress disorder. Journal of consulting and clinical psychology, 92(3), 150–164. https://doi.org/10.1037/ccp0000873 The following are instances of publications that used the MIOS or the MIDS: Biscoe, N., Bonson, A., Nickerson, A., & Murphy, D. (2023). Factors associated with exposure to potentially morally injurious events (PMIEs) and moral injury in a clinical sample of veterans. European Journal of Trauma & Dissociation, 7(3). https://doi.org/10.1016/j.ejtd.2023.100343 Biscoe, N., & Murphy, D. (2024). Factors associated with well-being among treatment-seeking UK Veterans: A cross-sectional study. Journal of Military, Veteran and Family Health, advanced online publication. https://doi.org/10.3138/jmvfh-2023-0023 Espinola, C. W., Nguyen, B., Torres, A., Sim, W., Rueda, A., Beavers, L., Campbell, D. M., Jung, H., Lou, W., Kapralos, B., Peter, E., Dubrowski, A., Krishnan, S., & Bhat, V. (2024). Digital interventions for stress among frontline health care workers:	Thank you for this comment. The recent RCT on AD was not included in our report because it was published after the end date of our systematic literature search (February 2024). Because the moral injury evidence base is rapidly evolving, we would need to conduct an updated systematic search of the literature to identify recently published studies, rather than selectively include new publications (which could introduce bias). Unfortunately, conducting an updated systematic search of the literature and incorporating findings into the present review is not feasible. We have revised our description of Adaptive Disclosure to be consistent with the citation provided here. Thank you for including citations on the MIOS and MIDS. We included several of these citations for KQ1 (Biscoe 2023; Espinola 2024; Nazarov 2024; Phelps 2023; D'Alessandro-Lowe 2023; D'Alessandro-Lowe 2024; Tao 2023). We also now include Nguyen 2023, Ritchie 2023, and Williamson 2022. We excluded Biscoe 2023 for KQ2 because it was not conducted among US Veterans/military service members. Likewise, we excluded Espinola 2024,

Comment #	Reviewer #	Comment	Author Response
		Results from a pilot feasibility cohort trial. JMIR Serious Games, 12(1). https://doi.org/10.2196/42813 Nazarov, A., Forchuk, C. A., Houle, S. A., Hansen, K. T., Plouffe, R. A., Liu, J. J., Dempster, K. S., Le, T., Kocha, I., Hosseiny, F., Heesters, A., & Richardson, J. D. (2024). Exposure to moral stressors and associated outcomes in healthcare workers: Prevalence, correlates, and impact on job attrition. European Journal of Psychotraumatology, 15(1). https://doi.org/10.1080/20008066.2024.2306102 Nguyen, B., Torres, A., Espinola, C. W., Sim, W., Kenny, D., Campbell, D. M., Lou, W., Kapralos, B., Beavers, L., Peter, E., Dubrowski, A., Krishnan, S., & Bhat, V. (2023). Development of a data-driven digital phenotype profile of distress experience of healthcare workers during COVID-19 pandemic. Computer Methods and Programs in Biomedicine, 240. https://doi.org/10.1016/j.cmpb.2023.107645 Phelps, A. J., Madden, K., Carleton, R. N., Johnson, L., Carey, L. B., Mercier, J. M., Mellor, A., Baills, J., Forbes, D., Devenish-Meares, P., Hosseiny, F., & Dell, L. (2023). Towards a holistic model of care for moral injury: An Australian and New Zealand investigation into the role of police chaplains in supporting police members following exposure to moral transgression. Journal of Religion and Health, 62(6), 3995-4015. https://doi.org/10.1007/s10943-023-01908-2 Ritchie, K., D'Alessandro-Lowe, A. M., Brown, A., Millman, H., Pichtikova, M., Xue, Y., Altman, M., Beech, I., Karram, M., Hosseiny, F., Rodrigues, S., O'Connor, C., Schielke, H., Malain, A., McCabe, R. R., Heber, A., Lanius, R. A., & McKinnon, M. C. (2023). The hidden crisis: Understanding potentially morally injurious events experienced by healthcare providers during COVID-19 in Canada. International Journal of Environmental Research and Public Health, 20(6), 4813. https://doi.org/10.3390/ijerph20064813 Williamson, C., Baumann, J., & Murphy, D. (2022). Exploring the health and wellbeing of a national sample of UK treatment-seeking veterans. Psychological Trauma: Theory, Research, Practice, and Policy. https://doi.org/10.1037/tra0001356 Turgoose, D., & Murphy, D. (2024). Associations between adverse childhood experiences (ACEs) and complex-PTSD, moral injury, and perceived social support: A latent class	Nazarov 2024, Phelps 2023, D'Alessandro-Lowe 2023, D'Alessandro-Lowe 2024, and Tao 2023 for KQ2 because they were not conducted among Veteran/military samples. Several studies were not included because they were published after the end date of our systematic literature search (Biscoe 2024; D'Alessandro-Lowe 2024; Hendrikx 2024; Griffin 2024; Maguen 2024; Turgoose 2024).

Comment #	Reviewer #	Comment	Author Response
		analysis. European Journal of Trauma & Dissociation, 100463. D'Alessandro-Lowe, A. M., Brown, A., Sullo, E., Pichtikova, M., Karram, M., Mirabelli, J., ... & Ritchie, K. (2024). Why are healthcare providers leaving their jobs? A convergent mixed-methods investigation of turnover intention among Canadian healthcare providers during the COVID-19 pandemic. Nursing Reports, 14(3), 2030-2060. D'Alessandro-Lowe, A. M., Karram, M., Ritchie, K., Brown, A., Millman, H., Sullo, E., Xue, Y., Pichtikova, M., Schielke, H., Malain, A., O'Connor, C., Lanius, R., McCabe, R. E., & McKinnon, M. C. (2023). Coping, supports, and moral injury: Spiritual well-being and organizational support are associated with reduced moral injury in Canadian healthcare providers during the COVID-19 pandemic. International Journal of Environmental Research and Public Health, 20(19), 6812. https://doi.org/10.3390/ijerph20196812 D'Alessandro-Lowe, A. M., Patel, H., Easterbrook, B., Ritchie, K., Brown, A., Xue, Y., ... & McKinnon, M. C. (2024). The independent and combined impact of moral injury and moral distress on post-traumatic stress disorder symptoms among healthcare workers during the COVID-19 pandemic. European Journal of Psychotraumatology, 15(1), 2299661. Hendrikx, L. J., & Murphy, D. (2024). Associations between International Trauma Questionnaire complex posttraumatic stress disorder symptom clusters and moral injury in a sample of UK treatment-seeking veterans: A network approach. Psychological Trauma: Theory, Research, Practice, and Policy, 16(3), 513. Tao, H., Nieuwsma, J. A., Meador, K. G., Harris, S. L., & Robinson, P. S. (2023). Validation of the Moral Injury Outcome Scale in acute care nurses. Frontiers in Psychiatry, 14, 1279255. https://doi.org/10.3389/fpsyt.2023.1279255 Griffin, B. J., Norman, S. B., Weber, M. C., Hinkson Jr, K. D., Jendro, A. M., Pyne, J. M., ... & Maguen, S. (2024). Properties of the modified self-forgiveness dual-process scale in populations at risk for moral injury. Stress and Health, e3413. Maguen, S., Griffin, B. J., Pietrzak, R. H., McLean, C. P., Hamblen, J. L., & Norman, S. B. (2024). Using the Moral Injury and Distress Scale to identify clinically meaningful moral injury. Journal of Traumatic Stress.	

Comment #	Reviewer #	Comment	Author Response
16	2	Yes - https://pubmed.ncbi.nlm.nih.gov/38655683/	This study was not included because it was published after the end date of our systematic literature search.
17	3	Yes - See comment above about published studies on the Building Spiritual Strength intervention. Since Feb 2024, when the literature search was performed, several studies have been published that are likely to be influential and are more methodologically rigorous than most of the earlier studies included in the review (citations are below). With such a dynamic literature, I am sure that it is difficult to ensure that the review reflects the most up to date information. The contribution of exposure to potentially morally injurious events to trajectories of posttraumatic stress symptoms among discharged veterans - a five-year study. Levinstein Y, Zerach G, Levi-Belz Y, Dekel R. Soc Psychiatry Psychiatr Epidemiol. 2024 Sep 20. doi: 10.1007/s00127-024-02766-3. Online ahead of print. PMID: 39302426 Response styles to positive affect during a positive psychology intervention for veterans with PTSD and moral injury: Preliminary results from a moral elevation intervention pilot trial. McGuire AP, Rodenbaugh M, Howard BAN, Contractor AA. Psychol Trauma. 2024 Aug 29. doi: 10.1037/tra0001774. Online ahead of print. PMID: 39207432 Using the Moral Injury and Distress Scale to identify clinically meaningful moral injury. Maguen S, Griffin BJ, Pietrzak RH, McLean CP, Hamblen JL, Norman SB. J Trauma Stress. 2024 Apr 24. doi: 10.1002/jts.23050. Online ahead of print. PMID: 38655683 In addition, I am aware of a forthcoming systematic review of the psychometric properties of scales designed to assess morally injurious outcomes that provides more in depth critiques of the available measures (e.g., factor structures, response formats, scoring algorithms, etc.). I also am aware of a forthcoming manuscript that examines the prevalence of PMIE exposure and functionally impairing moral injury in nationally representative groups of three high-risk populations including veterans. If requested, I would be glad to share the measure review or	Because the moral injury evidence base is rapidly evolving, as noted in this comment, we would need to conduct an updated systematic search of the literature to identify recently published studies, rather than selectively include new publications (which could introduce bias). Unfortunately, conducting an updated systematic search of the literature and incorporating findings into the present review is not feasible.

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		general prevalence manuscript with the VA ESP authors to consider including in the current review, especially if the literature search will be updated prior to publication of the current review.	
18	4	No	None
19	6	Yes - This study may or may not meet the inclusion criteria for interventions: Harris, J. I., Usset, T., Voecks, C., Thuras, P., Currier, J., & Erbes, C. (2018). Spiritually integrated care for PTSD: A randomized controlled trial of “Building Spiritual Strength”. Psychiatry Research, 267, 420–428. https://doi.org/10.1016/j.psychres.2018.06.045	See our response to comment #10 regarding the Building Spiritual Strength intervention.
20	7	No	None
21	8	Yes - Related to interventions, there is a newly published efficacy trial supporting AD for psychosocial functioning (Litz et al., 2024) and a newly published ACT-MI pilot trial (Walser et al., 2024), but these may not make sense to include based on the team's search date.	These studies were not included because they were published after the end date of our systematic literature search. Please also see our response to comment #17.
Additional suggestions or comments can be provided below.			
22	1	You defined PMIEs too narrowly. You are missing personal acts of omission (failing to act) and being the direct victim of another's transgressive behavior.	Thank you for your comment. We have edited our description of PMIEs in the background section to be more inclusive.
23	1	Your language use is often too imprecise: (1) Regarding the use of the terms PMIEs and MI: It is critical that you refer to PMIEs as "reports of PMIEs" and ratings on scales of MI as an outcome as "reports of MI symptoms." The only actual experience or behavior that is assessed with questionnaires is ticking off checklists or boxes on Likert-type scales. Anything assessed with questionnaires, including the PCL-5 and the PHQ-9, entail global retrospective best guesses about various experiences;	Thank you for your comment. Our choice of language to describe PMIEs and MI is consistent with language used to report other mental health outcomes that are not measured directly and are instead assessed via subjective self-report measures.
24	1	(2) it is very difficult to discern which studies and which scales contributed to Table 3, which is the most important Table in the report, it seems. It appears that scales that should only be considered assessments of reports of PMIEs were used in the MI symptoms category. There may be instances when the authors treated these scales as outcomes, but you should not. This reveals a lack of attention to content validity of scales and a critical appraisal of the internal validity issues within studies. This is highly problematic;	Throughout our synthesis, we differentiated between measures primarily assessing PMIE exposure and measures primarily assessing MI outcomes. We have added a table to the methods section specifying which methods of PMIE/MI assessment were considered reports of PMIE exposure versus MI outcomes and added some text before that Table that reiterates which studies were included in each analysis.

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25	1	(3) under overview of included studies, you mention the term mental health diagnoses. How is this latter issue germane to your review? Did any study use a structured clinical interview to determine caseness for a mental health diagnosis? I don't think this is the case. At best an investigator may have used a relatively arbitrary score threshold to determine caseness;	We have changed this text to state “mental health symptoms or diagnosis.”
26	1	(4) you stated "Pooled correlations were generally larger and more consistent between MI symptoms and mental health outcomes compared to correlations between PMIE exposures and these outcomes. This trend suggests a closer relationship between experiencing MI and mental health symptoms compared to being exposed to PMIE and mental health symptoms." Again, you are reifying symptoms and exposures. Experiencing of PMIEs and MI symptoms are not assessed with scales.	We have revised the wording of this sentence to improve clarity.
27	1	Also, the findings of greater associations between reports of MI symptoms and PTSD and depression is not unexpected. First, in some scales there is item overlap (not the MIOS). Second, PTSD and depression overlap with any behavioral and mental health problems. Third, conceptually, because MI requires a life-stressor and is life-stressor-based (well, with the EMIS it is not and that is another problem), these life-stressors are behaviorally, biologically, and socially haunting and painful and thus avoided (like PTSD), and the social pain that is associated with MI causes anhedonia and dysphoria (problems that are also inherent in any behavioral health problem, clinically)	We concur, and we include a paragraph in the Discussion section highlighting many points about why these constructs are similar yet potentially distinct.
28	1	(5) in the limitations section you mention the MIDS. This is unclear and inaccurate. PMIE exposure is a necessary element to the clinical problem of MI. Both are assessed at the same time. PMIE exposure on MI scales is not a predictor. It is a necessary for symptom endorsement. The MIDS assesses PMIEs and then indexes the MI items to that experience. I assume what you mean by "PMIE exposure outcomes rather than PMIE exposure" is a problem with the MIES and other questionnaires that assess reports of PMIEs. The MIES confounds reports of exposure and reports of being bothered by the experiences (the latter being completely inadequate as an index of MI symptoms). In any event, what you should say is that unlike prior scales, in the MIDS, MI symptoms are indexed to a specific PMIE. Also, they did this after the MIOS was published	We have revised the limitations section to more clearly describe limitations of existing measures and highlight that evidence using newer measures has been published since the end date of the systematic literature search that informed this review.

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		which also anchors MI symptoms to PMIEs, which you fail to mention.	
29	1	The biggest problem that you fail to mention is that no scale other than the MIOS has sufficiently focused on content validity. Without sufficient content validity, the danger is that a scale like the MIDS does not fully capture the construct of MI (which it doesn't). I think the following excerpt from Litz and Walker (in press). Moral Injury: An Overview of Conceptual, Definitional, Assessment, and Treatment Issues. Annual Review of Clinical Psychology might be useful to give you a sense of the content validity issues: "The MIDS and the MIOS share several structural elements: (1) respondents are asked to endorse exposure to a PMIE. Both scales assess personal acts of commission or omission and witnessing transgressions; the MIOS also assesses being directly affected by the transgressive acts of others (including betrayal experiences); (2) the self-identified worst and most currently distressing experience is used to anchor reports of possible MI symptoms; (3) if no exposure is endorsed, the scale is not completed; and (4) respondents rate the impact of their worst event over the last month. Predictably, there is also content overlap between the two scales. The initial pool of MIDS items was generated by two authors, Shira Maguen and Sonya Norman, based on Litz et al. (2009) and their clinical experience as psychologists in the VA. They also received feedback from Veterans, and colleagues in healthcare and the first-responder community. Due to the shortcomings of Litz et al. (2009), whose theory nearly exclusively addressed the aftermath of personal transgressions, and the anecdotal and likely narrow understanding of MI among the stakeholders who judged item content (who may have construed MI as an outcome pertaining to personal transgressive acts of omission or commission), the authors' item creation and selection process falls short with respect to content validity. The biggest concern in this regard is that the MIDS underrepresents the MI construct. It appears that the unique outcomes associated with bearing witness to grave inhumanity, observing others' transgressions, or being the direct victim of others' transgressive acts were not fully considered. The MIDS has one item that asks respondents the degree to which	We have revised the limitations section, which now mentions content validity as a limitation of the measures used by studies that we included for KQ2.

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		they "feel betrayed by leaders and institutions." This single item may be problematic for several reasons: (1) it arguably is a rating of exposure to a betrayal experience, rather than reflecting content associated with betrayal experiences (i.e., externalizing outcomes); (2) it appears to rule out reports of (and potential feelings about) trust violations by peers, intimates, or stranger- and bystander-based experiences; and (3) it is unclear how ratings about how true the statement 'I feel betrayed by leaders or institutions' (the harm) would necessarily change in psychotherapy, versus the varied and lasting outcomes from a veridical harm. Perhaps the authors' tacit theory is that judgments about the relative truth about being betrayed is the clinical problem, which may change if the treatment goal, for some reason, is to help someone change how true it is for them that they feel betrayed. The strengths of the MIDS are that the scale: (1) was structured well (i.e., requiring exposure, constraining symptom reports to 1 month); (2) was validated on three occupational groups at risk for PMIE exposure; (3) has some very good psychometric characteristics; and (5) has a high degree of content validity with respect to the aftermath of personal transgressions. The trimmed 18-item scale was found to have excellent convergent validity with mental and behavioral health measures and there was a high degree of internal consistency, suggesting that the MIDS is unidimensional. Unfortunately, a simple bivariate correlation between two administrations completed 2-weeks apart suggested poor temporal stability (.68). Litz et al. (2022) employed a bottom-up, grounded theory approach to develop operational definitions of the subconstructs of MI, which informed the item content for the MIOS. This approach was driven by a comprehensive, multicultural study aimed at discovering and validating the lasting mental and behavioral health impact of PMIEs. Hundreds of service members and Veterans in the US, Israel, England, Canada, and Australia were administered a semi-structured interview to assess participants' reports of the lasting phenomenological impact of exposure to PMIEs. Psychotherapists with extensive experience helping Veterans with PTSD and other behavioral	

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		health problems in each country were also interviewed and asked to describe their observations of the impact of PMIEs among patients in their care. Litz et al. (2022) used qualitative data reduction and analysis techniques to extract invariant, content-valid, higher-order themes, appealing to theory, when necessary, which they operationalized as domains of impact (i.e., subconstructs) of PMIEs and specific components within those domains. Transcribed interview content that overlapped with PTSD and depression symptoms was excluded. els and operational definitions of the distinct domains of impact of MI were as follows: (1) alterations in self- and other-perception, defined as disruptions in how individuals define themselves or the world with respect to what they or others are capable of in terms transgression. This is similar to the construct of shattered assumptions about a just world and personal invulnerability (Janoff-Bulman 1992, Pearlman & McCann 1990); (2) alterations in moral thinking, which entails judging the self or others harshly, moralistically, and with condemnation (self-censure, grievance, embitterment), also posited by Herman (1992), Shay (1994), and Janoff-Bulman (1992); (3) social impacts, defined as alterations in degree of comfort with others, connectedness, social acceptance / belonging, and changes in the frequency and quality of engaging with others (see Bowlby 1988, Herman 1992, Litz et al. 2009); (4) moral emotions and moods, defined as predominant, pressing, and easily triggered moral emotions (see Herman 1992); (5) self-harming / sabotaging, defined as deliberate and non-deliberate behaviors that negatively impact functioning, impair health, personal safety, and quality of life / well-being (see Litz et al. 2009); and (6) changes in beliefs about life meaning and purpose, defined as alterations in individuals' religious or spiritual beliefs and behaviors (e.g., Litz et al. 2009). The first part of the MIOS assesses PMIE exposure. The specific event-type options are "a stressful experience in which you": (1) did something (or failed to do something) that went against your moral code or values; (2) saw someone (or people) do something or fail to do something that went against your moral code or values; and (3) were directly affected by someone doing something or failing to do something that went against your moral code or values. Individuals are asked whether any of these stressors occurred, and if yes, which type(s). The research	

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		version of the MIOS assesses whether a PMIE meets the Criterion-A definition of a traumatic event and uses a PTSD screener to assess the degree to which PTSD symptoms are currently present as well. In the research and brief versions of the MIOS, respondents are instructed to keep the worst event in mind and rate various outcomes experienced in the last month. Each version also entails a second part, which is an 8-item functioning scale based on the Brief Inventory of Psychosocial Functioning (BIPF; Kleiman et al. 2020) that asks respondents to rate the degree to which the MIOS symptoms endorsed made it hard for them to function across various domains. The authors posited that MI should only be considered a potential clinical problem if the symptoms significantly affect multiple domains of functioning. The investigators generated a large pool of potential items for the MIOS from each domain of impact and components of the higher-order domains. The validated MIOS is a 14-item questionnaire that was found to be invariant and reliable across cultures and had two factors, which were 7-item subscales that the authors labeled as shame-related and trust-violation-related outcomes. The MIOS had strong structural and configural validity, internal consistency, and strong test-retest reliability. Total and subscale scores were also found to have strong convergent validity, and PMIE-endorsers had substantially higher MIOS scores compared to non-endorsers (Litz et al. 2022). Although the MIOS has been validated in a study group of acute care nurses (Tao et al. 2023), unlike the MIDS, it was initially validated solely on active-duty service members and Veterans (and clinicians). In addition, the incremental and discriminatory validity of the MIOS has yet to be examined. The MIOS stands out because content validity is very strong, it has subscales that assess the unique internalizing outcomes that arise from personal transgressions and externalizing outcomes from being victimized by others' transgressive acts, and the MIOS includes an index of the current functional impact of MI symptoms.”	

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30	1	You do a good job underscoring the internal validity issues that arise from cross-sectional studies. I would add: (1) the term risk should never be used (like PMIE exposure is a risk factor for PTSD). It is a correlate; and (2) directionality and mono-method problems cannot be ruled out; reports of symptoms may affect ratings of reports of exposure to PMIEs. Or there may be a general response bias in filling out surveys. And, of course, correlational findings may be affected by a host of third variables	Thank you for this comment. Correlations or any other effect measure may reflect causal (temporal) relationships, but these relationships cannot be confirmed with cross-sectional evidence. For this reason, we are careful to state that any risk or causal relationships discussed are potential in nature. We also highlight the possibility of confounding. We revised text in the background and discussion sections discussing studies reporting on the relationship between PMIE/MI and mental health to be more explicit regarding these limitations.
31	1	You mention that no study has used the MIOS or the MIDS and this is not true. Some of these are obscure journals.. Biscoe, N., Bonson, A., Nickerson, A., & Murphy, D. (2023). Factors associated with exposure to potentially morally injurious events (PMIEs) and moral injury in a clinical sample of veterans. European Journal of Trauma & Dissociation, 7(3). https://doi.org/10.1016/j.ejtd.2023.100343 Biscoe, N., & Murphy, D. (2024). Factors associated with well-being among treatment-seeking UK Veterans: A cross-sectional study. Journal of Military, Veteran and Family Health, advanced online publication. https://doi.org/10.3138/jmvfh-2023-0023 Espinola, C. W., Nguyen, B., Torres, A., Sim, W., Rueda, A., Beavers, L., Campbell, D. M., Jung, H., Lou, W., Kapralos, B., Peter, E., Dubrowski, A., Krishnan, S., & Bhat, V. (2024). Digital interventions for stress among frontline health care workers: Results from a pilot feasibility cohort trial. JMIR Serious Games, 12(1). https://doi.org/10.2196/42813 Nazarov, A., Forchuk, C. A., Houle, S. A., Hansen, K. T., Plouffe, R. A., Liu, J. J., Dempster, K. S., Le, T., Kocha, I., Hosseiny, F., Heesters, A., & Richardson, J. D. (2024). Exposure to moral stressors and associated outcomes in healthcare workers: Prevalence, correlates, and impact on job attrition. European Journal of Psychotraumatology, 15(1). https://doi.org/10.1080/20008066.2024.2306102 Nguyen, B., Torres, A., Espinola, C. W., Sim, W., Kenny, D., Campbell, D. M., Lou, W., Kapralos, B., Beavers, L., Peter, E., Dubrowski, A., Krishnan, S., & Bhat, V. (2023). Development of a data-driven digital phenotype profile of distress experience of	Thank you for this comment We meant that no study meeting our eligibility criteria for KQ2 used the MIOS or MIDS. We have revised the text in the discussion section to be more specific.

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		healthcare workers during COVID-19 pandemic. Computer Methods and Programs in Biomedicine, 240. https://doi.org/10.1016/j.cmpb.2023.107645 Phelps, A. J., Madden, K., Carleton, R. N., Johnson, L., Carey, L. B., Mercier, J. M., Mellor, A., Baills, J., Forbes, D., Devenish-Meares, P., Hosseiny, F., & Dell, L. (2023). Towards a holistic model of care for moral injury: An Australian and New Zealand investigation into the role of police chaplains in supporting police members following exposure to moral transgression. Journal of Religion and Health, 62(6), 3995-4015. https://doi.org/10.1007/s10943-023-01908-2 Ritchie, K., D'Alessandro-Lowe, A. M., Brown, A., Millman, H., Pichtikova, M., Xue, Y., Altman, M., Beech, I., Karram, M., Hosseiny, F., Rodrigues, S., O'Connor, C., Schielke, H., Malain, A., McCabe, R. R., Heber, A., Lanius, R. A., & McKinnon, M. C. (2023). The hidden crisis: Understanding potentially morally injurious events experienced by healthcare providers during COVID-19 in Canada. International Journal of Environmental Research and Public Health, 20(6), 4813. https://doi.org/10.3390/ijerph20064813 Williamson, C., Baumann, J., & Murphy, D. (2022). Exploring the health and wellbeing of a national sample of UK treatment-seeking veterans. Psychological Trauma: Theory, Research, Practice, and Policy. https://doi.org/10.1037/tra0001356 Turgoose, D., & Murphy, D. (2024). Associations between adverse childhood experiences (ACEs) and complex-PTSD, moral injury, and perceived social support: A latent class analysis. European Journal of Trauma & Dissociation, 100463. D'Alessandro-Lowe, A. M., Brown, A., Sullo, E., Pichtikova, M., Karram, M., Mirabelli, J., ... & Ritchie, K. (2024). Why are healthcare providers leaving their jobs? A convergent mixed-methods investigation of turnover intention among Canadian healthcare providers during the COVID-19 pandemic. Nursing Reports, 14(3), 2030-2060. D'Alessandro-Lowe, A. M., Karram, M., Ritchie, K., Brown, A., Millman, H., Sullo, E., Xue, Y., Pichtikova, M., Schielke, H., Malain, A., O'Connor, C., Lanius, R., McCabe, R. E., & McKinnon, M. C. (2023). Coping, supports, and moral injury: Spiritual well-being and organizational support are associated with reduced moral injury in Canadian healthcare providers	

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		during the COVID-19 pandemic. International Journal of Environmental Research and Public Health, 20(19), 6812. https://doi.org/10.3390/ijerph20196812 D'Alessandro-Lowe, A. M., Patel, H., Easterbrook, B., Ritchie, K., Brown, A., Xue, Y., ... & McKinnon, M. C. (2024). The independent and combined impact of moral injury and moral distress on post-traumatic stress disorder symptoms among healthcare workers during the COVID-19 pandemic. European Journal of Psychotraumatology, 15(1), 2299661. Hendrikx, L. J., & Murphy, D. (2024). Associations between International Trauma Questionnaire complex posttraumatic stress disorder symptom clusters and moral injury in a sample of UK treatment-seeking veterans: A network approach. Psychological Trauma: Theory, Research, Practice, and Policy, 16(3), 513. Tao, H., Nieuwsma, J. A., Meador, K. G., Harris, S. L., & Robinson, P. S. (2023). Validation of the Moral Injury Outcome Scale in acute care nurses. Frontiers in Psychiatry, 14, 1279255. https://doi.org/10.3389/fpsyt.2023.1279255 Griffin, B. J., Norman, S. B., Weber, M. C., Hinkson Jr, K. D., Jendro, A. M., Pyne, J. M., ... & Maguen, S. (2024). Properties of the modified self-forgiveness dual-process scale in populations at risk for moral injury. Stress and Health, e3413. Maguen, S., Griffin, B. J., Pietrzak, R. H., McLean, C. P., Hamblen, J. L., & Norman, S. B. (2024). Using the Moral Injury and Distress Scale to identify clinically meaningful moral injury. Journal of Traumatic Stress.	
32	1	Your review of intervention studies is woefully uncritical, inaccurate, and not up to date: (1) The Elevation Online Intervention for Veterans Experiencing Distress Related to PTSD and Moral Injury study was a pilot feasibility project, not a confirmatory RCT. Only completers were analyzed and EMIS scores did not change. This is moot not only because nothing can be inferred from a null result but also because of Type-II error - the trial was underpowered and was not an actual trial; (2) your summary of Adaptive Disclosure is inaccurate. You are also missing the latest RCT that compared AD-Enhanced with present centered therapy: Litz, B. T., Yeterian, J., Berke, D., Lang, A. J., Gray, M. J., Nienow, T., Frankfurt, S., Harris, J. I., Maguen, S., & Rusowicz-Orazem, L. (2024). A controlled trial of adaptive	The section of our report that reviews interventions is part of KQ1, with the aim of characterizing published interventions only. We do not discuss the results of the studies or make any statements about intervention effectiveness. We did not assess study quality and cannot report which studies were higher quality. We report smaller studies and case studies because our aim is to describe interventions that have been studied, regardless of what can be gleaned from the study results. That said, our language was imprecise and incorrect in some places (*ie*, we should not have stated that these studies 'evaluated the efficacy of interventions') and we have revised the text to make a

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		disclosure-enhanced to improve functioning and treat posttraumatic stress disorder. Journal of consulting and clinical psychology, 92(3), 150-164. https://doi.org/10.1037/ccp0000873; (3) I would not include case studies. They have no confirmatory scientific value; (4) Impact of killing was a pilot feasibility study, not a confirmatory superiority trial. The results cannot be used as confirmation of efficacy; (5) please review all interventions and do not include studies that are not actual RCTs or disaggregate the pilots and the studies with serious internal validity problems from the high quality RCTs.	clearer distinction between trials and smaller pilot studies. See our response to comment #15 about Adaptive Disclosure. We did not include the last AD trial because it was published after the end date of our systematic literature search.
33	1	The Table on page 5 is problematic. First, there is no concern about the psychometric development and content validity of the scales. This is a huge problem. It is critical not to reify the results of studies that use psychometrically invalid scales as suggesting something about the construct of MI. For example, items for the MIS were "…generated by three psychologists who had worked for over 12 years with veterans diagnosed with PTSD. The items reflected the statements made by veterans about their emotional suffering and distress. These psychologists observed that the veterans they were treating were describing deeper core issues that accompanied their PTSD symptoms. These issues were identified as unresolved loss, guilt, and shame, the same issues that now have been identified as MI…" This reflects zero attention to content validity. Also, the MISS 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. In other words, the authors failed to follow state-of-the-art steps in test construction and validation and failed to establish content validity, to ensure the construct coverage and the meaningfulness of scale items. Prior to the MIOS and the MIDS, the only face valid measure of MI as an outcome was the EMIS. The problem with the EMIS is that content validity was not sufficiently ensured, the scale does not require exposure to at least one PMIE, and the there is no time period for the ratings (the ratings could be about experiences in the distant past or a cumulative trait judgement about lifespan experiences). Given that the MIOS and the MIDS have not been used in epi studies to date, the EMIS is a less than ideal but acceptable measure of MI as an outcome.	A thorough examination of the psychometric development and validity of measures was outside the scope of this review. Our intent with the mentioned table was to report the measures that have been used in the literature and not to critically evaluate them. However, based on this feedback, we removed this table to avoid misleading readers. We instead included a table in the methods section specifying which measures were included for which analyses. We did not consider the MIES to be a measure of MI symptoms. Studies using this measure were included only in the PMIE exposure category of our synthesis. We added some information about the MIES to the background section. For KQ2, we included studies that reported quantitative data on the relationship between PMIE exposures and mental health outcomes, even when PMIE exposures were not assessed formally with a PMIE measure. Specifically, we included studies that retrospectively categorized traumatic events experienced by individuals as PMIEs. In the process of evaluating each study's risk of bias using the QUIPS tool, we considered whether the study used a validated measure of PMIE exposures and when studies did not, we rated the risk of bias for the 'prognostic factor measurement' domain as 'high.'

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		Second, it is critical for you to understand that the MIES is not a measure of MI as an outcome. It is at best a measure of reports of exposure to SOME military-related PMIEs. I can give you citations where we critically examined the MIES. The MIES has items that cover reports of personal acts of commission and omission, respectively, bearing witness to transgressive behavior, and three items pertaining to betrayal experiences (by leaders, peers, and others outside the military). All items except the betrayal items include yoked questions about whether the person is "troubled by" each experience. Because the MIES has these "troubled by" items, some researchers have used the MIES to index MI as an outcome. This is unacceptable because the term is vague and can only suggest some degree of unspecified distress. Consequently, the MIES is not a valid measure of MI as an outcome (it fails to assess diverse and specific outcomes specific to the aftermath of PMIEs). This means that you cannot draw any inferences about MI as an outcome from studies that used it to indicate associations between MIES scores and other outcomes. Yet, you did this. In this Table and conceptually in your meta-analysis, the exposure scales and results from them need to be disaggregated from the scales that assessed the putative outcome of MI. (the SCID and the Differential Emotions Scale-IV and Deployment Risk and Resilience Inventory-2 should be taken off the list. In the study that used the SCID, we simply typed Criterion-A event descriptions from the PTSD module. The SCID was not used to formally assess reports of exposure to PMIEs rather we determined whether Criterion-A events were morally injurious in an epi study. A scale that assesses reports of emotions such as shame and anger is not a scale that measures the construct of MI, and the DRRI is not a measure of MI by any means. This underscores the lack of critical appraisal of the content and methodological validity of the studies you employed in your review.	Similarly, 1 included study examined the association between specified 'symptoms of moral injury' (*ie*, sorrow, regret, shame, and alienation) using non-MI scales (Differential Emotions Scale-IV and Deployment Risk and Resilience Inventory-2). We also rated this study as high risk of bias for the 'prognostic factor measurement' domain of the QUIPS.
34	1	Flow diagram doesn't explain why so many studies were excluded so it is unclear why more couldn't have been included.	Studies were excluded when they did not meet the eligibility criteria as described in our methods. KQ2 was limited to studies of US Veterans or military service members, and several studies conducted in other

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			populations were therefore excluded. We also limited study inclusion for KQ2 to studies reporting a quantitative association between MI/PMIE and a specified mental health outcome.
35	1	A good proportion of total published MI studies (80/279=28.6%) supposedly did not use a measure of PMIEs or MI, and it is unclear what those studies did and/or how they were published without using a measure (see table on pg. 12) - perhaps they just used single items to ask about PMIEs and then looked at other outcomes? This poses substantial internal validity problems, which means nothing substantive should be inferred about PMIE and MI as an outcome.	The first aim of this report was to describe and characterize the current state of the literature on moral injury. Many early studies do not use published measures, but instead ask participants in a survey about their experiences related to moral injury or PMIEs. We do not use these studies to reach any conclusions about moral injury – we are only describing the published literature. For KQ2, several studies did not use a measure to assess MI/PMIE exposure. These studies examine the association between reported exposure to PMIEs and mental health outcomes. This limitation was taken into account during during the process of evaluating study's risk of bias (also see our response to comment #33).
36	1	The way you coded studies was strength of evidence and your criteria for "imprecision" and "bias" were never defined clearly so hard to know what the criteria were for this or if it could be replicated.	We used the AHRQ methods guide (cited in our methods section) to make strength of evidence assessments and we follow AHRQ methods to evaluate the domains of imprecision and bias. The study limitations domain is based on our assessment of the risk of bias of each study and we used the QUIPS tool (also cited in our methods section) for this step. We evaluated imprecision based on the confidence intervals from the meta-analysis.
37	1	You don't have the search terms for the review so hard to know how to replicate the findings.	The search strategy for the review is provided in the beginning of the Appendix.
38	1	Under future research, the language needs more precision. What does explore innovative treatments addressing PMIE exposure mean? Treatments that prevent exposure? And, what do you mean by MI symptom sequelae? PTSD and depression? I would state explicitly that clinical trials of putative MI treatments need to use a scale that measures MI symptoms and functional impact as the primary endpoint / outcome. None to date have.	We revised this section to improve clarity. We also now recommend that future intervention studies use MI-specific measures as primary outcomes.
39	2	Page 4 line 18: "moral transgressions related to self-directed actions (commissions) and other-directed actions including failing	Thank you for your comment. We have edited the text to correctly include omission as a self-directed action.

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		to act (omissions)." Omission is correctly defined (failing to act) but should be conceptualized as a self-directed not other-directed action	
40	2	Table 1 page 5: need to make it clear if scales are measuring PMIE indexed to morally injury symptoms (i.e., connecting the two) as this is not clear from table (only whether these are measured or not). Also please note that there is more than one Table 1 in the document so may need to renumber for clarity.	Reviewing the psychometric properties of measures was outside the scope this review. We removed the mentioned table to avoid misleading readers. Please also see our response to comment #33.
41	2	Table 1 page 12: The MIDS is not included in this table nor in the subsequent figures despite having two published studies (and many more in process). It seems that other measures with two published studies are included in this table.	We only identified a single study using the MIDS that was published prior to the end of our systematic literature search (February 2024).
42	2	I am not clear why intervention with ref #52 is included for moral injury-this seems much more like a PTSD related intervention for sexual assault survivors.	This intervention was developed for individuals with both PTSD and MI. We revised the description of this intervention to improve clarity.
43	2	Table 2 p 14. Please add if these are individual or group interventions	We added this information to the Table.
44	2	I am not clear about why the two population-based studies for suicide outcomes were not included in analysis? This could be a source of bias?	These studies were not included in quantitative analyses because of how their data was reported (odds ratios or risk ratios), but they still contribute to the strength of evidence assessments for that outcome.
45	3	Table 1 reports characteristics of measures of moral injury. To increase the utility of the table for researchers and clinicians tasked with selecting a PMIE/moral injury measure for their specific purposes, I would expect to see additional information presented. For example, to my knowledge, the MISS and MIDS are the only two measures listed in the table that have published empirically supported scoring algorithms suggesting that responses on the scale can be aggregated into either (1) a continuous composite score where higher values representing increasing severity and (2) a discrete score representing the presence/absence of clinically significant and functionally impairing levels of moral injury. This can be an incredibly valuable tool to enhance efficient screening for individuals likely to benefit from treatment focused on moral injury. Related, the available scales differ in attributes other than unidimensional/multidimensional factor structure, such as some that use unipolar response formats (e.g., Not at all to Extremely)	It was not the aim of this review to evaluate the psychometric properties and limitations of scales that measure PMIE exposure or MI symptoms. We removed the mentioned table to avoid misleading readers. Please also see our response to comment #33. We added text to the background section highlighting some issues with current measures, including the fact that some measures do not link outcomes to PMIEs.

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		versus bipolar response formats (e.g., Strongly Disagree to Agree). Finally, some but not all of the listed measures index moral injury outcomes to specific potentially morally injurious event, which is a prerequisite for moral injury as suggested by the review authors.	
46	3	Table 2 reports characteristics of moral injury interventions for veterans and military service members. It seemed unusual to me that the Building Spiritual Strength (BSS) intervention was omitted. In fact, I believe there are more published RCTs of BSS than any other intervention designed to address moral injury (citations included below). These studies certainly fall within the time period for literature selection, and it is not clear to me why they would have been excluded based on the stated inclusion/exclusion criteria. Harris, J. I., Usset, T., Voecks, C., Thuras, P., Currier, J., & Erbes, C. (2018). Spiritually integrated care for PTSD: A randomized controlled trial of "Building Spiritual Strength". Psychiatry Research, 267, 420-428. Harris, J. I., Erbes, C. R., Engdahl, B. E., Thuras, P., Murray-Swank, N., Grace, D., ... & Le, T. (2011). The effectiveness of a trauma focused spiritually integrated intervention for veterans exposed to trauma. Journal of clinical psychology, 67(4), 425-438.	Please see our response to comment #10 regarding the Building Spiritual Strength intervention.
47	3	The limitations section mentions that recently developed scales including the MIDS and MIOS measure moral injury outcomes rather than PMIE exposure. A more correct statement is that each of these measures assess morally injurious exposures and outcomes, linking the hallmark indications of moral injury endorsed by a respondent to a specific event or series of related potentially morally injurious events.	We removed this statement regarding MIDS and MIOS, and now only state that newer measures have been developed in recent years to overcome some of the limitations of prior measures.
48	3	Given the focus in the results on the strength of evidence supporting each of the intervention approaches (e.g., pre-post open trial, RCT, etc.), I expected more specific future directions for clinical research in the discussion. For example, trials often did not include a control condition, and when they did it was not an active control (e.g., emerging evidence-based moral injury interventions were compared to wait-list rather than alternative	To clarify, we did not synthesize evidence on intervention effectiveness in this review. Rather, our aim was to characterize/describe moral injury interventions that we identified in the published literature. However, based on this feedback, we added a sentence to the future research section stating that MI

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		treatment like evidence-based treatment for PTSD, other supportive therapy, or treatment as usual). Additionally, the authors point out in the review that trials often evaluated the effectiveness of moral injury interventions using a proxy measure for moral injury, such as the widely used PTSD Symptom Checklist. This is because until recently only measures of PMIE exposure were available, and PMIE exposure is assumed to be constant once it occurs (thus not amenable to change over the course of treatment). Given the conceptual arguments differentiating PTSD and moral injury in the review, I anticipated the authors would encourage future trials to use the newly developed measures of moral injury outcomes (e.g., MIDS, MIOS) that likely are more sensitive to change than the previously developed measures of PMIE exposure.	intervention studies should use MI-specific outcome measures.
49	3	The authors write "increasing" when I think they mean "increasingly" on page v line 14 and page vi line 36.	Thank you. We corrected these errors.
50	3	On page 17 line 45, the authors state that five studies comprised primarily Black participants but give 8 citations. I did not follow the logic, given that when they described the number of studies for other groups the number of citations matched the number of studies described in the narrative.	Thank you. We corrected this error.
51	3	It did not appear that the CHAI or NHVRS Abbreviations were reported in the Abbreviations table. There may be other abbreviations not reported in the table; however, these were the only two that I noticed. A careful proofread is warranted.	Thank you. We added CHAI and NHVRS to the abbreviations table and reviewed the report for other missing abbreviations.
52	3	On page 26 line 42, the authors wrote "week" when the word "weak" was intended.	Thank you. We corrected this error.
53	4	Pg8, ln14: should be “increasingly”	Thank you. We corrected this error.
54	4	Pg28, ln 8: “Of the studies discussed in the previous section” is ambiguous. The previous section was discussing intervention studies, but this section has a larger purview.	Thank you; we changed the text to read “of the studies included for Key Question 1” to improve clarity.
55	4	Pg28, ln 54: “No studies used the more recently published MIDS, MIOS, and MIS measures.” What about those validation studies themselves? Data from those validation studies includes cross-sectional findings on correlations between measures of moral injury and the mental health outcomes of interest.	The validation study for the MIOS was included for KQ1, but not for KQ2, since the data is from participants from multiple countries and KQ2 was limited to US studies. Similarly, the validation study for the MIDS was included for KQ1, but not for KQ2, since it includes data from non-Veteran/military service member participants and does not report separately on this subgroup.

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			Omission of the validation study for the MIS from KQ2 was an oversight and we now include this study.
56	4	Pg37, ln 16: Should this read "…were conducted exclusively among recent era…"? Because, in fact, even more of the studies included post-9/11 veterans, just not exclusively so? If I understand the findings on the top of page 22, roughly 99% of studies at least included post-9/11 veterans, and only 1% of studies were among Vietnam Veterans. Does this merit a recommendation that more research should be conducted among non-post-9/11 Veterans, particularly Vietnam Veterans?	Yes, we mean that these studies only included recent era Veterans/military service members and have added 'exclusively' to the text where this is mentioned. We revised the future research section to highlight the need for more research to understand how PMIE/MI may impact Veterans of different service eras.
57	4	How are PMIE Exposures vs. MI Symptoms measures determined? The report routinely differentiates between PMIEs and MI. However, I am unclear on how the findings denoted in the report (e.g., Table 3 and elsewhere) precisely distinguished between PMIE and MI for purposes of the differentiated results that are presented. Table 1 lists different measures of PMIEs and MI, but it is unclear from the table if certain measures were considered measures of PMIE and others of MI or if some of the measures were parsed to reflect both PMIE and MI. Please provide clearer description of how this discernment was made.	Thank you for your comment. We added a table to the methods section and some text to the results section that more clearly defines how we differentiated between PMIE exposure and MI symptoms.
58	4	Is it possible that the relatively small association between PMIE/MI and suicidality has to do with the frequences of STBs and how STBs were measured? Specifically, suicide and suicide attempts are relatively low base rate occurrences, which could make it difficult to detect statistically significant findings in modestly sized samples. The very large CHAI study found quite substantial effect sizes in key populations – it was helpful to see the details of that study. Why was that one not included in the meta-analysis? Further, in the discussion, how do you square the finding from the present review of there being a small association between PMIE/MI and STBs with the Jamieson et al (2023) finding that PMIE "substantially amplifies the risk of suicide..."? It seems that both the CHAI study and Jamieson (2023) review suggest a more substantial relationship between moral injury and suicidality than found in the present review, a discrepancy that merits further explanation.	It is accurate that STBs are low base rate events, but this should not influence the magnitude of the correlation. The magnitude does have a relationship with the likelihood of statistical significance (with larger effects being more likely to be significant). For these reasons we interpret both magnitude and significance of findings throughout the report. A possible explanation for the lower magnitude of the STB relationship is that STBs are more distal from the PMIE than depression, anxiety, and PTSD. As such, there may be more factors that contribute to the likelihood of STBs. The CHAI study could not be included in quantitative analyses because of how their data is reported, but the results still contributed to the strength of evidence assessments for that outcome.

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			We revised the text regarding Jamieson 2023 to more accurately state that, like our review, Jamieson 2023 found that exposure to morally injurious events is associated with suicide risk. We removed the phrase "substantially amplifies" (language used in the Jamieson 2023 manuscript) to avoid implying that our findings were meaningfully different from those of Jamieson 2023.
59	4	It seems out of place to specifically name the MIDS in the Limitations question. The limitation the MIDS is noted as overcoming (i.e., distinguishing between exposure and outcomes) was already overcome by previously published measures such as the EMIS and MIOS. The MIDS is a recent example of a moral injury scale that seeks to disentangle exposure and outcomes, but the sentence in the Limitations seems to imply that this disentanglement is a novel contribution from the MIDS, which it is not. Recommend not specifically naming just this one measure here. Also, in stating that "no completed studies" were found using the MIDS, MIOS, or MIS, is the review not including the validation studies for any of these measures? And what about the EMIS? Relatedly, it seems premature to specifically name the MIDS but not other measures in the Future Research section. If multiple measures are to be named in this section, at the least, the MIOS should also be named here, as it had a very robust psychometric validation and is presently being used in VA clinical settings across the country as part of moral injury care; and the MIOS is also at present the only moral injury measure in BHL. As the present review did not purport to conduct a comparative evaluation of moral injury measures, caution is warranted in highlighting a specific measure for future research. That said, the authors should consider whether they would recommend studies to comparatively evaluate different measures.	Please see our response to comment #28. Regarding inclusion of studies using the MIDS, MIOS, or MIS, please see our response to comment #55.
60	4	Finally, there were two elements in the tables/figures that were unclear to me. On pg10, in the ES Table, what is meant by the "Estimates" in italics. Is this number derived from sample size and number of studies somehow, then used in the meta-analyses? Then, on pg21, in the literature flow diagram, I am unclear on exactly why studies were excluded at each of the stages. For example were 357 excluded based on title/abstract	Estimates refers to the number of associations reported that were included in the meta-analysis. We found that different studies sometimes used data from the same or similar groups of participants, so we are distinguishing between the number of distinct samples of individuals versus the number of associations included in the

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		review (leaving 871 remaining)? Why were the 503 studies then excluded? Also based on title/abstract?	analysis, which often meant multiple estimates were reported for the same sample of participants. The literature flow diagram for this report has the added complexity of different eligibility criteria for the 2 Key Questions. 357 records were excluded during initial title/abstract review. After that, 503 records were excluded during review of full-text of the records. We have added some detail to the figure to clarify.
61	6	p. ii line 53 – change affiliation for Keith Meador to "VA Mid-Atlantic MIRECC"	The affiliation has been corrected.
62	6	p. v line 35 – Suggest omitting the word "combat," which limits the scope of situations that are potentially morally injurious in a manner that does not reflect the fullness of potentially relevant military experiences (e.g., drone operators, training-related incidents, military sexual trauma).	Thank you for this suggestion. We have removed the word 'combat' from this sentence in both the Executive Summary and Background sections.
63	6	p. v lines 35-36 – The line "Moral injury (MI) describes the potential responses to such exposures" makes it sound to me like MI is an umbrella term for all possible responses (i.e., all responses along a continuum that includes less severe forms of moral distress), rather than a distinctive, defined response. Given that definitional clarity is one of the challenges identified in this report, a revision such as the following may provide helpful clarification: "Moral injury (MI) describes a uniquely intense and distressing response to such exposures…"	Thank you for this suggestion. We revised the text based on this feedback.
64	6	p. vi line 35 – change to "increasingly"	Thank you. We corrected this error.
65	6	p. 4 lines 6-9 – mirror the changes on page v regarding the use of "combat" and description of MI	Please see the response to comment #62.
66	6	Is it possible to offer any summative and/or evaluative feedback on the measures described in Table 1 to assist readers in identifying strengths and weaknesses in terms of development/psychometrics?	Please see our response to comment #33.
67	6	p. 14 paragraph 2 – I appreciate the nuanced acknowledgement that several interventions that are commonly referenced as being for moral injury were actually intended for individuals with PTSD and possible distress associated with PMIE exposure. This highlights the importance of focusing on moral injury sequelae/outcomes in intervention development as distinct from PTSD treatments.	Thank you for this comment.

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68	6	p. 14 paragraph 3 – This paragraph summarizes interventions that are specifically developed to target moral injury and as such distinguishes them from those in the prior paragraph. However, the first words of that paragraph ("Only 1 intervention developed specifically to target MI" sends the message that there is only one such intervention. I suggest moving the first sentence to the end of the paragraph to retain the emphasis on the RCT for the MOVED intervention while also avoiding potential misinterpretation at the start of the paragraph.	Thank you. We revised this section to improve clarity.
69	6	p. 15 line 6 – Suggest starting the description of the therapy group on a new line for consistent formatting	Thank you; we corrected the spacing.
70	6	p. 15 line 6 – per the cited paper, the group is composed of 10 weekly group sessions (not "8-10")	In the 'participants and procedures' section of this paper (Pernicano 2022), the authors state that there were 3 8-week and 4 10-week groups for this study. However, since the intervention itself was developed with 10 sessions, we have updated the table as suggested.
71	6	To aid readers in digesting the information in Table 2, would it be possible to enhance the organization of this table, perhaps by grouping the interventions into sections and/or adding columns with more detail (e.g., individual vs. group; professionally facilitated vs. peer or self-led; developed/used with US SMs/Veterans vs. international)?	We have edited the table so that the interventions are grouped by study design, and have added some information to the table, including sample sizes, comparators, and information on delivery/format of the intervention (*ie*, who delivered the intervention, whether it was an individual or group intervention, and whether it was delivered face-to-face or online).
72	6	p. 16 lines 10-11 – the case study presented in the referenced article did conclude with a public ceremony, but that was a facility-specific adaptation and not a core component of REAL. For accuracy, suggest omitting that sentence from the description and replace with "The three phases of the group focus on: inventorying losses, telling stories, and reclaiming lives." (Text drawn from page 545 of the published article)	Thank you. We have revised the table accordingly.
73	6	p. 19 line 33 – why were the two large population-based studies excluded from the meta-analyses?	These studies could not be included in quantitative analyses because of how their data was reported (odds ratios or risk ratios), but they still contribute to the strength of evidence assessments for that outcome.
74	6	p. 24 line 30 – unclear what "MIE dimensions" means in this sentence. Types/categories of MIE?	Correct; this study referred to the PMIE subtypes of atrocities of war, psychological consequences of war, and leadership failure/betrayal as 'MIE dimensions. Since this terminology is not used elsewhere in the

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			report, we changed the description to 'types' and listed the types.
75	6	p. 26 line 42 – change to "weak"	Thank you. We corrected this error.
76	6	p. 27 line 5 states that it is unclear whether MI symptoms precede, follow, or co-occur with PTSD symptoms. Is that finding unique to PTSD symptoms, or should the sentence instead refer to all related MH symptoms?	Thank you for the suggestion. We changed the text to state 'mental health symptoms.'
77	6	p. 27-28 Limitations/Future Research sections – what is the rationale for specifically highlighting the MIDS for differentiating PMIE exposure and outcomes when it is not the only measure reviewed to do so? And what is the rationale for specifically advocating its use relative to other measures that also differentiate? One strength of the MIDS is that it was developed using diverse samples (e.g., healthcare workers), but there is no empirical evidence to suggest it outperforms other moral injury measures among veterans/service members. Furthermore, the Moral Injury Outcome Scale (MIOS) is currently being used across VA via the BHL and MHA platforms, so it seems prudent to acknowledge the clinical quality improvement efforts and forthcoming studies using that measure.	Please see our response to comment #28.
78	6	A distinction between "PMIEs" and "MI" is made throughout the report in both the findings and the tables. However, I am unable to find how that distinction was defined. Was it based on the measure used in the study? If so, how were the different measures classified? For example, p. 19 line 28: "We identified 15 studies examining associations between PMIE exposures and STBs" – what was the criterion for identifying those 15 studies as pertaining to PMIE exposures?	Please see our response to comment #57.
79	6	It would be helpful to have a master reference list that incorporates the various lists that occur in the report and appendices.	We have added references for all studies included in the review to the Appendix.
80	7	The first finding of the report indicates that half of studies that have been published about moral injury (MI) or potentially moral injurious events (PMIEs) have been conducted among Veterans and military service members. However, the background definition of MI/PMIEs focuses almost entirely on MI/PMIEs on Veterans and military service members. For example, the opening sentence of the background starts by focusing on the experience of military service members. If half of the studies	Thank you for this suggestion. We expanded the first paragraph in the background section to mention that the concept of MI is increasing being applied to non-military populations including health care workers.

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		included for KQ1 were conducted outside of the Veteran or military service member or Veteran context (first finding noted in the review), it would be helpful to have a description of MI and PMIEs outside of the military service and/or Veteran context. This will help the reader understand the rational for inclusion or exclusion of specific studies from the descripting review for KQ1.	
81	7	As the review notes, there are a range of definitions and conceptualizations of MI and PMIEs in the literature. As a result, it may be helpful to provide a summary definition used when determining the appropriateness for including or excluding articles from the KQ1 review regardless of the setting for the MI or PMIE (could even be in a call-put box so it will be easy to identify).	Please see our response to comment #6.
82	7	While I could imagine the operational reason for having a significantly different set of inclusion/exclusion criteria for KQ1 and KQ2, the scientific and programmatic rational does not appear to be fully described. It would be helpful to specifically explain the scientific and pragmatic rational for describing the full set of literature for MI and PMIE for the descriptive review and then only including information on US service member and Veteran w the MI or PMIEs for the systematic review (KQ2). If feels somewhat unusual that you would describe a body of literature in KQ1 and then not include three quarters of the literature in the review for KQ2. While this difference in included articles may be appropriate, It would be helpful to have a clearer rational for this in both the summary and body of the review.	Please see our response to comment #6.
83	7	Because KQ1 and KQ2 include a significantly different set of articles, the question is raised about whether the coeducations in KQ2 would be different if the entire body of literature included in KQ1 was included in KQ2. The importance of this topic is highlighted by the KQ1 result that only 1 of 16 interventions that have been studies for MI/PMIEs was designed specifically for MI among Veterans/military service members. While there is a paragraph in the discussion that compares results for KQ2 to a previous systematic review that included studies among people who are not Veterans/service members from the United States, this may have included different literature. If the data exist to specifically compare the characteristics of studies from KQ1 that included the type of correlation information that would have otherwise made them eligible for KQ2 if the include population	An examination of the association between PMIE exposure/MI symptoms in non-US-Veteran/military service member populations was outside the scope of this review. The literature base on this topic is large and we needed to narrow the scope for feasibility, which we did in consultation with the Operational Partners. Unfortunately, we are not able to provide additional information about studies we did not include for KQ2.

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		and settings were broader to those studies in KQ2, that would be helpful un understanding the potential for having different results for the correlation between MI/PMIEs and mental health systems as a whole as opposed for just the specific population included in KQ2. Even if only the number of otherwise eligible articles that would have been included is available, that may be helpful.	
84	8	One area where clarification would be useful is more explicit context about why HCW studies were included to characterize the scope of the research on moral injury in the beginning in detail and then not consistently referenced later. It feels a bit disjointed to include a paragraph reflecting a summary of interventions for HCWs and then a table for interventions in Veterans/Service members. Additionally, it feels disjointed to not include a section of the ESP reporting on moral injury and mental health and functioning outcomes for HCWs. More context about why some domains are not reported on and consistency in reporting methods could be useful…maybe more clarification in this section would be helpful in this section: “of the studies discussed in the previous section, 49 studies…” Can the authors clarify which studies are being referencing from the previous section and why HCW studies are not included in this section?	Please see our responses to comment #6 and comment #83. We revised the text to clarify ‘of the studies included for KQ1, 50 studies met criteria for inclusion for KQ2.’ HCW studies were included only for KQ1; the eligibility criteria specifies that KQ2 is limited to studies conducted among US Veterans and military service members.
85	8	Related to measures of moral injury section and table, consistency in reporting would be useful. This writer wouldn’t ever refer to the MIES as a measure of moral injury. Authors identify the construct being measured, but it is confusing to refer to the MIES as a measure of moral injury in some places and not others. This writer would recommend modifying Table 1’s title to indicate what it represents (e.g., measures of PMIE exposure, moral distress, and moral injury). This writer also thinks it would be helpful if across the report measures like the MIES are not referred to as “moral injury” measures in the same way that a screener for PTSD would not be referred to as a PTSD measure. This could be problematic for future research and interpretation of previous work (e.g., the MIOS requires a very different level of rigor where functional impairment tied to PMIEs exposure and moral distress is explicitly assessed than a measure like the MIES).	Please see our response to comment #33.
86	8	It could also be helpful to more explicitly nod to the different conceptual interpretations of moral injury rather than limiting the discussion to moral injury as a dimensional syndrome. Some	Thank you for this comment. We removed the sentence referring to MI as a dimensional syndrome.

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		investigators do not believe a certain number of symptoms give rise to moral injury, but instead are explicitly focused on the functions of an individual's behavior related to moral distress when their behavior results in impairment in psychosocial functioning following exposure to PMIEs. Others believe a certain level/amount of signs or symptoms of moral injury is indicative of a syndrome where treatment is necessary. It could be helpful to represent the differences in conceptual framework across a few groups here. For instance, the underpinnings of moral injury according to AD are very different from the framework used to conceptualize moral injury in ACT.	
87	8	This reviewer has some concerns about how information is described in the interventions section. Efficacy trials have been conducted for AD and TrIGR. The statement "studies evaluated the efficacy of 16 interventions for moral injury…" could be misinterpreted as the majority of these interventions (including IOK) are not actually efficacy trials but pilot trials or case studies. This reviewer wonders if it would be useful to include more detail in Table 2 about the design of trials including sample size, stage of research for each intervention referenced, and detail about the kind of comparison condition included (e.g., waitlist vs. PCT vs. no comparison condition) so that results aren't misinterpreted or equated. For instance, IOK has a very different level of support than AD, but in reviewing both records on the table, this wouldn't be recognizable to someone without an understanding of moral injury interventional literature as RCTs were conducted for both interventions (just with very different targets [acceptability pilot vs. efficacy trial], sample sizes and comparison conditions). This reviewer also wonders about including Building Spiritual Strength (BSS). Was BSS excluded due to a lack of standardized moral injury measure? As the authors discussed, there are several interventions that were developed to target moral injury in the context of PTSD of which BSS is one and a large RCT was conducted. 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;267:420-428. doi:10.1016/j.psychres.2018.06.045	We concur that our language was imprecise and incorrect in some places in this section (*ie*, we should not have stated that these studies 'evaluated the efficacy of interventions') and we have revised this section to improve clarity. We edited the table, which is now organized by study design and includes information on sample size, intervention format/delivery, comparator, *etc*. Please also see our response to comment #32. Please see our response to comment #10 regarding the Building Spiritual Strength intervention. We have revised the sentence regarding the MOVED intervention.

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		Additionally, this reviewer interpreted the following statement as too strong… “only 1 intervention developed specifically to target MI in Veterans/military service members…” It could be argued that many moral injury interventions (e.g., AD, IOK) were explicitly developed to target MI in Veterans or Service members or explicitly developed from an extant intervention (e.g., ACT-MI). Revising this sentence might be useful so that it is not interpreted that this intervention was the only treatment developed for moral injury.	