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Jiwon Lee April 9, 2025

Social Determinants of Health on Moral Injury: The Role of the Social and Community Context

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Abstract

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By Jiwon Lee

Moral injury (MI) refers to the social, psychological, or spiritual suffering that may arise after an event conflicts with core moral beliefs (Borges et al., 2022). While MI has been widely studied in military and healthcare populations (Hines et al., 2021; Wisco et al., 2017), emerging research suggests it is also relevant to civilians, particularly when structural and social conditions contribute to potentially morally injurious events (PMIEs) (Borges et al., 2022). However, limited empirical research examines the socioenvironmental factors shaping MI in civilians. This study addresses this gap by applying the Social Determinants of Health (SDOH) framework to explore the role of socioenvironmental factors in MI. Variables of interest corresponded to each SDOH key area (e.g., *Healthcare Access and Quality, Education Access and Quality, Social and Community Context, Economic Stability*, and *Neighborhood and Built Environment*).

This study hypothesized that lesser socioeconomic resources—characterized by lower educational attainment, lower income, lack of health insurance coverage and greater neighborhood deprivation—would be associated with more severe MI. Additionally, greater exposure to childhood maltreatment and lifetime trauma would also be associated with more severe MI. Data from the Fani Affective Neuroscience Lab and the Grady Trauma Project were analyzed using multiple linear regression. A civilian sample of 385 adults (ages 18–65 years) completed self-report surveys. Secondary analyses explored the role of race-related stress and the moderating effect of subjective social status (SSS) in MI.

Findings revealed that higher childhood maltreatment, lifetime trauma exposure, and race-related stress significantly predicted higher MI, with trauma serving as a central mechanism. The relationship between childhood maltreatment and MI was moderated by SSS, with individuals of higher SSS showing stronger associations. These results highlight the potential influence of the *Social and Community Context* SDOH key area on psychological outcomes such as MI and underscore the need for interventions targeting social environments and systemic factors, particularly those influenced by historical and racial disparities. This research contributes to the understanding of MI in civilians and provides insights for developing targeted interventions to address systemic risk and protective factors, fostering a more equitable approach to mental health care.

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Introduction

Moral Injury (MI), initially conceptualized in military contexts, is a term that references the social, psychological, or spiritual suffering that may arise when individuals attempt to cope with or mitigate moral distress, ultimately leading to impairments in social and psychological functioning (Borges et al., 2022). MI is described as a potential consequence of exposure to events that involve either perpetrating or witnessing actions that conflict with core moral beliefs (Griffin et al., 2019). The distress associated with MI manifests in different forms, including painful emotions (e.g., guilt, shame), maladaptive cognitions (e.g., self-blame), action urges (e.g., withdrawal or confrontation), and physiological responses (Borges et al., 2022)) as well as feelings of betrayal.

The concept of MI has evolved significantly since its initial association with warzone trauma, expanding to encompass effects on diverse non-military populations. Recent research has begun to illuminate the impact of potentially morally injurious events (PMIEs) in civilian contexts, yet the scope of this work remains limited. While early investigations primarily focused on combat veterans, subsequent studies have demonstrated that MI is not confined to military settings. For example, the COVID-19 pandemic catalyzed a wave of research on healthcare providers, revealing that frontline healthcare workers frequently encountered PMIEs with profound psychosocial consequences (Borges et al., 2021). In a nationally representative study of three high-risk groups for PMIEs, Maguen et al. (2025) found that nearly half of the sample endorsed PMIE exposure, including 50.8% of healthcare workers, 49.3% of combat veterans, and 41.6% of first responders. Between 4% and 7% of participants screened positive for clinically meaningful MI, with 10% to 15% of those exposed to a PMIE reporting functionally impairing symptoms characteristic of MI. Notably, 42.1% of respondents reported PMIEs from

over a decade ago—the largest proportion in the study—suggesting that PMIEs' psychological burden can persist long after the precipitating event. Additionally, while some individuals encountered PMIEs recurrently, 38.1% of respondents experienced them only once, underscoring the potential for even isolated moral transgressions to have lasting consequences.

Beyond these groups, MI has been observed among refugees navigating displacement and trauma (Nickerson et al., 2018) educators facing systemic and moral challenges in their roles (Currier, Holland, Rojas-Flores, et al., 2015), social workers grappling with ethical dilemmas (Fenton & Kelly, 2020), and law enforcement officers managing moral conflicts in their profession (Papazoglou et al., 2020). MI has also been observed in civilians exposed to sexual violence and interpersonal trauma. For instance, in a civilian sample, childhood sexual abuse and adulthood sexual assault were significant predictors of MI, highlighting a unique link between sexual violence and moral injury (Lathan et al., 2023). Similarly, a study of trauma-exposed civilians found a significant positive association between moral injury-related distress and adulthood interpersonal violence exposure (Fani et al., 2021). These findings challenge the conception that MI is exclusive to combat-related experiences, illustrating its relevance across a broad spectrum of professional and personal domains. However, despite growing recognition that MI extends beyond military personnel and healthcare workers, research on MI in civilian contexts remains limited beyond the highlighted studies.

MI has wide-ranging consequences in the psychological health domain. PMIE exposure has been linked to greater psychiatric symptoms, including depression and posttraumatic stress disorder (PTSD). For civilians, PMIE exposure correlates with a more complex trauma history and even has been found to have a direct pathway to mental health problems (Currier, Holland, & Malott, 2015; Fani et al., 2021). Depression, in particular, is consistently associated with MI,

with studies showing moderate associations between MI-related constructs and depressive symptoms in civilian populations such as undergraduates (Chaplo et al., 2019) and military samples (Griffin et al., 2019; McCormack & Ell, 2017). Exposure to PMIEs is also moderately linked to severity of PTSD symptoms across both populations (Fani et al., 2021; Hall et al., 2022), with military personnel and civilians (e.g., students, educators, and law enforcement officers) showing positive associations between MI and PTSD (Batttles et al., 2018; Chaplo et al., 2019; Papazoglou et al., 2020). Furthermore, MI has been associated with suicidal ideation and behaviors, with research indicating that MI contributes to suicide risk even when accounting for co-occurring PTSD and depression symptoms (Ames et al., 2019; Fani et al., 2021; Wisco et al., 2017).

Beyond psychological outcomes, MI has also been linked to negative outcomes in behavioral, social, spiritual, and physical health domains. MI has been correlated with increased aggression and substance use. In military populations, exposure to wartime atrocities and PMIEs is significantly linked to higher hostility and aggressive behaviors (Bryan et al., 2016; Wilk et al., 2013), as well as greater alcohol use and, to a lesser extent, drug use (Batttles et al., 2018; Forkus et al., 2019). In the social domain, MI can impair interpersonal functioning, with studies showing that exposure to PMIEs is associated with lower community involvement, poorer relationship quality, and reduced perceived social support, in military and paramilitary groups (Currier, Holland, & Malott, 2015; Currier et al., 2018; Koenig et al., 2018). In the religious and spiritual domain, veterans exposed to PMIEs often report feelings of abandonment by God and doubts about faith, which can exacerbate distress and hinder moral coherence (Drescher et al., 2011; Evans et al., 2018). Lastly, MI is linked to physical health challenges, including

heightened pain sensitivity, difficulties with physical activity, and poorer overall physical functioning (Koenig et al., 2018; Yan, 2016).

Despite these advances, significant gaps remain in our understanding of MI, particularly concerning the role of socioenvironmental factors. Griffin et al. (2019) note that while the body of research linking PMIE exposure to adverse mental and behavioral health outcomes continues to grow, "little is known about risk and protective factors (e.g., the precipitating conditions and situational constraints) that moderate the association between exposure to PMIEs and enduring mental and behavioral health outcomes" (p. 353). This observation emphasizes a critical need for research that examines the broader context in which MI occurs.

Emerging perspectives suggest that a multilevel analysis, integrating individual, environmental, and societal factors, offers a more nuanced understanding of factors that may enhance risk for MI development. In health research, scholars have argued that causal factors operate across multiple levels of analysis, with individual characteristics nested within social environments that, in turn, are influenced by broader societal structures (Taylor et al., 1997). Blacksher (2002) emphasized that "each level of analysis reveals information about the causes of health and illness that consideration of one level alone cannot provide" (p. 458). This framework underscores the importance of examining how diverse socioenvironmental factors may intersect to shape the experience and outcomes of MI.

Building upon the importance of multilevel analyses in understanding MI, the role of social determinants of health (SDOH) emerges as a critical approach to examining the contextual factors that influence MI in civilian populations. SDOH are conditions in which individuals are born, grow, live, work, and age, shaping health outcomes across populations. SDOH are

inherently tied to the dynamic interaction between individuals and their environments, shaping both the likelihood of encountering PMIEs and the health outcomes that follow (CDC, 2024). Borges et al. (2022) underscore the importance of this approach, stating:

> SDOH are contextual factors that are a product of an individual's relationship with their environment. SDOH may impact the way a person's environment interacts with them, potentially increasing the likelihood of experiencing moral code violations and of developing poor health outcomes related to moral injury. (p. 204).

By emphasizing the complex interplay between individual and systemic factors, this perspective moves beyond solely psychological or biological explanations, offering a more comprehensive lens through which to address MI. Understanding these socioenvironmental factors is therefore essential not only for identifying individuals and communities at heightened risk but also for developing targeted assessment, intervention, and prevention strategies that address the root causes and broader contexts of MI.

The inherently social and relational dimensions of MI are well-captured through the lens of SDOH. MI, which is rooted in the self-perceived transgression of core personal convictions and values often imbued with social or sacred importance, has far-reaching effects on emotions, relationships, health, and functioning (Griffin et al., 2019). Socioeconomic deprivation, as one of the critical elements of SDOH (WHO, 2025), has theoretical and empirical implications for the moral self. Adler and Ostrove (1999) illustrate how environments shaped by socioeconomic status (SES) influence psychological responses, stating that "environments associated with different SES levels may vary in how much control is afforded to individuals, the degree of emotional and instrumental support provided, and exposure to conflict and threat" (p. 12). These

environmental characteristics can lead to maladaptive psychological responses, such as distrust and fear, particularly in persistently threatening social environments (Adler & Ostrove, 1999).

Chronic socioeconomic deprivation further undermines the development of self and the capacities essential to moral agency, which includes self-determination and the ability to craft a meaningful life (Blacksher, 2002). Such environments often limit individuals' decision-making autonomy, with circumstances shaping the range and nature of choices available to them. This dynamic has profound implications for moral agency and freedom, as some contexts enable human flourishing while others constrain it. Lower SES groups may be disproportionately exposed to high-stakes environments involving greater threat and deprivation (Weissman et al., 2022), which could elevate the risk of PMIEs. High-stakes environments involve intense pressure and severe consequences tied to decisions or actions, often threatening safety, livelihood, or integrity (Borges et al., 2022; Roth et al., 2022; Roth et al., 2023). Circumstances such as lack of health care access, food insecurity, and unsafe neighborhoods may place individuals under limited options and survival pressures, complicating moral and ethical decisions. These precursor events to MI, encompass violations of moral codes through actions, inactions, or betrayals by others (Borges et al., 2022; Litz et al., 2009). The frequent exposure to such environments may explain the associations between low SES and adverse psychosocial outcomes, including heightened anger, hostility, and suicidal ideation (Blacksher, 2002). These outcomes align with the emotional and behavioral consequences observed in individuals experiencing MI.

Certain SES-related factors, such as trust in others/society, perceived safety in one's community, and social reciprocity, may serve as protective buffers against MI. Silva et al. (2016) suggest that these elements are linked to reduced mental health distress, potentially mitigating

the impact of PMIEs and adverse psychosocial outcomes. In contrast, research consistently shows that adverse socioenvironmental conditions—such as low income, limited education, and neighborhood deprivation—serve as psychosocial risk factors that increase the likelihood of poor mental health (Silva et al., 2016). By including these factors into MI research, we can better identify not only risk factors but also conditions that may foster resilience in socioeconomically disadvantaged populations.

Expanding on the link between MI and socioenvironmental factors, it is important to address the broader context of SDOH and its relevance to this study. This study examines six primary variables, each aligning with one of the five key areas of SDOH outlined by the Healthy People 2030 initiative, which sets data-driven objectives to improve health and well-being nationwide (Office of Disease Prevention and Health Promotion [ODPHP], 2020). Educational attainment corresponds to *Education Access and Quality*, as ODPHP (2020) states that "people with higher levels of education are more likely to be healthier and live longer." Household income reflects *Economic Stability*, aligning with the initiative's goal to "help people earn steady incomes that allow them to meet their health needs" (ODPHP, 2020). Health insurance coverage represents *Health Care Access and Quality*, given ODPHP's emphasis on increasing insurance coverage as "critical for making sure people get important health care services" (ODPHP, 2020). Neighborhood quality, which includes factors like housing quality, captures *Neighborhood and Built Environment*, as ODPHP (2020) highlights that many U.S. neighborhoods face "high rates of violence, unsafe water, and other health and safety risks." Finally, childhood maltreatment and lifetime trauma exposure fit within *Social and Community Context*, as ODPHP (2020) underscores the role of social relationships across the lifespan in health outcomes, citing examples such as children with incarcerated parents and adolescents experiencing bullying. By

examining these variables, this study provides a comprehensive framework for understanding socioenvironmental contributors to moral injury.

Educational attainment is a well-documented SDOH with complex associations with mental health and broader health outcomes. Limited education has consistently been linked to poorer physical and mental health, which may increase vulnerability to moral injury. Higher rates of mental disorders are associated with social disadvantage, particularly limited education (Silva et al., 2016). Low educational attainment is also linked to higher risks of developing cardiovascular risk factors (CVRFs) such as hypertension, diabetes, dyslipidemia, and obesity, as well as less healthy dietary habits (Andersen et al., 2005; Lee et al., 2000; Lynch et al., 1996). A systematic review and meta-analysis by Khaing et al. (2017) found that individuals with low education had a 36% higher risk of coronary artery disease (CAD) and a 23% higher risk of stroke compared to those with high education. These health disparities are partly attributable to higher rates of risk behaviors (e.g., smoking, obesity, physical inactivity) and poorer health literacy among individuals with lower educational attainment (Kuper et al., 2007). Lower education levels are also associated with reduced access to preventive care, poor disease management, and limited adherence to treatment recommendations, contributing to higher mortality rates (Kuper et al., 2007).

In the context of MI, lower educational attainment may increase vulnerability through reduced access to critical coping strategies and psychological resources, such as problem-solving skills and emotional regulation, which are often strengthened by higher education. Limited health literacy and awareness of mental health resources may further compound this vulnerability, making it more difficult for individuals with lower education to process and recover from PMIEs. Particularly, higher educational levels have been linked to lower rates of MI in veterans

(Wisco et al., 2017), yet conflicting evidence suggests occupation-specific variations. For instance, nurses with higher education levels report greater moral distress due to the ethical complexities of decision-making (Hamaideh, 2014). While such findings may not generalize to broader civilian populations, they illuminate the nuanced interplay between education and MI.

Similarly, income is another critical factor, with evidence suggesting that financial strain and generational poverty amplify vulnerability to MI. Research has consistently shown that low income is linked to poorer health outcomes, which may partly explain its connection to more severe MI. A systematic review by Spencer et al. (2013) found significant associations between early childhood low socioeconomic status (SES)—specifically low income—and various adverse health outcomes in later childhood and adolescence, including activity-limiting illness, parent-reported poor health status, acute and recurrent infections, higher BMI percentiles, and increased hospitalization rates. The health consequences of low income extend into adulthood as well. Choi et al. (2020) reported that the health gap between the lowest and highest 20% of the income distribution was significantly larger among U.S. adults compared to their English counterparts on 13 of 16 health measures, including depressive symptoms, hypertension, diabetes, cancer, etc. Notably, this disparity was more pronounced among lower-income individuals in the U.S., suggesting that the adverse health effects of low income may be magnified in contexts with weaker social safety nets. In the context of MI, these broader health disparities could reflect increased psychological and physiological vulnerability to stress and trauma among individuals with limited financial resources. Wisco et al. (2017) found that U.S. veterans with higher income levels reported fewer morally injurious events, as measured by the Moral Injury Events Scale (MIES). This relationship extends to civilian contexts, where lower income is associated with increased moral distress, as observed in both healthcare professionals (Hamaideh, 2014) and

homeless populations (Cameron, 2024). These findings highlight the protective role of economic stability against experiences that might lead to MI.

Health insurance coverage ensures access to healthcare, which may play a pivotal role in mitigating the impact of psychological and physical trauma. The broader consequences of limited healthcare access are substantial. Bernstein et al. (2010) explain that uninsured individuals tend to report lower levels of self-perceived wellness, and at the time of the publication, as many as 44,500 premature deaths per year in the U.S. were attributed to a lack of insurance. However, insurance coverage improves health outcomes by expanding access to prescription drug benefits, preventive care, and mental health services. Furthermore, Lauterbach et al. (2005) identified a significant link between insurance coverage and PTSD status in trauma survivors, emphasizing the connection between healthcare access and mental health. While research on the direct relationship between health insurance coverage and MI is limited, one existing study provides valuable context. Williams et al. (2020) found that resource allocation dilemmas during acute healthcare crises, such as the COVID-19 pandemic, heightened moral distress among providers. This finding suggests that unequal access to care may similarly amplify MI in patients who are unable to receive necessary treatment. Addressing disparities in insurance coverage is therefore essential to reducing MI risk and improving outcomes for individuals affected by trauma and unequal care.

Childhood maltreatment exposure, including emotional abuse and maltreatment, plays a foundational role in shaping MI risk by fostering feelings of low self-worth, shame, and guilt that persist into adulthood (Battaglia et al., 2019). These early experiences may contribute to a "kindling effect," where cumulative trauma exposure heightens moral distress over time and exacerbates negative health outcomes (Fani et al., 2021). Adverse family environments—marked

by abuse, conflict, or financial instability—correlate with poor health outcomes and increased MI risk (Blacksher, 2002; Hertzman et al., 2000). Perpetration-related trauma during adolescence, such as involvement in gang violence, has also been shown to mediate PTSD symptoms, suggesting the potential long-term impact of early PMIE exposure on MI across the lifespan (Borges et al., 2022). The relationship between childhood maltreatment and MI has been further elucidated in psychiatric samples, where MI and shame were found to mediate the effects of childhood maltreatment on PTSD, borderline personality disorder, and dissociative symptoms (Bekes et al., 2023). Notably, adverse childhood experiences (ACEs), particularly those involving personal abuse, may act as vulnerability factors that increase the risk of MI following exposure to PMIEs in adulthood, such as during military service (Beckwith, 2023). Additionally, the impact of ACEs on adult mental health has been shown to involve difficulties with emotion regulation, which moderate the relationship between trauma, MI, and adverse outcomes (Roth et al., 2022).

Beyond childhood, lifetime trauma exposure further compounds vulnerability to MI by reinforcing maladaptive cognitive and emotional patterns, increasing susceptibility to moral distress following PMIEs. Both childhood and adult trauma have been consistently linked to negative mental health outcomes such as PTSD and depression (Litz et al., 2009), as well as MI. A study assessing MI in trauma-exposed civilians found that greater MI distress was significantly associated with higher lifetime trauma exposure, particularly with adult interpersonal trauma exposure having a significant association with distress related to MI (Fani et al., 2021). Lathan et al. (2023) examined associations between MI and trauma types among civilian medical patients and found that adulthood sexual assault was a significant predictor of MI distress. Given the lasting psychological and emotional consequences of both childhood and

lifetime trauma exposure, it is crucial to consider how these socioenvironmental factors further shape vulnerability to MI.

Characterized by low average income, high unemployment, and concentrated poverty, neighborhood deprivation has been shown to predict morbidity and mortality beyond individual SES (Adler & Ostrove, 1999; Diez-Roux et al., 1997; Haan et al., 1987). Social disadvantage in these neighborhoods, including limited resources and increased exposure to violence, is strongly associated with worse mental health outcomes, such as higher rates of psychosis and depression (Wickham et al., 2014), greater psychological distress (Ajrouch et al., 2010), and increased hospitalization for mental disorders (Sundquist & Ahlen, 2006). Even perceptions of neighborhood problems, including crime and social disorder, independently predict poorer mental well-being (Brisson et al., 2014; Gale et al., 2011). Neighborhood deprivation has also shown to contribute specifically to MI. For instance, Owens (2020) documented how individuals in deprived neighborhoods described community violence and systemic inequities that challenged or violated their moral values. Participants reported experiences of moral stress and betrayal tied to their environments, emphasizing the cumulative impact of neighborhood deprivation on mental health and MI. Thus, neighborhood quality represents a critical socioenvironmental factor, shaping exposure to stressors that undermine psychological well-being and moral resilience, particularly in populations already facing systemic inequities.

Incorporating these various SDOH into the conceptualization of MI, it is crucial to examine how theoretical models, particularly Litz et al. (2009) framework, offer insight into the psychological processes underlying MI. Litz et al. (2009) provide a foundational model of MI, suggesting that inner conflict and dissonance resulting from morally poignant transgressions give rise to negative moral emotions such as guilt and shame. These emotions, in turn, exacerbate

difficulties with forgiveness and social withdrawal, potentially leading to more severe psychopathological outcomes, including PTSD and self-harm. This model emphasizes the role of moral conflict in the development of MI, highlighting how transgressions that violate an individual's moral code can have far-reaching psychological consequences.

Adapting this framework to the civilian context, especially for those in lower SES communities, we can view MI as a product of systemic inequities inherent in the SDOH. In these contexts, individuals' assumptions about the world—that it is benevolent, meaningful, and that they are deserving of good things—are deeply challenged. Persistent inequities in access to healthcare, education, and community support may create moral dissonance when individuals recognize that their opportunities are markedly limited in comparison to those in higher-SES areas. This realization may force individuals to confront the violation of fairness and justice, which are core moral beliefs, deepening their emotional distress.

The context of these inequities plays a critical moderating role. Supportive community networks or positive societal attitudes may help alleviate some of the dissonance, whereas systemic discrimination or neglect can exacerbate it. As individuals grapple with these disparities, they often experience guilt or shame—emotions that intensify the MI. While guilt can sometimes prompt positive change, shame is often paralyzing, contributing to a sense of powerlessness and alienation. The emotional toll of this dissonance, particularly when individuals feel personally responsible for their circumstances or internalize societal neglect, can significantly hinder their emotional well-being. Thus, MI in civilians, particularly those in marginalized communities, can be understood as a profound psychological and emotional reaction to inequities in the social system. These systemic injustices violate individuals' core moral expectations of fairness and equality, leading to heightened emotional distress, alienation,

and a persistent sense of injustice. Ultimately, this conceptualization highlights the importance of addressing the broader SDOH to mitigate the risk of MI and promote psychological healing.

In addition to these structural inequities, individual and cultural experiences of discrimination further complicate the relationship between SDOH and MI. Race-related stress (RRS) has previously shown a significant association to moral injury. For instance, among warzone veterans, White race was negatively associated with PMIE exposure, while non-White race was linked to higher rates of self-induced and other-directed PMIEs (Nieuwsma et al., 2022). These disparities extend to civilian contexts, particularly in health care settings where BIPOC providers often face systemic discrimination and powerlessness, heightening their risk of MI when hospital policies conflict with their moral codes (Borges et al., 2022). Recent studies have shown strong correlations between exposure to RRS and both moral injury exposure (MIEs) and moral injury distress (MID), with exposure to individual and cultural RRS exhibiting the strongest associations (Elbasheir et al., 2024). This study seeks to provide a more comprehensive understanding of how exposure to RRS affects moral injury risk, by examining the relationship between RRS and MI in a subset of Black participants. Given that the ODPHP (2020) identifies discrimination as a challenge within the *Social and Community Context* SDOH key area—and that racial discrimination is a well-documented form of RRS (Williams, 2018)—the IRRS-B variable in the secondary analysis captures this key SDOH area.

Interestingly, even among individuals with similar objective SES, the perception of one's standing relative to others—often shaped by broader social inequalities—may influence their likelihood of experiencing MI. Research has shown that relative deprivation, or the sense that one's position in the social hierarchy is lower than others, can have profound impacts on mental health and well-being (Kawachi et al., 1999). As Richard Wilkinson (1986) explains, it is not just

the absolute circumstances of an individual's life, but their status relative to others, that matters significantly for psychological distress. When individuals perceive themselves as having higher social status, they are more likely to feel secure in their social environment, potentially leading to greater emotional resilience when confronted with moral violations. Thus, higher subjective social status (SSS) may mitigate the emotional and psychological toll of perceived inequities, potentially lessening the sense of moral violation in the face of observed injustice. Given that higher SSS may buffer the psychological impact of perceived inequities and reduce the sense of moral violations, I will examine SSS as a moderator of the relationship between SDOH and MI to explore whether perceptions of social status buffer or exacerbate the effects of SDoH on MI. If an individual scores higher on SSS, they may feel more embedded within the shared values system of their community or the broader society, potentially reducing the moral burden after exposure to a PMIE. Since SSS reflects how individuals perceive their standing within both their community and broader society, it aligns with the *Social and Community Context* SDOH area. ODPHP (2020) emphasizes that social interactions and community dynamics significantly impact health, and subjective perceptions of status may shape an individual's vulnerability to moral injury.

The current study's exploration of MI within civilian populations is crucial for advancing our understanding of how socioenvironmental factors contribute to this unique form of psychological distress. While MI research has traditionally focused on military personnel, veterans, and healthcare workers, this study shifts attention to civilians, aiming to identify individuals at heightened risk and tailor interventions to their specific needs. Examining MI in relation to SDOH provides a more nuanced understanding of vulnerability, offering insights into who is at risk and why. As Borges et al. (2022) note, "measures explicitly developed to assess

moral injury in groups beyond service members, warzone veterans, and healthcare providers are critical to address health inequities." This study's focus on civilian populations will highlight how individual and community-level stressors uniquely influence MI, which is essential for developing targeted, evidence-based interventions. Ultimately, this study seeks to fill critical gaps in the existing literature and provide a comprehensive framework for addressing MI in civilian contexts. By examining how SDOH interact with MI and how SSS may moderate this relationship, this research will not only advance theoretical understanding but also inform clinical practices aimed at alleviating the emotional and psychological toll of MI. Through these efforts, we can move closer to a more equitable and effective approach to mental health care, particularly for those who may otherwise fall through the cracks of current interventions.

Specifically, I aim to examine the specific contributions of social determinants of health (SDoH) to moral injury (MI). Specifically, I hypothesize that lesser socioeconomic resources—characterized by lower educational attainment, lower income, lack of health insurance coverage and greater neighborhood deprivation—will be associated with more severe MI. Additionally, I expect that greater exposure to childhood maltreatment and lifetime trauma will also be associated with more severe MI. Beyond the primary hypothesis, I will also explore additional research questions to further investigate the relationship between SDOH and MI. First, I will examine scores from the Index of Race-Related Stress—Brief (IRRS-B) in association with MI within a subset of participants who identify as Black/African American, to explore whether race-related stress contributes to moral injury severity. Secondarily, I will investigate whether perceptions of social status moderate the relationship between SDOH and MI, examining whether higher subjective social status (SSS) buffers or amplifies the impact of social inequities on moral injury.

Methods

Participants and Procedures

I analyzed data collected in the context of the Grady Trauma Project (GTP), a collective of studies that examine biomarkers and interventions for PTSD among civilians. Participants for GTP were historically recruited directly from Grady Memorial Hospital, but are now recruited from a variety of sources, including primary care clinic referrals and community advertisements. From a population of participants who were screened for eligibility for GTP research studies, a convenience sample of participants who reported residential addresses within Georgia was used, allowing for the standardized assessment of the sample's state-decile rankings in the Area Deprivation Index (ADI). To be eligible for participation, individuals had to meet the following criteria: (1) aged 18 to 65 years, (2) the ability to understand English, as assessed by a study researcher, and (3) willingness to provide informed consent. Participants were excluded from the study if they met any of the following criteria: (1) not residing in Georgia, (2) experiencing active psychosis, or cognitively impaired (e.g., intoxication, severe intellectual disability), (3) did not fully complete all measures of interest.

As part of the recruitment process, patients with preestablished medical appointments at the Grady Memorial Hospital were contacted via telephone and invited to participate in an initial screening assessment to determine their eligibility for any of the various studies conducted by the Grady Trauma Project. Interested individuals were then scheduled for the screening assessment. Before participating in the screening assessment, participants provided informed consent by signing a detailed form outlining the purpose and structure of the screening.

The screening assessments were conducted online via Zoom to ensure accessibility. During this session, trained research assistants verbally administered a series of self-report

questionnaires covering a broad range of topics, including demographic information, SSS, CTQ, LEC, etc. The questionnaires were designed to gather comprehensive data and typically took between 120 and 180 minutes to complete. Research assistants were available to clarify participants' questions about the questionnaire items throughout and after the session. Upon completing the assessment, participants received a $45 e-gift card as compensation for their time and effort. All participant responses were securely inputted into the Research Electronic Data Capture (REDCap) platform, ensuring data integrity and confidentiality. The informed consent process and all study procedures were approved by the Emory University Institutional Review Board.

Materials and Measures

Education. Participants' educational attainment was assessed via the following self-report item: "What was the highest grade you completed in school?" on the demographics questionnaire. Participants responded by selecting one of the following categories representing levels of educational attainment: 0 (Less than 12th grade), 1 (12th Grade/High School Graduate), 2 (GED), 3 (Some college or technical school), 4 (Technical school graduate), 5 (College graduate), and 6 (Graduate school). Higher scores on this measure indicated higher levels of educational attainment.

Income. The demographics questionnaire assessed participants' incomes via the following self-report item: "What is your approximate household monthly income?". Participants responded by selecting one of the following categories representing income ranges: 0 ($0–$249), 1 ($250–$499), 2 ($500–$999), 3 ($1,000–$1,999), or 4 ($2,000 or more). If participants selected the highest category (4 = $2,000 or more), they were prompted to provide additional details

regarding their income beyond this threshold. A higher score indicates greater monthly household income.

Health Insurance. Participants' health insurance status was assessed using a self-report item from the demographics questionnaire: "Do you currently have health insurance?" Response options included 0 (No), 1 (Yes – Medicaid), 2 (Yes – Private Insurance), 3 (Yes – Medicare), and 4 (Both - Medicare/Medicaid and Private Insurance). For analysis, participants who selected 0 were classified as uninsured, while those who selected any of the insured options (1–4) were grouped as insured to create a binary variable.

Childhood Maltreatment Exposure. The Childhood Trauma Questionnaire (CTQ) (Bernstein et al., 1994) is a self-report measure that assesses childhood abuse (sexual, physical, and emotional) and neglect (physical and emotional) (See Appendix A). The original CTQ demonstrated high internal consistency (Cronbach's $\alpha = 0.79–0.94$) and good test-retest reliability (ICC = 0.88) over a 2- to 6-month interval. Additionally, it showed strong convergent validity, with stability of reports over time and consistency across different instruments (Bernstein et al., 1994). Participants rated the extent to which each of the 28 items described their experiences in childhood and adolescence, using a scale of 1 (Never true) to 5 (Always true). Some items were reverse-keyed to control for response bias. Item responses were aggregated into a sum score of childhood maltreatment for analyses. The maximum possible composite score was 125, indicating more severe or frequent experiences of childhood abuse and neglect. Conversely, a lower composite score (e.g., 30) suggested minimal or no exposure to childhood abuse and neglect.

Lifetime Trauma Exposure. The Life Events Checklist for DSM-5 (LEC) (Weathers, 2013) is a self-report measure that assesses lifetime exposure to 16 traumatic events that may

lead to the development of PTSD, such as natural disasters, transportation accidents, physical assault, sexual assault, and combat exposure (See Appendix B). The original LEC, from which the LEC-5 is adapted, exhibited good test-retest reliability (r = .82) and sufficient inter-rater reliability (κ = .61) (Gray et al., 2004). The LEC-5 demonstrated moderate test-retest reliability (ICCs = .62–.64) in non-clinical samples, with higher reliability for directly experienced events compared to witnessed events (ICCs = .47–.52). Test-retest agreement for directly experienced events ranged from κ = .49–.72 (Pugach et al., 2021). Participants respond to each event based on whether they directly experienced it, witnessed it happening, learned about it occurring to a close friend or family member, encountered it as part of their job, are unsure, or if it does not apply. Item responses to the experienced and witnessed subscales were aggregated into a sum score, where each endorsed event in these categories was assigned a value of 1 and summed to create a total lifetime trauma exposure score.

Neighborhood Quality. The National Area Deprivation Index (ADI) data obtained through the Neighborhood Atlas from the University of Wisconsin School of Medicine and Public Health (Kind & Buckingham, 2018) assessed participants' neighborhood quality. The ADI provides insights into the relative socioeconomic conditions of neighborhoods based on publicly available data across key domains, including income, education, employment, and housing quality. The ADI ranks neighborhoods by comparing their scores to those of both the national and state averages, with higher rankings indicating greater socioeconomic disadvantage. The National Area Deprivation Index (ADI) has been validated through its association with several known health outcomes related to neighborhood disadvantage and is actively used by the Centers for Medicare and Medicaid Services (Hu et al., 2018). Full residential addresses collected from the demographics survey were geocoded and linked to their respective census

block groups using the Neighborhood Atlas. In my analyses, state decile scores were used and ranged from least disadvantaged block groups within the state (1) to most disadvantaged block groups within the state (10).

Race-Related Stress. The Index of Race-Related Stress-Brief (IRRS-B) (Utsey, 1999), a 22-item self-report measure, assessed race-related stress. The IRRS-B is an abbreviated version of the 46-item IRRS (Utsey & Ponterotto, 1996) and measures the emotional impact of racism encountered by Black individuals across three levels: individual, cultural, and institutional (See Appendix C). The original IRRS-B demonstrated good internal consistency (Cronbach's $\alpha = .69–.78$) and moderate intercorrelations among the subscales ($r = .56–.74$). It also showed strong convergent validity and criterion-related validity (Utsey, 1999). Participants responded to each item on a Likert-type scale from 1 (this never happened to me) to 5 (this event happened and I was extremely upset). Composite scores representing participants' race-related stress exposure were calculated by summing their responses. The maximum possible composite score (110), obtained if a participant scored the highest (5) on all 22 items, indicated the highest exposure to race-related stress. A lower composite score (e.g., 42) indicated a lower exposure to race-related stress.

Subjective Social Status. The Subjective Social Status (SSS) measure (Singh-Manoux et al., 2003) is a 2-item self-report tool designed to assess participants' perceptions of their social status relative to others in both their community and society (See Appendix D). The SSS has demonstrated adequate test-retest reliability (Spearman's $\rho = .62$, $p < .01$) and expected associations with objective SES indicators (Operario et al., 2004). Participants rated their social status using a visual ladder graphic representing a ten-rung scale, where the top of the ladder (rung 1) represents the highest social status, and the bottom (rung 10) represents the lowest. The

SSS questionnaire includes two distinct items: one assessing societal social status ("Imagine that this ladder represents the place that people occupy in society...") and the other assessing community social status ("Imagine that this ladder represents the place that people occupy in their community..."). Research assistants instructed participants to indicate the number on the rung that best reflects their perceived social status relative to others in their society and their community. For analysis, I treated societal subjective social status and community subjective social status as separate independent variables. This approach allows for a more nuanced understanding of how these perceptions may differentially influence the moderation outcomes. Each rating will be analyzed independently, with lower scores (e.g., 2) indicating a higher subjective social status and higher scores (e.g., 9) indicating a lower subjective social status.

Moral Injury. The Moral Injury Exposure and Symptom Scale for Civilians (MIESS-C) (Fani et al., 2021) is a 10-item self-report questionnaire that measures the severity of MI exposure and distress in civilians (See Appendix E). The original nine-item Moral Injury Events Scale (MIES), from which the MIESS-C is adapted, demonstrated excellent internal consistency (Cronbach's $\alpha = 0.90$), with item-total correlations ranging from 0.52 to 0.75, averaging 0.65, and indicating good internal reliability. It also exhibited good temporal stability, discriminant validity, and convergent validity (Nash et al., 2013). The MIESS-C demonstrated good internal consistency ($\alpha = 0.85$) in a community sample of Black Americans (Elbasheir et al., 2024). The items were prefaced by the statement: 'In this scale we will be asking you about events that might have conflicted with your morality or your sense of right and wrong.' Participants were asked to provide ratings regarding exposure to various potentially morally injurious events and related distress on a 6-point scale from 1 (strongly agree) to 6 (strongly disagree). All items were reverse-coded, such that higher scores reflected greater MI. Item responses were aggregated into

a sum score to generate a total MI score, with a maximum possible score of 60. A higher total score (e.g., 58) indicated greater exposure to, and distress from MI, while a lower score (e.g., 14) reflected less severe MI.

Design

This study employed a cross-sectional design to examine associations between various SDOH and MI. The primary independent variables included highest level of educational attainment, monthly household income, health insurance coverage, total CTQ, total LEC, and ADI. Additionally, societal SSS, community SSS, and total IRRS-B were examined in secondary analyses. The dependent variable was total MIESS-C score.

Data Analyses

All statistical analyses were conducted using IBM SPSS Statistics (Version 29.0.2.0). Prior to analysis, data were screened for missing values and geographic exclusions (See Appendix F). Descriptive statistics and bivariate correlations were examined to assess the relationships among study variables. For all analyses, statistical significance was set at $p < .05$. Findings were reported with 95% confidence intervals to ensure robustness of estimates.

For my primary analysis, multiple linear regression analysis using the enter method was conducted to examine predictors of MI. Monthly household income, highest level of educational attainment, health insurance status, total CTQ, total LEC, and ADI were simultaneously entered as predictors. The total MIESS-C score served as the outcome variable. Variance inflation factors (VIF) for all predictors were under the threshold of 5, so multicollinearity did not distort regression estimates.

After the primary analysis, two secondary analyses were conducted to further investigate the influence of SDOH and race-related stress on MI severity. The first secondary analysis included IRRS-B as an additional regression for MI; since the IRRS-B was administered only to Black participants, this was conducted as a separate analysis to not limit statistical power in the primary analysis. The same analytical procedures were applied as the primary multiple linear regression analysis. For the third secondary analysis, a moderation analysis was conducted to explore the role of societal SSS and community SSS in the relationship between SDOH and MI. To formally assess this moderation effect, Hayes' PROCESS macro (Model 1; Hayes, 2018) was used in SPSS to test interactions between societal SSS and community SSS and the strongest predictors of MI revealed in the primary analysis.

Results

Sample Characteristics

See Table 1 for an overview of the clinical and demographic characteristics of the sample. Participants (n = 385; M_{age} = 39.4 years; SD_{age} = 12.3 years) were primarily African American/Black (74.3%, n = 286), women (88.3%, n = 340), and a third were college graduates (30.1%, n = 116). While a substantial portion of the sample reported low monthly household income (40.5%, n = 156; monthly household income < $2,000), a slight majority (59.5%, n = 229) reported having a household monthly income of $2,000 or more per month. The mean MIESS-C total score was M = 38.4, SD = 12.6, indicating that, on average, participants in the study reported a moderate to high level of MI exposure and/or distress, as the sample's mean score falls closer to the upper end of the possible range (10 to 60) and reflects a relatively wide spread in scores.

Bivariate correlations between predictors and total MIESS-C score are displayed in Table 2. Societal SSS, community SSS, CTQ, LEC, and IRRS-B were all significantly and positively associated with MI ($r = .221$, $p < .001$; $r = .167$, $p < .001$; $r = .462$, $p < .001$; $r = .404$, $p < .001$; $r = .440$, $p < .001$, respectively).

Primary Analysis

A multiple regression analysis was conducted to examine predictors of total MI score (see Table 3). The overall model was statistically significant, $F(6, 378) = 23.42$, $p < .001$, accounting for 27.1% of the variance in MI ($R^2 = .271$). Only two regressors, LEC ($B = 0.72$, $p < .001$) and CTQ ($B = 0.23$, $p < .001$) were significant positive predictors of MI.

Secondary Analyses

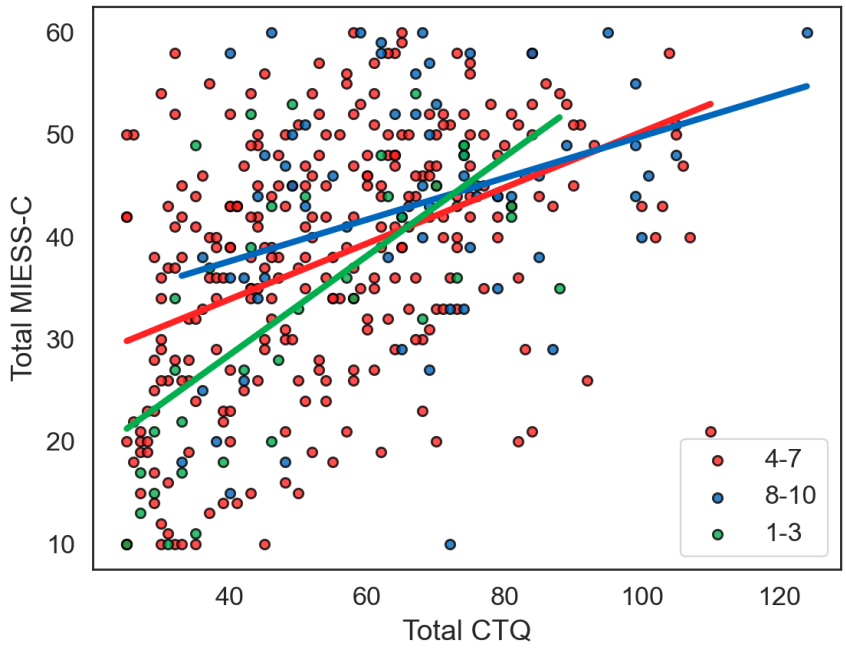
A multiple linear regression analysis was conducted to examine the effect of IRRS-B total on MI in addition to the original predictors (see Table 4). The overall model was statistically significant, $F(7, 299) = 23.80$, $p < .001$, explaining 35.8% of the variance in MI ($R^2 = .358$). LEC ($B = 0.45$, $p = .01$), IRRS-B ($B = 0.21$, $p < .001$) and CTQ ($B = 0.21$, $p < .001$) were significant positive predictors of MI.

Finally, a moderation analysis was conducted to explore the interaction between SSS and CTQ, which was identified as the strongest predictor of MI in the primary multiple linear regression analysis. The interaction between community SSS with CTQ on MI was not significant ($B = -0.017$, $p = .186$). However, the model involving societal SSS and CTQ was significant, $F(3, 381) = 38.86$, $p < .001$, accounting for 23.4% of the variance in MI ($R^2 = .234$). Moreover, the interaction term between societal SSS and CTQ was significant, $B = -0.038$, $p = .009$, indicating that the relationship between CTQ and MI was moderated by societal SSS.

Examination of the conditional effects revealed that the association between CTQ and MI was stronger at higher levels of societal SSS. Specifically, at a high level of societal SSS (16th percentile), the effect of CTQ on MI was $B = 0.345$, $p < .001$, 95% CI [0.267, 0.425]. At the median level of societal SSS (50th percentile), the effect remained significant but slightly weaker ($B = 0.307$, $p < .001$, 95% CI [0.244, 0.371]). At low levels of societal SSS (84th percentile), the association was still significant but further attenuated ($B = 0.193$, $p < .001$, 95% CI [0.108, 0.277]). These findings suggest that individuals with higher societal SSS reported stronger associations between CTQ and MI. The interaction effect accounted for a small but significant increase in variance explained ($\Delta R^2 = .0139$, $F(1, 381) = 6.92$, $p = .009$). This suggests that societal SSS modifies the strength of the relationship between childhood maltreatment and MI, with higher societal SSS amplifying the impact of childhood maltreatment on MI.

Figure 1

Societal SSS Moderation of CTQ and MI



Note. Societal SSS moderated associations between moral injury and childhood maltreatment. Green markers represent participants who rated their societal SSS as highest (rungs 1 to 3 on the

SSS ladder), red markers represent those with middle SSS ratings (rungs 4 to 7 on the SSS ladder), and blue markers denote participants with the lowest SSS ratings (rungs 8 to 10 on the SSS ladder).

Discussion

The present study aimed to examine the socioenvironmental factors contributing to moral injury (MI) in a civilian sample, applying the Social Determinants of Health (SDOH) framework to better understand the structural and social conditions that shape MI risk. Specifically, this study investigated the unique contributions of educational attainment, household income, health insurance coverage, childhood maltreatment, lifetime trauma exposure, and neighborhood quality to MI. Primary analyses revealed that both childhood maltreatment and lifetime trauma exposure were significant positive predictors of MI, emphasizing the central role of early and cumulative trauma in shaping MI outcomes. Secondary analyses further identified race-related stress as a significant positive predictor of MI in Black participants, even when accounting for other socioenvironmental factors. Additionally, societal subjective social status moderated the relationship between childhood maltreatment and MI, such that individuals who perceived themselves as better off in society exhibited a stronger positive association between childhood maltreatment and MI compared to those who perceived themselves as worse off.

These findings reinforce the well-established link between trauma exposure and MI while also highlighting the role of socioenvironmental factors in shaping individuals' responses to adversity. The moderating effect of subjective social status suggests that those with a higher perceived standing in society who experienced childhood adversity may experience greater distress or internal conflict when confronted with MI or PMIEs in adulthood. There are different

ways to interpret these findings. Speculatively, it is possible that those with higher subjective social status also have increased expectations of resilience or self-sufficiency. By demonstrating that MI is intrinsically linked to, and potentially influenced by, both personal experiences and greater societal contexts this study underscores the importance of considering both personal trauma histories and broader socioenvironmental conditions when developing interventions to mitigate MI risk. Addressing MI effectively may require a multidimensional approach that integrates trauma-informed care with strategies aimed at improving social and structural determinants of health.

The primary hypothesis was partially supported, as two of the six key variables capturing SDOH were significant predictors of MI. One of the examined factors, educational attainment—representing the SDOH key area of *Education Access and Quality*—was not a significant predictor of MI, although a trend was observed ($p = .13$). This finding contradicts previous research linking lower educational attainment to increased vulnerability to mental health disorders (Hamad et al., 2008; Henderson et al., 2005; Silva et al., 2016; van der Waerden et al., 2014). In the context of MI, Wisco et al. (2017) found that college-educated veterans had lower scores on the Moral Injury Event Scale (MIES) compared to those with less education, suggesting that higher educational attainment may serve as a protective factor against MI.

However, the lack of a significant association in the present study may be attributable to range restriction, as the sample consisted primarily of college graduates (30.1%), with relatively few participants having lower educational attainment. The limited variability in education levels may have reduced the ability to detect significant effects. Additionally, the impact of education on health and psychological outcomes may differ across demographic groups. Adler and Ostrove (1999) theorized that additional years of education yield greater health benefits for white men

compared to white women and African Americans, suggesting that traditional socioeconomic indicators may not function uniformly across diverse populations. Given that the present sample was predominantly Black and female, the expected association between educational attainment and MI may not hold in the same way as in previous studies, which have largely focused on WEIRD (Western, Educated, Industrialized, Rich, and Democratic) populations. This highlights the need for future research to explore whether the protective effects of education on MI vary across racial, gender, and socioeconomic contexts, as well as the importance of conducting MI research in marginalized populations.

Household income, representing the *Economic Stability* key area of SDOH, was also not a significant predictor of MI in this study. This finding contradicts prior research suggesting that higher income serves as a protective factor against MI. For instance, Wisco et al. (2017) found that high-income veterans exhibited lower MI scores, while Hamaideh (2014) identified income as the strongest predictor of moral distress among nurses, with higher income levels associated with reduced moral distress. Similarly, Cameron (2024) reported that generational poverty significantly predicted MI risk among homeless individuals. These findings suggest that financial security may mitigate the psychological burden of PMIEs by reducing exposure to stressors that challenge moral beliefs or by facilitating access to mental health resources.

One possible explanation for the null finding in the present study is the limited granularity of the income variable. The Grady Trauma Project's screening assessments categorize household income into broad brackets, with the highest bracket encompassing all individuals earning $2,000 or more per month. This classification is outdated and fails to capture the full range of financial circumstances within the sample. For context, the median household income in Georgia in 2023 was $74,664 (U.S. Census Bureau, 2024), or approximately $6,222

per month—significantly higher than the upper limit of the study's income brackets. Given that most participants fell into the highest category, this lack of differentiation may have constrained the ability to detect meaningful associations between income and MI. Further, the classification does not account for the economic burden on households. For instance, an individual earning $2,500 per month with no dependents may have greater financial stability than someone earning $6,000 per month while supporting a large family, covering medical expenses, or managing debt. Without accounting for factors such as household size, cost of living, and financial obligations, the income variable may not accurately reflect participants' true economic security or stress, potentially obscuring its relationship with MI.

Similarly, healthcare insurance coverage, which falls under the *Healthcare Access and Quality* key area of SDOH, was not a significant predictor of MI. This result contrasts with extensive research linking insurance coverage to improved health outcomes. For example, Bernstein et al. (2010) found that having health insurance strongly correlates with better overall health by increasing affordability and access to preventive care, mental health services, and routine medical visits. Vulnerable populations, particularly those without insurance, face heightened risks of poor health outcomes due to barriers in accessing necessary care. Moreover, Lauterbach et al. (2005) reported that the type of insurance and whether it covered routine office visits significantly predicted PTSD status, even after controlling for other health-related variables. These findings underscore the crucial role of insurance in shaping health trajectories, particularly for individuals with trauma exposure.

A potential reason for the non-significant relationship between insurance coverage and MI in the present study is the lack of variability in insurance status within the sample, as 80% of participants reported having health insurance, leaving only 20% uninsured. This imbalance may

have limited the statistical power to detect meaningful differences based on insurance status. Additionally, the binary nature of the variable (insured vs. uninsured) may have further oversimplified the complexities of healthcare access. While insurance status provides a broad indicator of access, it does not account for differences in quality, scope, and usability of healthcare services. For instance, researchers found that psychiatrists had significantly lower acceptance rates for all types of insurance compared to other medical specialties, with nearly half not accepting private insurance and more than half not accepting Medicare or Medicaid (Bishop et al., 2014). Similarly, Wiznia et al. (2017) demonstrated that only 15% of psychiatrists were willing to schedule appointments for Medicaid patients, compared to 93% for cash-paying patients. These persistent disparities in provider acceptance—even in states with expanded Medicaid eligibility—highlight that merely having insurance does not guarantee access to quality mental health care.

Neighborhood quality, which represents the *Neighborhood and Built Environment* key area of SDOH, was also not a significant predictor of MI in the primary analysis. However, a trend toward significance was observed in the secondary analysis, specifically within the subset of Black participants ($p = .07$). This finding contrasts with previous research demonstrating strong associations between neighborhood deprivation and adverse mental health outcomes. For instance, Wickham et al. (2014) found that neighborhood deprivation was linked to an increased risk of mental disorders such as psychosis and depression. Additionally, research has shown that poorer neighborhood conditions—characterized by high unemployment rates, limited social cohesion, and greater exposure to violence—correlate with worse mental health outcomes (Santiago et al., 2011; Simone et al., 2013; Stockdale et al., 2007). Owens (2020) further highlighted the psychological toll of living in socioeconomically disadvantaged neighborhoods,

noting that participants reported moral stress arising from resource scarcity and community violence, which in turn contributed to morally injurious experiences, including feelings of betrayal and violations of personal values.

A potential explanation for the non-significant effect of ADI in the primary analysis is that the sample may not have fully captured the distribution of neighborhood quality across the state. The majority of participants (36.9%) had relatively high ADI scores, falling in deciles 1–3, which reflect residence in less disadvantaged neighborhoods. In contrast, only a small percentage (12.9%) resided in the most disadvantaged deciles (8–10). Moreover, the trend toward significance observed within the subset of Black participants warrants more attention. This subset had a higher mean ADI decile score ($M = 4.96$) compared to the overall sample ($M = 4.61$), suggesting that Black participants tended to reside in more disadvantaged neighborhoods than participants of other ethnicities. Notably, only the Black subset included participants in the most disadvantaged decile (decile 10), while other ethnic groups reported residing in neighborhoods no more disadvantaged than decile 9. Given these findings, the limited variability in ADI scores across ethnicities in the current sample may have reduced the ability to detect a meaningful association between neighborhood quality and MI in the full sample. However, the stronger trend in the Black subset suggests that ADI could be an important factor to consider when investigating MI among Black individuals. This represents a potential avenue for future research, although this interpretation remains speculative at this stage.

In contrast, two variables representing the *Social and Community Context* key area of SDOH—CTQ and LEC—were both significant predictors of MI. Higher levels of childhood maltreatment and lifetime trauma exposure were associated with increased MI, consistent with prior literature. Trauma exposure across the lifespan, from early childhood through adulthood,

has been consistently linked to trauma-related psychopathologies such as PTSD and depression (Litz et al., 2009), as well as MI (Fani et al., 2021). The significance of these findings underscores the role of cumulative trauma in shaping MI vulnerability and highlights the importance of considering moral injury as a long-term consequence of adverse social environments.

The observed association between childhood maltreatment and MI aligns with research indicating that early adverse experiences—such as emotional abuse and neglect—contribute to persistent patterns of shame, guilt, and low self-worth that extend into adulthood (Battaglia et al., 2019). This emotional foundation may create a cognitive framework that heightens moral distress following exposure to PMIEs. Prior studies suggest that childhood maltreatment primes individuals for MI by fostering persistent feelings of self-blame and worthlessness, which may later be exacerbated by morally injurious experiences in adulthood (Beckwith, 2023; Roth et al., 2022). Furthermore, adverse family environments characterized by abuse, conflict, or financial instability have been linked to poorer health outcomes and increased MI risk (Blacksher, 2002; Hertzman et al., 2000). These early adversities contribute to a cumulative burden on mental health, where childhood trauma, social instability, and economic hardship intertwine to shape an individual's emotional and psychological resilience. Such findings reinforce how SDOH—particularly exposure to violence, family dysfunction, and socioeconomic disadvantage—can disrupt emotional development and contribute to lifelong struggles with mental health. These experiences not only increase the likelihood of encountering PMIEs later in life but also hinder one's ability to process or cope with these events, thereby amplifying MI risk. The present findings extend this literature by demonstrating that early-life adversities are not only predictive

of traditional trauma-related disorders but also play a significant role in the development of MI, emphasizing the need for early intervention to mitigate long-term moral distress.

Beyond childhood maltreatment, lifetime trauma exposure was also a significant predictor of MI, further supporting the notion that trauma accumulation across the lifespan exacerbates moral distress (Fani et al., 2021). Greater exposure to trauma, particularly interpersonal trauma in adulthood, has been associated with heightened distress related to MI, suggesting that moral injury may have a cumulative effect over time (Lathan et al., 2023). This aligns with prior studies demonstrating that increased trauma exposure intensifies emotional dysregulation and moral distress, particularly among individuals with histories of repeated victimization (Roth et al., 2022). The concept of a "kindling effect," wherein successive traumatic experiences amplify moral distress and psychological dysfunction, is particularly relevant here (Fani et al., 2021). Within this framework, early exposure to trauma may sensitize individuals to subsequent moral conflicts, rendering them more vulnerable to MI when later confronted with PMIEs.

Moreover, research on specific populations has demonstrated that lifetime trauma exposure interacts with social and systemic factors to shape MI risk. For example, individuals involved in child protective services (CPS) have identified PMIE exposure as a barrier to fully engaging with CPS services, potentially perpetuating negative outcomes for both themselves and their children (Haight et al., 2017). Similarly, in gang-affiliated adolescents, perpetration-related trauma has been shown to mediate the relationship between gang involvement and PTSD symptoms, suggesting a link between early exposure to moral transgressions and the later development of MI (Borges et al., 2022). These findings collectively reinforce the idea that repeated exposure to interpersonal and systemic trauma contributes to MI across diverse

populations and contexts. The primary analysis suggests that the relationship between trauma and MI is not incidental but rather a deeply embedded pattern within the data. Despite the extensive research linking childhood trauma to MI, relatively fewer studies have examined the cumulative effects of lifetime trauma exposure on MI. The present study helps address this gap by demonstrating that trauma's impact extends beyond early life, continuing to shape MI vulnerability well into adulthood. Given that trauma often accrues across the lifespan, these findings highlight the need for research that considers the full spectrum of an individual's traumatic experiences rather than focusing exclusively on childhood adversity or military contexts. Further investigation is warranted to elucidate how various forms of trauma—whether experienced in childhood, adulthood, or both—interact to influence MI outcomes.

The secondary analysis examined the relationship between IRRS-B, other SDOH factors, and moral injury within a subset of Black participants who completed the IRRS-B. CTQ, IRRS-B, and LEC emerged as significant predictors of moral injury, with CTQ being the strongest predictor, followed by IRRS-B and LEC. Consistent with the primary analysis, CTQ and LEC remained significant predictors, while IRRS-B additionally appeared as a significant factor. This finding aligns with prior research indicating that race-related stress is a strong correlate of moral injury (Elbasheir et al., 2024). The emergence of IRRS-B as a predictor underscores the role of race-related stress in moral injury and suggests that race-related stress may function as a profound moral transgression, particularly for Black individuals who experience systemic injustices.

Race-related stress (RRS), including racial discrimination, has been conceptualized as a form of trauma with established links to PTSD and MI (Elbasheir et al., 2024; Mekawi et al., 2021). The finding that IRRS-B, CTQ, and LEC were significant predictors of moral injury in

this study suggests that trauma—whether in the form of childhood maltreatment, lifetime trauma exposure, or race-related stress—may be a central mechanism underlying moral injury. Black Americans frequently encounter racial discrimination at multiple levels: individual (e.g., racial violence), cultural (e.g., media portrayals reinforcing stereotypes), and institutional (e.g., discriminatory policies in law enforcement) (Brondolo et al., 2018; Case & Hunter, 2014; Harrell, 2000). These experiences contribute to emotional distress and can create moral dissonance when individuals witness or endure systemic injustices that violate moral and ethical values. Given that all forms of RRS are strongly correlated with MI (Elbasheir et al., 2024), racial discrimination may act as a moral transgression that elicits betrayal, powerlessness, and anger—key emotional responses associated with MI (Litz et al., 2009). Feelings of anger and disgust following institutional betrayals (Borges et al., 2022) are core components of MI and may explain why IRRS-B was a significant predictor of MI among Black participants.

The link between RRS and MI is further supported by Nieuwsma et al. (2022), who hypothesized that MI may be more prevalent among individuals with limited social empowerment. Within the civilian Black population, systemic power imbalances may contribute to moral conflicts, particularly when individuals feel compelled to comply with unjust societal norms or institutional policies out of fear of retribution. Historical and ongoing institutional betrayals, such as those observed in medical settings (Manning, 2020) and racial disparities in maternal mortality (Petersen et al., 2019), further illustrate how RRS can compound MI by eroding trust in systems intended to provide care and protection.

Notably, all three significant predictors of moral injury in this study—IRRS-B, CTQ, and LEC—fall within the *Social and Community Context* key area of SDOH, highlighting the profound influence of social environments on moral injury. Race-related stress (IRRS-B),

childhood maltreatment (CTQ), and lifetime trauma exposure (LEC) reflect interpersonal and systemic adversities that disrupt social connectedness, trust, and perceived fairness. These findings suggest that MI is deeply embedded in social structures and historical contexts of discrimination, marginalization, and trauma, particularly for Black individuals. Socioeconomic deprivation, which often intersects with racial discrimination, may further exacerbate these effects by restricting access to social capital and increasing vulnerability to MI (Blacksher, 2002). Importantly, these results suggest that understanding and addressing MI requires shifting the focus beyond individual psychological factors to the broader social environment in which it develops. Experiences of early-life adversity, trauma exposure across the lifespan, and the quality of social relationships all play a central role in shaping moral distress. These findings highlight the need for interventions that target social and community-based factors—such as strengthening family stability, reducing exposure to interpersonal violence, and fostering supportive environments—to mitigate the risk of MI. By addressing the structural and relational factors that perpetuate moral distress over time, interventions can extend beyond symptom management and more effectively reduce moral injury, particularly among populations disproportionately exposed to trauma due to systemic inequities.

A particularly interesting finding was that societal SSS significantly moderated the relationship between CTQ and MI, such that individuals who rated themselves higher on societal SSS exhibited a stronger positive relationship between childhood trauma exposure and MI than those who rated themselves lower. This result was contrary to my initial expectation, as higher SSS is typically associated with better health outcomes (Adler & Ostrove, 1999). Given its role as a key measure of perceived social standing, I had anticipated that SSS would buffer the effects of childhood maltreatment on moral injury. However, the observed interaction suggests a more

complex psychological dynamic. One possible explanation for this pattern is the psychological dissonance that arises when individuals with high SSS must reconcile early-life adversity with their current social standing. Blacksher (2002) notes that those who endure significant childhood hardships often struggle to attribute personal agency to their successes, instead perceiving themselves as passive recipients of external circumstances. This paradox—feeling powerless over past suffering while simultaneously struggling to claim ownership of present success—may heighten MI symptoms. Relative deprivation theory further suggests that well-being is shaped not only by absolute resources but also by perceived social position (Wilkinson, 1986; Kawachi et al., 1999). Individuals with higher SSS may feel increased pressure to justify their success, leading to internalized guilt or unworthiness if they have experienced significant childhood trauma. The contrast between past suffering and present privilege may intensify moral injury, particularly if they struggle to view their success as a product of personal resilience.

Incorporating the Minorities' Diminished Returns (MDRs) theory provides additional context to this finding, particularly when considering individuals from racial and ethnic minority groups. Research suggests that the relationship between socioeconomic position (SEP) and health outcomes is not the same across racial and ethnic groups. For instance, while high SEP individuals generally experience better health outcomes, the health gains associated with high SEP resources are disproportionately smaller for racial and ethnic minorities compared to White individuals (Assari, 2018a, 2018b). This pattern holds for a wide range of SEP indicators, such as educational attainment, where African Americans, for example, do not experience the same level of health benefit from education as non-Hispanic Whites (Assari, 2018a). These diminished returns are often attributed to structural factors like racism and discrimination, which can reduce the effectiveness of SEP resources for minorities (Hudson et al., 2012). The MDR theory

suggests that the disadvantages of racial and ethnic minorities are compounded, and their health outcomes are less responsive to traditional markers of socioeconomic success (Assari, 2018b). Given this, individuals with high SSS who are from minority backgrounds may face greater psychological strain, as the societal acknowledgment of their success is often tempered by the additional "tax" of discrimination and systemic barriers (Fuller-Rowell et al., 2015). This may contribute to the heightened MI observed in my findings, as these individuals grapple with the tension between their higher social standing and the barriers they continue to face.

The John Henryism hypothesis (JHH) provides additional insight into this dynamic, particularly given that this sample is primarily Black. Originally developed to examine health disparities among African Americans, JHH illustrates how high-effort coping with chronic psychosocial stressors may carry significant psychological and physiological costs, particularly for those from disadvantaged backgrounds (Bennett et al., 2004). John Henryism (JH) is characterized by a strong commitment to hard work, a relentless drive for success, and sustained engagement with stressors despite adversity (James, 1994). While these traits can be adaptive, research suggests that individuals who exhibit high JH, particularly in high-status roles, experience heightened physiological strain, including elevated blood pressure and cardiovascular reactivity (Light et al., 1995). Although initially studied in African Americans, research indicates that JHH is not exclusive to this group and has been observed across racial and gender lines (Bennett et al., 2004). For individuals with high SSS who have overcome childhood adversity, the unrelenting effort to maintain success—while carrying unresolved trauma—may exacerbate psychological distress and contribute to MI. The legend of John Henry himself underscores this cost, as his triumph in outworking a steam-powered drill ultimately came at the expense of his life, serving as a metaphor for the toll of relentless perseverance (Williams, 1983).

Applying the JH framework to my findings, individuals with high SSS who have experienced childhood adversity may feel a heightened need to maintain their status through persistent high-effort coping, despite underlying distress. The pressure to succeed, particularly in social contexts that promote meritocratic narratives, may exacerbate psychological strain rather than alleviate it. This may contribute to the observed positive relationship between childhood trauma and MI among individuals with higher SSS. While social capital is generally protective against mental distress (Silva et al., 2016), those with high SSS may not fully benefit from these protections if they feel alienated from their past adversity or unable to process their trauma within their social environment. Moreover, individuals with lower SSS, who may also be more frequently exposed to socioeconomic adversity, may not perceive PMIEs as acutely morally injurious, as constant exposure to systemic violations may render such experiences commonplace. In contrast, those who have achieved higher social standing may have a stronger expectation of moral integrity in their environments and thus experience greater moral dissonance when confronted with PMIEs. This could lead to a more profound sense of betrayal or distress, amplifying the impact of MI. Consequently, the relationship between childhood trauma and MI among individuals with higher SSS may, in part, be driven by the disparity between their past adversities and their current social expectations, making moral transgressions feel more disruptive to their psychological well-being.

These findings challenge conventional assumptions about SSS and psychological well-being, highlighting the intricate interplay between socioenvironmental factors and MI. While higher SSS is typically associated with better mental health outcomes (Adler & Ostrove, 1999), its interaction with childhood maltreatment in predicting MI suggests that upward mobility does not uniformly confer psychological resilience. Instead, for individuals with histories of adversity,

higher societal standing may introduce new psychological challenges in processing past trauma, potentially exacerbating MI symptoms. The finding that greater SSS strengthens the relationship between childhood trauma and MI underscores the psychological tension between perceived social mobility and moral distress. This insight is particularly relevant for individuals from disadvantaged backgrounds who later achieve upward mobility, as they may struggle to reconcile past adversities with their present status. MDR theory in conjunction with JHH suggests that the strain of upward mobility may be further amplified for racial and ethnic minorities, as the health benefits of their SEP resources are minimized compared to those of non-Hispanic Whites (Assari, 2018b; Bennett et al., 2005). This disparity in the returns on socioeconomic success could play a critical role in the increased psychological burden experienced by individuals from minority backgrounds, making their experience of MI more profound. Future research should examine how perceptions of agency, prevailing social narratives about success, and access to trauma-informed support networks shape this relationship, ultimately informing tailored interventions for those experiencing psychological dissonance related to their social standing.

From a real-world perspective, these findings suggest that MI may have intergenerational implications. Critical aspects of low socioeconomic status (SES)—including poor health outcomes, parenting behaviors, and limited educational attainment—have been shown to persist across generations (Blacksher, 2002; Burger & Mortimer, 2021; Conger et al., 2021; Wolfe et al., 2018). While speculative, this raises the possibility that MI itself may follow a similar trajectory, wherein moral injury experienced by one generation could shape the psychological well-being and decision-making of the next. If MI is, in part, a consequence of prolonged exposure to social and structural inequities, it is essential to consider family- and community-based interventions that address both immediate MI and its potential long-term transmission. Public health initiatives

aimed at disrupting cycles of trauma and socioeconomic disadvantage—such as early childhood intervention programs, trauma-informed community support, and policy reforms that target systemic inequalities—may serve as critical tools in mitigating the intergenerational impact of MI.

Limitations

Although this study provides valuable insights into the socioenvironmental contributors to MI, several limitations must be acknowledged. First, the study relied on a convenience sample of Georgia residents, which, while appropriate for hypothesis testing, limits the generalizability of the findings. The geographic limitation of using a sample of Georgia residents may have introduced bias, as it does not account for regional variations in trauma exposure, socioeconomic conditions, and healthcare access across the U.S. Consequently, the findings cannot be assumed to fully represent broader populations, particularly those in rural areas or states with different socioeconomic and healthcare landscapes.

Second, the sample exhibited unequal distributions in key SDOH, including education, income, and health insurance coverage. As previously noted, this imbalance may have introduced range restriction, potentially attenuating or inflating the observed relationships between these variables and MI. Additionally, the measurement of SDOH was somewhat limited in scope. For instance, healthcare access was assessed solely through health insurance status, which does not fully capture the complexities of healthcare quality and accessibility, such as insurance type and extent of coverage. More nuanced measures—such as frequency of medical visits, perceived ability to seek care when needed, and concerns about affordability or provider trust—could offer a more comprehensive evaluation of healthcare disparities and their

association with MI. Third, all study variables were assessed through self-report measures, introducing the possibility of response biases. Given the sensitive nature of trauma-related experiences, participants may have underreported or overreported certain aspects of their history, potentially affecting data accuracy. Future research could benefit from incorporating objective measures, such as clinical interviews or physiological markers of stress and trauma, to complement self-reported data.

Finally, while SSS emerged as a meaningful factor in this study, its measurement was relatively limited. The reliance on a single-item from the same measure for each community and societal SSS may not fully capture the complexity of an individual's perceived social standing. A more comprehensive assessment incorporating multidimensional scales—evaluating factors such as financial security, occupational prestige, and perceived social mobility—could provide deeper insights into the relationship between SSS and MI. Future studies should also consider alternative methodologies, such as qualitative interviews or longitudinal designs, to examine how shifts in SSS over time influence moral distress.

Future Directions

While this study offers valuable insights into the socioenvironmental contributors to MI, several important avenues for future research remain. First, expanding data collection to include a broader range of racial groups and regions across the U.S. would be useful for enhancing our understanding of how socioenvironmental factors contribute to MI. Gathering data from diverse demographic groups would help illuminate potential regional and racial differences in how socioeconomic factors impact MI, providing a more comprehensive picture of these relationships. Also, ensuring that participants are evenly distributed across categories like income and education will help address potential range restrictions in these variables.

Additionally, future research should incorporate more updated and valid measures, such as income brackets adjusted for inflation, to better reflect the current economic climate and its influence on MI. Another important area for future research is the consideration of more nuanced measures of health insurance coverage. Rather than using a binary variable for insured versus uninsured, it would be beneficial to explore the type of insurance coverage (e.g., private, public, or no insurance) to better capture the varying levels of access to care and the associated risks for MI.

In light of the complex nature of socioenvironmental stressors, future studies should investigate the cumulative impact of multiple socioenvironmental factors on MI. As noted by Borges et al. (2022), assessing the interaction between factors such as income, education, lifetime trauma exposure, and neighborhood quality may reveal compounded effects on psychological distress and vulnerability to MI. Research has demonstrated that chronic exposure to adverse conditions, particularly in lower socioeconomic contexts, can lead to long-term health consequences (Blacksher, 2002). Understanding the compounded effects of multiple stressors on MI will provide a more comprehensive framework for identifying at-risk populations and developing targeted interventions.

Given the multifaceted nature of socioenvironmental stressors, future research should examine the cumulative impact of multiple factors on moral injury (MI). While individual determinants such as income, education, and lifetime trauma exposure each contribute to psychological distress, their interaction may compound vulnerability to MI. Borges et al. (2022) emphasize the need to assess cumulative exposure to PMIEs across various life contexts, including childhood adversity, incarceration, and health challenges. Additionally, chronic exposure to adverse conditions, particularly in lower socioeconomic contexts, has been shown to

biologically embed stress, leading to long-term health consequences (Blacksher, 2002). The concept of a "social gradient" in health suggests that even among higher-SES individuals, relative advantage continues to predict better outcomes (Blane, 1995; Mechanic, 2002). Investigating how these layered stressors shape MI risk will provide a more comprehensive framework for identifying at-risk populations and developing targeted interventions. Ultimately, examining these gaps and expanding the scope of future research will deepen our understanding of the complex interplay between socioenvironmental factors and MI, and help inform more effective strategies for mitigating its harmful effects on mental health.

Conclusion

Overall, this study advances our understanding of moral injury (MI) by situating it within the broader framework of social determinants of health (SDOH) and providing empirical support for the role of cumulative trauma and socioenvironmental factors in shaping MI vulnerability. By identifying key predictors of MI—namely, childhood maltreatment (CTQ), lifetime trauma exposure (LEC), race-related stress (IRRS-B), and the moderating role of societal subjective social status (SSS) in the relationship between CTQ and MI—these findings underscore that MI is not merely an individual psychological phenomenon but is deeply embedded within social and community contexts. By expanding MI research beyond military and clinical populations to broader civilian contexts and examining socioenvironmental determinants, this study highlights the urgent need for holistic interventions that integrate psychological, social, and systemic perspectives. Addressing MI in civilian populations requires early interventions and systemic changes that acknowledge the interplay between trauma and social context. Ultimately, these findings pave the way for more inclusive and effective strategies to screen for and ultimately mitigate MI’s long-term impact.

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Table 1

Demographic and Clinical Characteristics of Participants (n = 385)

Sample Characteristics	*n* (%) or Mean (SD) [Range]
Sex Assigned at Birth	
Female	340 (88.3%)
Male	45 (11.7%)
Age (Years)	39.42 (12.3) [18 – 65]
Race/Ethnicity	
African American/Black	286 (74.3%)
American Indian/Alaskan Native	1 (0.3%)
White	59 (15.3%)
Asian	6 (1.6%)
Mixed	13 (3.4%)
Other Non-White	1 (0.3%)
Other	6 (1.6%)
Education Level	
Less than 12th	15 (3.9%)
12th Grade/High School Graduate	60 (15.6%)
GED	11 (2.9%)
Some College Or Technical School	95 (24.7%)
Technical School Graduate	17 (4.4%)
College Graduate	116 (30.1%)

Graduate School	71 (18.4%)
Monthly Household Income (US$)	
0 - 249	45 (11.7%)
250 - 499	9 (2.3%)
500 - 999	29 (7.5%)
1000 - 1999	73 (19.0%)
2000 or more	229 (59.5%)
Healthcare Coverage Status	
Insured	308 (80.0%)
Uninsured	77 (20.0%)
Employment	
Employed	250 (64.9%)
Unemployed	135 (35.1%)
ADI State Decile	4.61 (2.35) [1-10]
Societal SSS	5.66 (1.86) [1-10]
Community SSS	5.31 (2.04) [1-10]
CTQ Total Score	56.42 (19.92) [25-124]
LEC Experienced & Witnessed Total Score	6.96 (4.14) [0-24]
IRRS-B Total Score[a]	69.02 (20.00) [22-110]
MIESS-C Total Score	38.41 (12.56) [10-60]

Note. ADI = Area Deprivation Index. SSS = Subjective Social Status. CTQ = Childhood Trauma Questionnaire. LEC = Life Events Checklist. IRRS-B = Index of Race-Related Stress – Brief. MIESS-C = Moral Injury Exposure

and Symptom Scale for Civilians. [a] n= 307; African American/Black participants who completed the IRRS-B only.

[a] n = 307

Table 2

Correlations Between MIESS-C, Education, Income, Insurance, Societal SSS, Community SSS, CTQ, LEC, ADI, and IRRS-B.

Variable	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. MIESS-C	-0.00 [b]	-0.04 [b]	0.06 [b]	0.22** [a]	0.17** [a]	0.46** [a]	0.40** [a]	0.06 [a]	0.44** [a]
2. Education		0.33** [b]	0.16** [b]	-0.37** [b]	-0.28** [b]	-0.16** [b]	-0.03 [b]	-0.16** [b]	0.11* [b]
3. Income			0.18** [b]	-0.31** [b]	-0.19** [b]	-0.06 [b]	-0.01 [b]	-0.10* [b]	-0.03 [b]
4. Insurance				-0.13** [b]	-0.12* [b]	-0.01 [b]	0.08 [b]	-0.02 [b]	0.05 [b]
5. Societal SSS					0.66** [a]	0.31** [a]	0.11* [a]	0.09 [a]	0.13* [a]
6. Community SSS						0.29** [a]	0.07 [a]	0.02 [a]	0.06 [a]
7. CTQ							0.43** [a]	0.03 [a]	0.24** [a]
8. LEC								0.07 [a]	0.33** [a]
9. ADI									-0.01 [a]
10. IRRS-B									

Note. * indicates p <.05; ** indicates p <.01.

[a] Pearson's bivariate correlation

[b] Spearman's rank correlation

Table 3

Regression Analysis: Predictors of Moral Injury Excluding IRRS-B

Variable	*B*	*SE B*	β	*df*	*t*	*p*	95% CI
(Intercept)	16.93	2.82		(6, 378)	6.00**	<.001	[11.39, 22.48]
Education	0.49	0.32	.07	(6, 378)	1.52	.13	[-0.15, 1.12]
Income	-0.03	0.43	-.00	(6, 378)	-0.08	.94	[-0.89, 0.82]
Insurance	0.80	1.43	.03	(6, 378)	0.56	.58	[-2.01, 3.60]
CTQ	0.23	0.03	.37	(6, 378)	7.45***	<.001	[0.17, 0.29]
LEC	0.72	0.15	.24	(6, 378)	4.84***	<.001	[0.43, 1.02]
ADI	0.21	0.24	.04	(6, 378)	0.88	.38	[-0.26, 0.68]

Note. ** indicates p <.01; *** indicates p <.001.

Table 4

Regression Analysis: Predictors of Moral Injury Including IRRS-B

Variable	*B*	*SE B*	β	*df*	*t*	*p*	95% CI
(Intercept)	6.24	3.47		(7, 299)	1.80	.07	[-0.59, 13.07]
Education	-0.01	0.35	-.00	(7, 299)	-0.03	.98	[-0.70, 0.68]
Income	-0.04	0.46	-.00	(7, 299)	-0.09	.93	[-0.95, 0.87]
Insurance	-0.13	1.54	-.00	(7, 299)	-0.08	.94	[-3.15, 2.90]
CTQ	0.21	0.04	.32	(7, 299)	5.88***	<.001	[0.14, 0.28]
LEC	0.45	0.17	.15	(7, 299)	2.64*	.01	[0.12, 0.79]
ADI	0.50	0.27	.09	(7, 299)	1.84	.07	[-0.04, 1.03]
IRRS-B	0.21	0.03	.32	(7, 299)	6.27***	<.001	[0.14, 0.27]

Note. * indicates p <.05; *** indicates p <.001.

Appendix A

Childhood Trauma Questionnaire (CTQ)

Directions: These questions ask about some of your experiences growing up as a child and a teenager. For each question, circle the number that best describes how you feel. Although some of these questions are of a personal nature, please try to answer as honestly as you can. Your answers will be kept confidential. When I was growing up...	
Response Options: ○Never True ○Rarely True ○Sometimes True ○Often True ○Always True	
Item #	
1	I didn't have enough to eat
2	I knew there was someone there to take care of me and protect me
3	People in my family called me things like stupid, lazy, or ugly
4	My parents were usually too high or too drunk to take care of me
5	There was someone in my family who helped me feel important or special
6	I had to wear dirty clothes
7	I felt loved
8	I thought that my parents wished I had never been born
9	I got hit so hard by someone in my family that I had to see a doctor or go to the hospital
10	There was nothing I wanted to change about my family
11	People in my family hit me so hard it left me with bruises or marks
12	I was punished with a belt, a board, a cord (or some other hard object)
13	People in my family looked out for each other
14	People in my family said hurtful or insulting things to me
15	I believe that I was physically abused
16	I had the perfect childhood
17	I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor or doctor.

18	Someone in my family hated me
19	People in my family felt close to each other
20	Someone tried to touch me in a sexual way or tried to make me touch them
21	Someone threatened to hurt me or tell lies about me unless I did something sexual with them
22	I had the best family in the world
23	Someone tried to make me do sexual things or watch sexual things
24	Someone molested me (took advantage of me sexually)
25	I believe that I was emotionally abused
26	There was someone to take me to the doctor if I needed it
27	I believe that I was sexually abused
28	My family was a source of strength and support

Note. This table displays the CTQ scale participants answered during the screening assessment.

Appendix B

Life Events Checklist (LEC)

Directions: This next measure is looking at stressful or difficult experiences you may or may not have experienced throughout your lifetime. When someone has gone through a lot of difficult things, we don't want to put them in a position where they have to think deeply about all of them all at once. Therefore, this measure is brief and not meant to go into detail. It's just trying to give us a snapshot of certain life experiences you may have gone through.

For each event, say whether it happened to you personally; if you witnessed it happen to someone else; if you learned about it happening to a close family member or close friend; if you were exposed to it as part of your job (for example, as a paramedic, police, military, or other first responder); you are not sure if it fits; or if it doesn't apply to you.

Sometimes stressful events might fit into several categories and we only want to count each experience one time on this survey. So, as I read this list of possible events to you, if one of your experiences applies to multiple types of events please choose the one you feel it best fits.

Response Options:

○Happened to me ○Witnessed it ○Learned about it ○Part of my job ○Not sure ○Doesn't apply

Item #	
1	Natural disaster (for example, flood, hurricane, tornado, earthquake)
2	Fire or explosion
3	Transportation accident (for example, car accident, boat accident, train wreck, plan crash)
4	Serious accident at work, home, or during recreational activity
5	Exposure to toxic substance (for example, dangerous chemicals, radiation)
6	Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)
7	Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)
8	Sexual assault (for example, rape, attempted rape, made to perform any type of sexual act through force or threat of harm)
9	Combat or exposure to a war-zone (in the military or as a civilian)
10	Other unwanted or uncomfortable sexual experience

11	Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)
12	Life-threatening illness or injury
13	Severe human suffering
14	Sudden violent death (for example, homicide, suicide)
15	Sudden accidental death
16	Serious injury, harm, or death you caused to someone else
17	Any other very stressful event or experience

Note. This table displays the LEC scale participants answered during the screening assessment.

Appendix C

Index of Race-Related Stress – Brief (IRRS-B)

Directions: This survey questionnaire is intended to sample some of the experiences that Black people have in this country because of their "blackness." There are many experiences that a Black person can have in this country because of his/her race. Some events happen just once, some more often, while others may happen frequently.

Below you will find listed some of these experiences, for which you are to indicate those that have happened to you or someone very close to you (i.e., a family member or loved one). It is important to note that a person can be affected by those events that happen to people close to them; this is why you are asked to consider such events as applying to your experiences when you complete this questionnaire.

Response Options:

- This never happened to me
- This event happened, but did not bother me
- This event happened & I was slightly upset
- This event happened & I was upset
- This happened & I was extremely upset

Item #	
1	You notice that crimes committed by White people tend to be romanticized, whereas the same crime committed by a Black person is portrayed as savagery, and the Black person who committed it, as an animal.
2	Salespeople/clerks did not say thank you or show other forms of courtesy and respect (e.g., put your things in a bag) when you shopped at some White/non-Black owned businesses.
3	You notice that when Black people are killed by the police, the media informs the public of the victims' criminal record or negative information in their background, suggesting they got what they deserved.
4	You have been threatened with physical violence by an individual or group of White/non-Blacks.
5	You have observed that White kids who commit violent crimes are portrayed as boys being boys, while Black kids who commit similar crimes are wild animals.
6	You seldom hear or read anything positive about Black people on radio, TV, in newspapers, or history books.

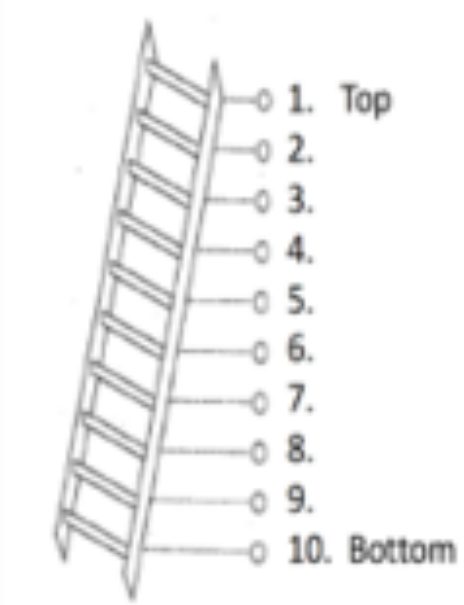
7	While shopping at a store the salesclerk assumed that you couldn't afford certain items (e.g., you were directed toward the items on sale).
8	You were the victim of a crime and the police treated you as if you should just accept it as part of being Black.
9	You were treated with less respect and courtesy than Whites and other non-Blacks while in a store, restaurant, or other business establishment.
10	You were passed over for an important project although you were more qualified and competent than the White/non-Black person given the task.
11	Whites/non-Blacks have stared at you as if you didn't belong in the same place with them; whether it was a restaurant, theater, or other place of business.
12	You have observed the police treat White/non-Blacks with more respect and dignity than they do Blacks.
13	You have been subjected to racist jokes by Whites/non-Blacks in positions of authority and you did not protest for fear they might have held it against you.
14	While shopping at a store, or when attempting to make a purchase, you were ignored as if you were not a serious customer or didn't have any money.
15	You have observed situations where other Blacks were treated harshly or unfairly by Whites/non-Blacks due to their race.
16	You have heard reports of White people/non-Blacks who have committed crimes, and in an effort to cover up their deeds falsely reported that a Black man was responsible for the crime.
17	You notice that the media plays up those stories that cast Blacks in negative ways (child abusers, rapists, muggers, etc.), usually accompanied by a large picture of a Black person looking angry or disturbed.
18	You have heard racist remarks or comments about Black people spoken with impunity by White public officials or other influential White people.
19	You have been given more work, or the most undesirable jobs at your place of employment while the White/non-Black of equal or less seniority and credentials is given less work, and more desirable tasks.
20	You have heard or seen other Black people express a desire to be White or to have White physical characteristics because they disliked being Black or thought it was ugly.
21	White people or other non-Blacks have treated you as if you were unintelligent and needed things explained to you slowly or numerous times.

22	You were refused an apartment or other housing; you suspect it was because you're Black.

Note. This table displays the IRRS-B scale participants answered during the screening assessment.

Appendix D

Subjective Social Status (SSS)



Directions: Using the image above, where would you place yourself on this ladder? Pick the number that best represents where you would be on this ladder.	
Response Options: ○1 ○2 ○3 ○4 ○5 ○6 ○7 ○8 ○9 ○10	
Item #	
1	Imagine that this ladder represents the place that people occupy in society. At the top of the ladder are the people who are the best off in society-they have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off-they have the least money, the least education, and the least respected jobs or no job.
2	Imagine that this ladder represents the place that people occupy in their community. At the top of the ladder are the people who are the best off in your community-they have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off-they have the least money, the least education, and the least respected jobs or no job.

Note. This table displays the SSS scale participants answered during the screening assessment.

Appendix E

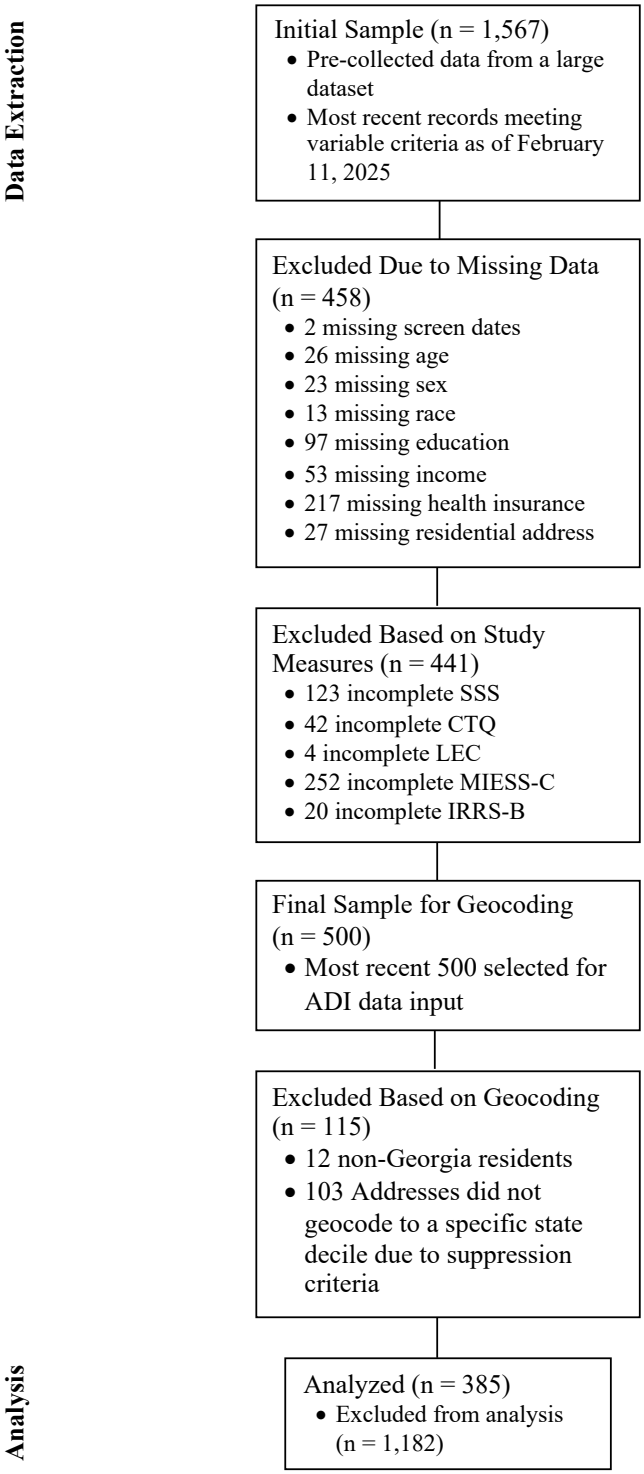
Moral Injury Exposure and Symptom Scale for Civilians (MIESS-C)

Directions: In this scale we will be asking you about events that might have conflicted with your morality or your sense of right and wrong.	
Response Options: ○1 = strongly agree ○2 ○3 ○4 ○5 ○6 = strongly disagree	
Item #	
1	I saw things that were morally wrong
2	I am troubled by having witnessed others immoral acts
3	I acted in ways that violated my own moral code or values
4	I am troubled by having acted in ways that violated my own morals or values
5	I violated my own morals by failing to do something that I felt I should have done
6	I am troubled because I violated my morals by failing to do something that I felt I should have been done
7	I feel betrayed by specific people who I once trusted
8	I am troubled by this betrayal by specific people
9	I feel betrayed by the institutions that I am supposed to trust (for example, police, church, schools, governmental workers)
10	I am troubled by this betrayal by the institutions that I am supposed to trust

Note. This table displays the MIESS-C scale participants answered during the screening assessment.

Appendix F

Data Exclusion Chart



Note. This figure shows the data exclusion process.